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bearing number.....**DSL/APSSDC/19023**.....has successfully

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.....**JNTUA College of Engineering, Anantapuramu**.....

from **12 March 2018** to **17 March 2018**

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Authorized Signatory:

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completed.....**Essentials for NX Designers**.....Course

Conducted at

.....**JNTUA College of Engineering, Anantapuramu**.....

from **12 March 2018** to **17 March 2018**

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This is to certify that **BALU SURENDRA**.....

bearing number.....**DSL/APSSDC/19026**.....has successfully

completed.....**Essentials for NX Designers**.....Course

Conducted at

.....**JNTUA College of Engineering, Anantapuramu**.....

from **12 March 2018** to **17 March 2018**

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This is to certify that **SHAIK LATHEEF**.....

bearing number.....**DSL/APSSDC/19027**.....has successfully

completed.....**Essentials for NX Designers**.....Course

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from **12 March 2018** to **17 March 2018**

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This is to certify that **DARA ANIL**.....

bearing number.....**DSL/APSSDC/19028**.....has successfully

completed.....**Essentials for NX Designers**.....Course

Conducted at

.....**JNTUA College of Engineering, Anantapuramu**.....

from **12 March 2018** to **17 March 2018**

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This is to certify that **GANGANAPALLI KUMAR**

bearing number **DSL/APSSDC/19029** has successfully

completed **Essentials for NX Designers** Course

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This is to certify that **KUMBHAGIRI RAMAKRISHNA**

bearing number.....**DSL/APSSDC/19030**.....has successfully

completed.....**Essentials for NX Designers**.....Course

Conducted at

.....**JNTUA College of Engineering, Anantapuramu**.....

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This is to certify that **MEKALA VISWESWARA RAO**.....

bearing number.....**DSL/APSSDC/19031**.....has successfully

completed.....**Essentials for NX Designers**.....Course

Conducted at

.....**JNTUA College of Engineering, Anantapuramu**.....

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This is to certify that **GATTUPALLI PHANINDRA REDDY**.....

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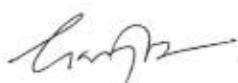
completed.....**Essentials for NX Designers**.....Course

Conducted at

.....**JNTUA College of Engineering, Anantapuramu**.....

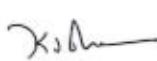
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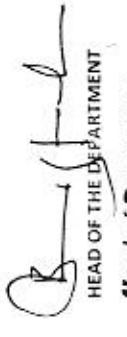
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KAVALLI-524201, S.P.S.R Nellore Dist., A.P. India. Ph:08626-243930

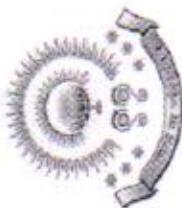
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

3.5.1 Number of Collaborative activities for research, Faculty exchange, Student exchange/ Internship per year [10]

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
1	Performance Enhancement of the Induction Motor Hybrid drives through common mode voltage compensator	VNR VIJET, Hyderabad JNTUH, Hyderabad	A. Bhaktha vachala	2020	8 Years	RESEARCH	http://serc.org/journals/index.php/IAST/article/view/4652
2	Fuzzy Logic Controller based Unity Power Factor Correction of Boost Converter	VNR VIJET, Hyderabad JNTUH, Hyderabad	A. Bhaktha vachala	2017	8 Years	RESEARCH	http://www.iosrjournals.org/iosr-ieee/Papers/Vol12%20Issue%206/Version-1.pdf
3	A Simplified Filter Topology for Compensating Common Mode Voltage and Electromagnetic Interference in Induction Motor Drives	VNR VIJET, Hyderabad JNTUH, Hyderabad	A. Bhaktha vachala	2017	8 Years	RESEARCH	https://www.sciencedirect.com/science/article/pii/S1876610217323767
4	An improved methodology for enhancing the power factor of bridgeless buck PFC converter	VNR VIJET, Hyderabad JNTUH, Hyderabad	A. Bhaktha vachala	2019	8 Years	RESEARCH	https://www.iespublications.com/upload/2019_v10_11_41.pdf
5	A novel topology for fast charging of electrical vehicle battery	VNR VIJET, Hyderabad JNTUH, Hyderabad	A. Bhaktha vachala	2019	8 Years	RESEARCH	https://app.box.com/s/74ivznic4x6si4003Optn94npv7ml7nx
6	Interconnection of hybrid PV-Wind system with grid through a multi input transformer coupled bidirectional battery	VNR VIJET, Hyderabad JNTUH, Hyderabad	A. Bhaktha vachala	2019	8 Years	RESEARCH	http://www.jircjournal.com/gallery/68_jier-november-2019.pdf
7	Reduction of inter harmonics in PV systems using modified MPPT Technique	VNR VIJET, Hyderabad JNTUH, Hyderabad	A. Bhaktha vachala	2020	8 Years	RESEARCH	https://drive.google.com/file/d/1S1tU3-FY1mMw7F-vXsh2relfzeviKKaBW/view
8	New Techniques for Tuning of PID Load Frequency Controller of Interconnected Electric Power System	KLU University, Vijayawada P.Gopi	P.Gopi	2016	5 Years	RESEARCH	https://www.researchgate.net/publication/317772226_New_techniques_for_tuning_of_load_frequency_controller_of_interconnected_electric_power_system
9	Application of modern heuristic algorithm to automatic generation control of hybrid electric power system	KLU University, Vijayawada P.Gopi	P.Gopi	2016	5 Years	RESEARCH	https://www.enggjournals.com/jiet/docs/110673_EGJET16-08-05-426.pdf
10	Tuning of Load Frequency PID Controller of Electric power system	KLU University, Vijayawada P.Gopi	P.Gopi	2016	5 Years	RESEARCH	https://www.iasinet.net/iasi/article&aid=110673
11	Load Frequency Controller of Microgrid Power System using SDQ software	KLU University, Vijayawada P.Gopi	P.Gopi	2015	5 Years	RESEARCH	https://scholar.google.com/scholar?clusterr=1015221078849517185&hl=en&oi=scholar
12	A Robust Decentralized Controller Design for interconnected PS with Random Load Perturbations using SDQ Software	KLU University, Vijayawada P.Gopi	P.Gopi	2015	5 Years	RESEARCH	https://www.sciencedirect.com/science/article/pii/S2212017315002881
13	A new optimized PD-PI controller usign NSGA-II for automatic	JNTU, Anantapur Ch. Srinivasulu Reddy	Ch. Srinivasulu Reddy	2017	6 Years	RESEARCH	https://www.ijsree.com/upload/2017/uly49_A%20New%20Optimized%20PD-PI%20Controller%20using%20NSGA-II%20for%20Automatic%20Load%20Perturbation%20in%20Interconnected%20Power%20Systems.pdf

14	400KV SubStation Monitoring	AP Transco 400KV SubStation	16731A0202-CH.Anusha	2018	INTERNSHIP
15	SDST PowerStation Monitoring	SDST PowerStation	16731A0206-G.Mounika	2018	INTERNSHIP
16	SDST PowerStation Monitoring	SDST PowerStation	16731A0219-M.Anvesh	2018	INTERNSHIP
17	133KV SubStation Monitoring	133KV SubStation Monitoring	16731A0206-K.Hareesh	2018	INTERNSHIP
18	Rayalaseema Thermal Power plant	Rayalaseema Thermal Power plant	16731A0201-B.Nikitha	2018	INTERNSHIP
19	APGENCO- Power Station Monitorinf	APGENCO	16731A0205-D.Uma	2018	INTERNSHIP
20	400KV SubStation Monitoring	400KV SubStation Monitoring	16731A0225-D.Suma	2018	INTERNSHIP
21	APTRANS CO (132KV SS Monitoring)	APTRANS CO (132KV SS Monitoring)	16731A0202-B.Sushmaram	2018	INTERNSHIP
22	APTRANS CO (132KV SS Monitoring)	APTRANS CO (132KV SS Monitoring)	16731A0208-Sk.Dada Khalindar	2017	MINI PROJECT WORK
23	APTRANS CO (132KV SS Monitoring)	APTRANS CO (132KV SS Monitoring)	16731A0205-CH.Anugna	2017	INTERNSHIP
			15731A0208-G.Mallika		


Head of Department
ELECTRICAL & ELECTRONICS ENGINEERING
PUR Viswadeva Institute of Technology & Science
KAVALI - 524 201, SPSR Nellore (Dt) A.P



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VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE
 (Affiliated to J.N.T.U.A, Approved by AICTE and Accredited by NAAC with 'A' Grade)
KAVALI – 524201, S.P.S.R Nellore Dist., A.P. India. Ph: 08626-243930



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

3.5.1 Number of Collaborative activities for research, Faculty exchange, Student exchange/internship per year (10)

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
1	Adaptive Multipath Routing for Congestion Control with Packet Priority and Queuing	JNTUCEK, Kakinada	N. KRISHNA CHAITANYA	2013	5 Years	Research	1
2	Image Processing	Acharya Nagarjuna University, Guntur	GOLLA NAGESWARA RAO	2014	5 Years	Research	2
3	Substrate Integrated Wave Guide Filters Optimization using ANN	NIT, Thirichy	RANJIT RAYALA	2016	5 Years	Research	3
4	Image Processing	K L University, Guntur	CH. AMARNATHSARMA	2016	5 Years	Research	4
5	Image Processing	JNTUA, Ananthapuram	VANI	2016	5 Years	Research	5

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
6	Wireless Communication	JNTUA, Ananthapuramu	P.BHASKAR RAO	2016	5 Years	Research	6
7	A Novel Image Processing Technique of Thermal Wave Imaging for Non Destructive Evaluation	Shri Venkateswara University, U.P.	V.PHANIBHUSHAN	2017	5 Years	Research	7
8	A Novel Invisible Digital Image Watermarking	VELS University, Chennai	V.PRASANNA ANJANEYA REDDY	2017	5 Years	Research	8
9	Exploring Design Opportunities in Digital Circuits for Ultra Low Power Consumption	JNTUCEK, Kakinada	M.PAVITRA	2018	5 Years	Research	9
10	VLSI Design	JNTUCEK, Kakinada	M.SUREKHA	2019	5 Years	Research	10
11	A compact flower slotted dualband notched ultrawideband antenna integrated with Kuband for Design and Parametric Analysis of Beveled UWB Triple Band Rejection Antenna	Microwave and Optical Technology Letters	Dr.A. Maheswara Rao	2019	1 Year	Research	https://doi.org/10.1002/mop.32619
12	Progress In Electromagnetics Research M. PIER M	Dr.A. Maheswara Rao	Dr.A. Maheswara Rao	2019	1 Year	Research	http://www.ipier.org/PIERM/pierm84/10.19071301.pdf

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
13	Secured IoT Technology in Wide Area Public Networks	IJERT	Dr. M.R. ARUN	2020	1Year	Research	www.ijert.org
14	Comparing BlockChain with other Cryptographic Technologies (DAG, Hashgraph, HoloChain)	IJCERT	Dr. M.R. ARUN	2020	1Year	Research	https://doi.org/10.2362/ijcert/2020v7i04/v7i04n3
15	Historical Analysis and Scientific Overview of Coronaviruses	US National Library of Medicine enlisted journal	Dr. M.R. ARUN	2019	1Year	Research	Al Ameen Charitable Fund Trust, Bangalore
16	A Novel Method For Blood Bank Monitoring System Using Gsm And Raspberry Pi (RPI)	International Journal of Management, Technology And Engineering	R.Prathap Singh	2019	1Year	Research	https://www.iiste.org/wp-content/uploads/papers/v8/4/D9968118419.pdf
17	Segmentation of Thermogram based on Region based technique using Split and Merge	International Journal of Recent Technology and Engineering (IJRTE),	V. Phani Bhushan	2019	1Year	Research	https://www.tandfonline.com/doi/abs/10.1080/21681724.2018.1519854
18	A Novel Method For Blood Bank Monitoring System Using Gsm And Raspberry Pi (RPI)	International Journal of Management, Technology And Engineering	K.SOWMYA	2019	1Year	Research	
19	A novel fan shaped UWB antenna with band notch for WLAN using a simple parasitic slit	International Journal of Electronics Letters	Dr.A.Maheswara Rao	Sep,2018	1Year	Research	

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
20	Compact UWB monopole antenna with quadruple band notched characteristics	International Journal of Electronics	Dr.A.Maheswar Rao	May,2019	1Year	Research	https://www.tandfonline.com/loi/tetn20
21	A Novel Fan Shaped UWB Antenna with BandNotch for WLAN Using a Simple Parasitic Slit	International Journal of Electronics Letters.	Dr. A.Maheswara Rao	Sep,2018	1Year	Research	https://doi.org/10.1080/21681724.2018.1519854
22	Arduino Based Oil Tank Truck Alarm System for Illegal Fuel Hoarding Using GSM Module	International Journal of Advanced Technology and Innovative Research	R.Pratap Singh	July, 2018	1Year	Research	http://ijatir.org/uploads/136425IJATIR17020-141.pdf
23	An Adaptive Resource Allocation and Management in Full Duplex Heterogeneous Network	International Journal of Advanced Technology and Innovative Research	R.Pratap Singh	Mar, 2019	1Year	Research	http://www.ijatir.org/issue.php?issue=1 ISSUE%203&volume=Volume11
24	Image Watermarking using QR Decomposition	International Journal of Advanced Technology and Innovative Research	V.Phani Bhushan	July, 2018	1Year	Research	http://ijatir.org/uploads/45263IJATIR17018-139.pdf
25	NonLocal Centralized and Adaptive PCA Based Denoising Technique for color images	International Journal of Advanced Technology and Innovative Research	V.Phani Bhushan	Aug, 2018	1Year	Research	http://www.ijatir.org/issue.php?issue=1 ISSUE%208&volume=Volume10&page=3
26	Power Monitoring System For Automatic Metering And Billing	International Journal of Advanced Technology and Innovative Research	A.Suman Kumar Reddy	Dec, 2018	1Year	Research	http://www.ijatir.org/issue.php?issue=1 ISSUE%2012&volume=Volume10

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
27	Improved Adaptive Multipath Routing for Congestion Control	Journal of Advanced Research in Dynamical and Control Systems (JARDCS).	N.Krishna Chaitanya	Aug, 2018	1Year	Research	http://www.jardcs.org/backissuesearchives-special.php?year=2018&issue=12.
28	Traffic Aware Congestion Control Priority based Efficient Adaptive Multipath Routing in wired networks	Wireless Personal Communication, Springer Publications,	N.Krishna Chaitanya	Dec, 2018	1Year	Research	https://link.springer.com/article/10.1007/s11277-018-6003-z
29	Design and implementation of 64 bit parallel self time adder(PASTA)	IJFRES International Journal of Professional Engineering studies	M.Pavitra	Dec, 2018	1Year	Research	http://www.ijfres.com/pdf40/12.pdf
30	A Fire Alarming System For Monitoring Environmental Fire Issues Based On YCbCr Method	International Journal of Advanced Technology and Innovative Research N.V.Sai Chand	N.V.Sai Chand	Nov,2018	1Year	Research	http://www.ijatir.org/issue.php?issue=15&volume=Volume10
31	Environment Pollution Awareness through Vehicle Tracking System Using IOT	International Journal of Scientific Research and Review Ch.Amarnath Sharma	Ch.Amarnath Sharma	Nov,2018	1Year	Research	http://www.dynamictublisher.org/gallery/83-jstrial115.f.pdf
32	FPGA Implementation of Reconfigurable FIR Filter using Carry Bypass Adder	International Journal of Advanced Research in Computer and Communication Sk.Rasool	Sk.Rasool	Nov,2018	1Year	Research	https://ijarcce.com/papers/fpga-implementation-of-reconfigurable-fir...
33	Environment Pollution Awareness through Vehicle Tracking System Using IOT	International Journal of Scientific Research and Review A.Srinivasa Rao	A.Srinivasa Rao	Nov,2018	1Year	Research	http://www.dynamictublisher.org/gallery/83-jstrial115.f.pdf

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration of the activity	Nature of the activity	Link to the relevant document
34	STUDENTS				1Year	Research	
35	Arduino Based Oil Tank Truck Alarm System for Illegal Fuel Hoarding Using GSM Module	International Journal of Advanced Technology and Innovative Research	R Navitha Devi	July, 2018	1Year	Research	http://ijatir.org/uploads/136425IJATIR17020-141.pdf
36	An Adaptive Resource Allocation and Management in Full Duplex Heterogeneous Network	International Journal of Advanced Technology and Innovative Research	S Harreesh	Mar, 2019	1Year		http://www.ijatir.org/issue.php?issue=ISSUE%203&volume=Volume11
37	Image Watermarking using QR Decomposition	International Journal of Advanced Technology and Innovative Research	D Malathi	July, 2018	1Year	Research	http://ijatir.org/uploads/452631IJATIR17018-139.pdf
38	NonLocal Centralized and Adaptive PCA Based Denoising Technique for color images	International Journal of Advanced Technology and Innovative Research	P Kawitha	Aug, 2018	1Year	Research	http://www.ijatir.org/issue.php?issue=ISSUE%208&volume=Volume10&page=3
39	Power Monitoring System For Automatic Metering And Billing	International Journal of Advanced Technology and Innovative Research	V kalyan Chakravarthi	Dec, 2018	1Year	Research	http://www.ijatir.org/issue.php?issue=ISSUE%2012&volume=Volume10
40	Design and implementation of 64 bit parallel self time adder(PASTA)	IJPRES International Journal of Professional Engineering studies	M Haritha	Dec, 2018	1Year	Research	http://www.ijpresa.com/pdf40/12.pdf

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
41	A Fire Alarming System For Monitoring Environmental Fire Issues Based On YCbCr Method	International Journal of Advanced Technology and Innovative Research	L.Sathy Sujatha	Nov,2018	1Year	Research	http://www.ijatir.org/?issue.php?issue=ISSUE%2011&volume=Volume10
42	A Novel Method for Transmission of Data using Barcode Modulation for Handheld Electronic Devices	International Journal of Scientific Engineering and Technology Research	Dr. A.Maheswara Rao	Sep, 2017	1Year	Research	http://ijsetr.com/issuetable.php?issue=ISSUE%2030&volume=Volume6&page=2
43	LDPC Decoding for NAND Flash Memory by using Array Dispersion	International Journal of Innovative Technologies	V.Narayana Reddy	Sep, 2017	1Year	Research	http://ijitech.org/uploads/236514IJIT15697-359.pdf
44	Implementation of Area Efficient Carry-Select Adder	International Journal of VLSI System Design and Communication Systems	V.Narayana Reddy	Jan, 2018	1Year	Research	http://www.ijvdc.org/?issue.php?issue=ISSUE%201&volume=Volume6&page=5
45	Fingerprint Compression Based on Sparse Representation using FFT Method	International Journal of Advanced Technology and Innovative Research	V.Phani Bhushan	Jan., 2018	1Year	Research	http://www.ijatir.org/?issue.php?issue=ISSUE%201&volume=Volume10
46	of Low-Energy Techniques for Instruction Memory Organisations in Embedded Systems	COMPUSOFT, An international journal of advanced computer technology	A.Suman Kumar Reddy	Dec, 2017	1Year	Research	https://www.ijact.in/index.php/ijact/article/view/693/563
47	A Research Study of Power Impact of Loop Buffer Schemes for Biomedical Wireless Sensor Nodes	International Journal of Research	A.Suman Kumar Reddy	Feb, 2018	1Year	Research	

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration of the activity	Nature of the activity	Link to the relevant document
48	Exploration Tool for Instruction Memory Organisations Based On Accurate Cycle-Level Energy Modelling	International Journal of Engineering Science and Invention (IJSI)	A.Suman Kumar Reddy	Feb,2018	1Year	Research	http://www.ijesi.org/papers/Vol(7)j2/Versoion-3/C0702033951.pdf
49	Trace of JPEG Compression and Forgery Detection using Saliency Method(Tentative)	International Journal of Advanced Technology and Innovative Research,	N.Krishna Chaitanya	Jan,2018	1Year	Research	http://www.ijatir.org/issue.php?issue=ISSUE%201&volume=Volume10
50	Design of High Speed Variable Latency 64-Bit Carry Skip Adder	International Journal of VLSI System Design and Communication Systems,	M.Pavitra	July,2017	1Year	Research	http://www.ijvdc.org/uploads/265134IJVDCS15158-131.pdf
51	Design of Redundant Binary Multipliers using Modified Partial Product Generator	International Journal of Research,ei-	M.Pavitra	Nov,2017	1Year	Research	https://journals.pen2print.org/index.php/ijr/article/view/9854
52	A Review on Design and Implementation of Fault Tolerant Parallel FFT's using ECC and Parseval Checks	International Journal of Innovative Technologies	N.V.Saichand	Sep,2017	1Year	Research	http://ijitech.org/uploads/153642IJIT15521-330.pdf
53	Implementation of Conventional Multiplier in Reversible Logic	International Journal of VLSI System Design and Communication Systems,	K.Rajesh	Sep, 2017	1Year	Research	http://www.ijvdc.org/issue.php?issue=ISSUE%209&volume=Volume5
54	Facial Feature Identification and Matching using Face Sketch Synthesis by Modified Sparse Technique	International Journal of Advanced Technology and Innovative Research	K.Rajesh	Jan,2018	1Year	Research	http://www.ijatir.org/issue.php?issue=ISSUE%201&volume=Volume10

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
55	Non-Uniform Templates for Near Duplicate Image Matching	International Journal of Advanced Technology and Innovative Research, K.Rajesh		April, 2018	1Year	Research	http://www.ijjatir.org/uploads/36245IJATIR16825-94.pdf
56	Efficient Approaches for Designing Quantum Costs of Various Reversible Gates	International Journal of Engineering Studies M.Surekha		Nov, 2017	1Year	Research	https://pdfs.semanticscholar.org/928e/5871ff632916b0abfb65062d15cc5eb14492.pdf
57	Design of Area Efficient High-Performance 2-4 and 4-16 Mixed-Logic Line Decoders	JOURNAL OF PROFESSIONAL ENGINEERING STUDIES L.M.L.Narayana reddy		Dec,2017	1Year	Research	http://www.ijpres.com/pdf37/46.pdf
58	Transferring the Health Details of Animal using Zigbee Module	International Journal of Scientific Engineering and Technology Research K.Ashok Kumar		Sep,2017	1Year	Research	http://ijsetr.com/uploads/461235IJSETR15551-996.pdf
59	An Approach to Control and Monitor Environmental Parameters in Greenhouse using ARM	International Journal of Advanced Technology and K.Ashok Kumar Innovative Research,		Oct, 2017	1Year	Research	http://ijatir.org/uploads/514623IJATIR15791-351.pdf
60	Design And Implementation of FMO/Manchester Encoder Using Sols Technique	International Journal of VLSI Design and Communication Systems K.Ashok Kumar		Jan, 2018	1Year	Research	http://www.ijvds.org/issue.php?issue=ISUE%201&volume=Volume6&page=6
61	A Novel High Speed Memory Solution using TCAM	International Journal of Innovative Technologies K.Ashok Kumar		Jan, 2018	1Year	Research	http://ijitech.org/uploads/354621IJIT16736-40.pdf

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
62	Construction and Design of Microcontroller Embedded Based Viscometer	SSRG International Journal of Electronics and Communication Engineering (SSRG-JECE)	D.Uma Maheswara Reddy	July, 2017	1Year	Research	http://www.internationaljournalsrg.org/IJECE/2017/Volume4-Issue7/IJECE-V4I7M102.pdf
63	A Novel Method for Transmission of Data using Barcode Modulation for Handheld Electronic Devices	International Journal of Scientific Engineering and Technology Research	SK Mujeeba	Sep, 2017	1Year	Research	http://ijestr.com/issue.php?issue=1ISSUE%2030&volume=Volume6&page=2
64	LDPC Decoding for NAND Flash Memory by using Array Dispersion	International Journal of Innovative Technologies	KARANATI Yamini	Sep, 2017	1Year	Research	http://ijitech.org/uploads/236514IJIT15697-359.pdf
65	Implementation of Area Efficient Carry-Select Adder	International Journal of VLSI System Design and Communication Systems	K Renuka Priyadarsini	Jan, 2018	1Year	Research	http://www.ijvdc.org/issue.php?issue=1SUE%201&volume=Volume6&page=5
66	Fingerprint Compression Based on Sparse Representation using FFT Method	International Journal of Advanced Technology and Innovative Research	K Rajya Lakshmi	Jan., 2018	1Year	Research	http://www.ijatir.org/issue.php?issue=ISSUE%201&volume=Volume10
67	Trace of JPEG Compression and Forgery Detection using Saliency Method(Tentative)	International Journal of Advanced Technology and Innovative Research,	G Meghana	Jan,2018	1Year	Research	http://www.ijatir.org/issue.php?issue=ISSUE%201&volume=Volume10
68	Design of High Speed Variable Latency 64-Bit Carry Skip Adder	International Journal of VLSI System Design and Communication Systems,	CH Sravani	July,2017	1Year	Research	http://www.ijvdc.org/uploads/2651341JVDCS15158-131.pdf

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
69	Design of Redundant Binary Multipliers using Modified Partial Product Generator	International Journal of Research,e-	P Hari Krishna	Nov,2017	1Year	Research	https://journals.pen2print.org/index.php/ijr/article/view/9854
70	Implementation of Conventional Multiplier in Reversible Logic	International Journal of VLSI System Design and Communication Systems,	B Sri Lakshmi	Sep, 2017	1Year	Research	http://www.ijvdc.org/issue.php?issue=ISUE%209&volume=Volume5
71	Facial Feature Identification and Matching using Face Sketch Synthesis by Modified Sparse Technique	International Journal of Advanced Technology and Innovative Research	P Kavya Sri	Jan,2018	1Year	Research	http://www.ijatir.org/issue.php?issue=ISSUE%201&volume=Volume10
72	Non-Uniform Templates for Near Duplicate Image Matching	International Journal of Advanced Technology and Innovative Research,	D Vijaya Kumar	April, 2018	1Year	Research	http://www.ijatir.org/uploads/362451IJATIR16825-94.pdf
73	Design of Area Efficient High-Performance 2-4 and 4-16 Mixed-Logic Line Decoders	JOURNAL OF PROFESSIONAL ENGINEERING STUDIES	G Kiran	Dec,2017	1Year	Research	http://www.ijpres.com/pdf37/46.pdf
74	Transferring the Health Details of Animal using Zigbee Module	International Journal of Scientific Engineering and Technology Research	P Naga Lakshmi	Sep,2017	1Year	Research	http://ijsetr.com/uploads/4612351IJSETR15551-996.pdf
75	An Approach to Control and Monitor Environmental Parameters in Greenhouse using ARM	International Journal of Advanced Technology and Innovative Research,	B Sreelekha	Oct, 2017	1Year	Research	http://ijatir.org/uploads/514623IJATIR15791-351.pdf

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
76	Design And Implementation of FMO/Manchester Encoder Using SoIs Technique	International Journal of VLSI Design and Communication Systems D Prassanna Kumar		Jan, 2018	1Year	Research	http://www.ijvdc.org/issue.php?issue=IS SUE%201&volume =Volume6&page=6
77	A Novel High Speed Memory Solution using TCAM	International Journal of Innovative Technologies P Pujitha		Jan, 2018	1Year	Research	http://ijitech.org/uploads/354621IJIT16736-40.pdf
78	Texture Image Segmentation Based on threshold Techniques	International Journal of Computer Engineering In Research Trends Dr. D Prathyusha Reddi		March-2017	1Year	Research	http://ijcert.org/e_ms/ijcert_papers/V4I301.pdf
79	A New Approach For The Design Of Low Power Dynamic Differential Logic For Secure Integrated	International Journal of Innovative Research and Advanced Studies (IJIRAS) M.Pavitra		Dec., 2016	1Year	Research	https://pdfs.semanticscholar.org/bae6/558fb3f419e393c254b3fe758cb6
80	Personal Health Monitoring Using Android Based Mobile Device	International Journal Of Professional Enggeering Studies R.Prathp singh		Sept., 2016	1Year	Research	http://www.ijecs.in/index.php/ijecs/article/view/3276/3035
81	Reduction of switching Activity in NOC By using Data Encoding Schemes	International Journal Of Engineering and computer Sciences Volume R.Prathp singh		Sept., 2016	1Year	Research	http://www.ijecs.in/index.php/ijecs/article/view/3276/3035
82	Objective quality assessment and optimization for high Dynamic range image tone mapping	Anveshana's International Journal Of Research In Engineering And Applied Sciences V.Phani Bhushan		Dec., 2016	1Year	Research	

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
90	Fault Tolerant of FIFO Buffers of NoC Router	International Journal of VLSI System Design and Communication Systems	T. Sunil Kumar	Dec., 2016	1Year	Research	http://www.jvdcs.org/uploads/156234IJVDCS13151-307.pdf
91	Effective Implementation of AES Algorithm using Reversible Logic	International Journal of Advanced Technology and Innovative Research	C.V.Kavya Suvarchala	Sept., 2016	1Year	Research	http://www.ijatir.org/uploads/542136IJATIR11294-332.pdf
92	Effective Implementation of AES Algorithm using Reversible Logic	International Journal of VLSI System Design and Communication Systems	C.V.Kavya Suvarchala	Sept., 2016	1Year	Research	http://www.jvdcs.org/uploads/152463IJVDCS11295-147.pdf
93	Effective Implementation of AES Algorithm using Reversible Logic	International Journal of Advanced Technology and Innovative Research	C.V.Kavya Suvarchala	Sept., 2016	1Year	Research	www.ijatir.org
94	High Throughput Architecture for the Advanced Encryption Standard Algorithm	International Journal of Advanced Technology and Innovative Research	C.V.Kavya Suvarchala	Oct., 2016	1Year	Research	http://www.ijatir.org/uploads/516432IJATIR11983-493.pdf
95	A New Approach For The Design Of Low Power Dynamic Differential Logic For Secure Integrated	International Journal of Innovative Research and Advanced Studies (IJRAS)	SK Afrin	Dec., 2016	1Year	Research	https://pdfs.semanticscholar.org/bae6/558fb3f419e393c254b3fe758cb6
96	Personal Health Monitoring Using Android Based Mobile Device	International Journal Of Professional Engineering Studies	M Venkata Naga Nitesh	Sept., 2016	1Year	Research	

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
97	Reduction of switching Activity in NOC By using Data Encoding Schemes	International Journal Of Engineering and computer Sciences Volume	Y Supraja	Sept., 2016	1Year	Research	http://www.ijecs.in/index.php/ijecs/article/view/3276/3035
98	Objective quality assessment and optimization for high Dynamic range image tone mapping	Anveshana's International Journal Of Research In Engineering And Applied Sciences	B Sravani	Dec., 2016	1Year	Research	https://www.ijitr.com/index.php/ojs/article/view/928
99	Smart Traffic Control System For prevention and control of Blockade ,Emergency Vehicle	International Journal of Advanced Technology and Innovative Research	Yasvanth Sai Jaladanki	July, 2016	1Year	Research	https://www.ijatir.org/uploads/564132IJATIR10335-265.pdf
100	A Novel Method Of Segmentation of tissue in MRI Based on C-Mean Algorithm	International Journal of Advanced Technology and Innovative Research	S Divya	July, 2016	1Year	Research	http://www.ijatr.org/uploads/564132IJATIR10335-265.pdf
101	Removal Of Salt And Pepper Noise Using Advanced Modified Decision Based Unsymmetric Trimmed	International Journal of Innovative Technology And Research	SK Mahendra Babu	Nov., 2016	1Year	Research	https://www.ijitr.com/index.php/ojs/article/view/1446
102	A Novel Method for Image Denoising using Non local Means Filter Based On Similarity Validation	International Journal of Innovative Technology And Research	K Hima Bindu	Nov., 2016	1Year	Research	http://www.ijvdc.org/uploads/156234IJVDCS13151-307.pdf
103	Fault Tolerant of FIFO Buffers of NoC Router	International Journal of VLSI System Design and Communication Systems	G Prasanthi	Dec., 2016	1Year	Research	http://www.ijvdc.org/uploads/156234IJVDCS13151-307.pdf

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
104	Effective Implementation of AES Algorithm using Reversible Logic	International Journal of VLSI System Design and Communication Systems	V Swapna	Sept., 2016	1Year	Research	http://www.jvdcs.org/uploads/1152463IJVDCS11295-147.pdf
105	VLSI Low-Complexity Low-Latency Architecture for Matching of Data Coded with Error-Correcting Codes	International Journal of Advanced Technology and Innovative Research, Vol.08, IssueNo.08,	B Madhavi	July, 2016	1Year	Research	
106	Design of a 64-Bit Square Root Carry Select Adder Using Brent Kung Adder and BEC	International Journal of innovative research in communication in scientific engineering,	G Sravani	March, 2017	1Year	Research	
107	clock frequency multiplication & division using floating point multiplier	International Journal of Advanced Technology and Innovative Research	M. Pavitra	Dec, 2015	1Year	Research	http://www.ijatir.org/uploads/1153246IJATIR7904-589.pdf
108	Design of a high speed single precision floating point unit using VerilLog	International Journal of Scientific Engineering & Technology Research	M. Pavitra	Dec, 2015	1Year	Research	http://ijestr.com/uploads/531642IJESTR8017-1879.pdf
109	Reduction Of Switching Activity In Noc By Using Data Encoding Schemes	International Journal Of Engineering And Computer Science	R.S.Pratap Singh	Aug, 2015	1Year	Research	http://www.ijecs.in/index.php/ijecs/article/view/3276/3035
110	Recognition of License Plate for Straight and Inclined -Number Plates	International journal of Scientific Engineering and Technology Research	V.Phani Bhushan	May, 2016	1Year	Research	www.ijestr.com

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
111	Robust document image binarization for degraded document images	International journal of innovative research in electronics and communications	A.Suman Kumar Reddy	July, 2015	1Year	Research	www.arcjournals.org/rg
112	Automatic number plate recognition system using an improved segmentation	International Journal of Innovative Technologies (IJITECH)	N.Krishna Chaitanya	July, 2015	1Year	Research	
113	Implementation of asymptotic capacity of large relay networks for cooperative communication	International Journal of Scientific Engineering and Technology Research (IJSETR)	N.Krishna Chaitanya	July, 2015	1Year	Research	
114	An implementation of Adaptive Multipath Routing Algorithm for Congestion Control	19th International Conference on Circuits, Systems, Communications and	N.Krishna Chaitanya	July, 2015	1Year	Research	
115	Wireless communication and gprs based irrigation system	International Journal of Scientific Engineering and Technology Research (IJSETR).	N.Krishna Chaitanya	Sept, 2015	1Year	Research	http://ijsetr.com/uploads/164235IJSETR6806-1305.pdf
116	Melanoma early detection using dual classifier	International Journal of Scientific Engineering and Technology Research (IJSETR)	N.Krishna Chaitanya	Sept, 2015	1Year	Research	
117	Channel sensing in cognitive radio by using matlab	The IUP Journal of Telecommunication	N.Krishna Chaitanya	Nov, 2015	1Year	Research	https://www.researchgate.net/publication/326316599_CHANNEL_SENSEI

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Link to the relevant document
133	Location-aware and safer cards	International Journal of Electronics & Communication Technology (IJECT)	K Kavitha	Dec, 2015	1Year	Research	http://ijarece.org/wp-content/uploads/2015/09/IJARECE-015.pdf
134	A Speed and Accurate Binary Multiplier for Floating Point values	International Journal of Advance research in Electrical, Electronics and Communication	M Bala Subba Reddy	Sept, 2015	1Year	Research	http://www.jvdc.org/uploads/14JVDCS8259-268.pdf
135	Implementation of Double Precision Floating Point Multiplier	International Journal Of VLSI Design and Communication Systems	B Sukhaday	Dec, 2015	1Year	Research	http://www.ijsr.net/236514IJVDCS8259-268.pdf
136	FPGA Implementation of Area-Delay and Power Efficient Carry Select Adder	International Journal of Innovative Research in Electronics and Communications	SK Rizwan	Aug,15	1Year	Research	
137	Vlsi implementation of fast addition subtraction and multiplication(unsigned) using quaternary signed digit	International journal & magazine of engineering technology management	A Leela Bharadwaj reddy	and research issn no.2348-	Dec-15	1Year	Research


 Dr. Jitendra Deep Verma,
 Electronics & Communication Engineering
PBN Viswadevaya Institute of Technology & Science
 KAVALI - 524 201



Directorate of Admissions
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA-533003, Andhra Pradesh, INDIA

ADMISSION LETTER

No. 359

Date: 21-11-13

Mr./Ms. / Sri / Smt.

KRISHNA CHAITANYA N. is provisionally

selected for Ph.D Programme in the Department of

ECE

Received an amount of Rs.30,000/- (Thirty Thousand) only towards tuition
fee for 1st year bearing D.D./ Challan No. 541369 dated 04.11.13.

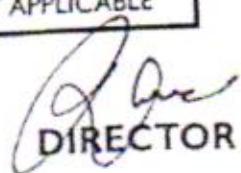
Topic of Research:

Name & Contact details of Supervisor:

Name & Contact details of Co-Supervisor:

Receipt of Certificates

UG &			
1.	P.G. Degree Certificate in original	O	
2.	Transfer Certificate in original	O	
3.	Abstract of the Proposal Work	O	
4.	Joining Report of the candidate signed by Supervisor & Co-Supervisor	P	
5.	No objection certificate from the Head of the Organization/ Institute	O	
6.	Integrated Community Certificate (in case of B.C. / S.C. / S.T.)	X	
7.	Four passport size photos	✓	
8.	Counseling Fee Challan	✓	
9.	One set of attested copies of certificates	✓	
O-ORIGINAL, X-XEROX,		P-PENDING,	N-NOT APPLICABLE


DIRECTOR

** Student Copy **



**A.N.U. COLLEGE OF ENGINEERING AND TECHNOLOGY
ACHARYA NAGARJUNA UNIVERSITY
NAGARJUNA NAGAR – 522 510, GUNTUR (DT). A.P., INDIA**

Prof. E. Sreenivasa Reddy
Principal

Off. : 0863 - 2346251
Fax : 0863 - 2346252

No.ANU/CET/Ph.D./Admns.2013-14

Date: 21-03.-2014.

PROCEEDINGS OF THE VICE-CHANCELLOR

**Sub: A.N.U. College of Engineering and Technology – Research Admissions 2013-14 – List
Of candidates admitted into Ph.D under Full Time, Part-time and extramural
Categories – Approved – Communicated – Reg.**

- Ref:** 1. List submitted by the Principal, ANUCET
2. Vice-Chancellor's orders dated 20.03.2014.

ORDER:

The Vice-Chancellor having considered the list under reference (i) cited above, has ordered that the following candidates are admitted into Ph.D. under part-time in ANU College of Engineering and Technology during the academic year 2013-14

Department of Electronics and Communication Engineering

Sl.No	H.T.No	Candidate Name	Rank	Name of the Supervisor	FullTime/PartTime
1	R1530553	MOHMMAD BAIG MOHMMAD	1	Dr. T. Ranga Babu	PARTTIME
2	R1530304	UDAYA BHASKAR PATTAPU	2	Dr. N. Venkateswara Rao	FULLTIME
3	R1530483	V.KUMAR RAJU VIPPARTI	3	Dr. T. Ranga Babu	PARTTIME
4	R1530123	DHANA LAKSHMI NAMBURI	4	Dr. M. Satya Sai Ram	PARTTIME
5	R1530524	VIJAYA KUMAR P	5	Dr. N. Venkateswara Rao	PARTTIME
6	R1530018	KAREEMSAHEB SYED	6	Dr. M.V.S. Prasad	PARTTIME
7	R1530154	V.V.S. PRASAD MANTRAVADI	7	Dr. T. Ranga Babu	PARTTIME
8	R1530592	SUDHA MANI CHILAKALA	8	Dr. M. Satya Sai Ram	PARTTIME
9	R1530063	NAGESWARA RAO GOLLA	9	Dr. M. Satya Sai Ram	PARTTIME
10	R1530296	SUNEEL MUDUNURU	10	Dr. T. Ranga Babu	PARTTIME
11	R1530041	ADINARAYANA	12	Dr. T. Ranga Babu	PARTTIME

NATIONAL INSTITUTTE OF TECHNOLOGY TIRUCHIRAPPALLI

ADMISSION - Student Copy

Programme : Ph.D
Roll Number : 408916002
Branch/Specialization : --
Student Category : SC
State Of Eligibility : Andra Pradesh

Department : Electronics and Communication Engineering
Student Name : RANJIT KUMAR RAYALA
Admission Date : 03-Aug-2016
Allotted Category : SC
Nationality : Indian

FOR OFFICE USE: (Documents produced at the time of admission)

Sl.No.	Document Name	Original Copies	No of Photo Copies
1	10th/12th Mark Sheet	Not Collected	1
2	Certificate of Category (OBC/SC/ST)	Not Collected	1
3	Certificate of Disabilities (PWD)	Not Collected	0
4	C.V of External Guide/Research Co-ordinator	Not Collected	0
5	Degree Grade/Marksheet	Not Collected	2
6	Degree/Provisional Certificate	Collected	2
7	Entrance Exam Score	Not Collected	0
8	Relieving Order/NOC/Sponsord/Exprience Certificate	Collected	1
9	Research and Library facility of External Organization	Not Collected	0
10	Transfer Certificate	Collected	1

Admitted / Provisionally Admitted
N. S. S. G.
Chairman-Admission Committee
318116



R. Ranjith
Verification Officer

Student Signature :

K L University



(Koneru Lakshmaiah Education Foundation)

Estd. u/s 3 of UGC Act 1956

Green Fields, Vaddeswaram - 522 502

Guntur Dt - Andhra Pradesh

Phone No: 08645 - 246048

Fax No: 08645 - 247249

K
L
U

PROCEEDINGS OF DEAN R&D REGISTRATION NOTICE

KLU/AR/2016-17/REG/APPL NO:16007868

Date: 07/01/2017

To,
CH AMARNATHA SARMA
c/o G.Vasudeva Sastry
D.No:4-213/1,VUYYURU,KRISHNA,Andhra Pradesh

Dear CH AMARNATHA SARMA ,

Sub: PhD admission

We are in receipt of the following documents that you have submitted in connection with the registration into a Ph.D. program in the department of "Electronics and Communication Engineering".

1. A demand draft number(s)/Online Payment Ref. No.141003, drawn on SBI, dated 3/1/2016 for 30000/-.
2. Xerox copies of SSC, Inter, UG,PG-1.
3. Personal declaration (Annexure-A)

We are pleased to inform you that, you have been registered as a PART TIME research scholar in the department of "Electronics and Communication Engineering" on 4/1/2017.

Name of the Supervisor: Dr.M.Siva Kumar
Name of the External Supervisor (if any):

You are requested to contact your supervisor for finalization of research plan, and shall submit the same within two months through your supervisor to Doctoral Committee.

Dr. K. Ch. Sri Kavya
Associate Dean (AR)

Best wishes,
Dr.K.L.Narayana
Dean (R&D)

EXALTING EDUCATION, EPITOMISING EXCELLENCE



Proceedings of the
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
ANANTHAPURAMU-515 002. (A.P) INDIA
Present: Prof. A.Ananda Rao, Director,
RESEARCH & DEVELOPMENT

Proc. No. JNTUA/R&D/Change of Supervisor/2019

Dt:21.1.2019

Sub:- JNTUA-R&D- Mrs.Katta Vani., Ph.D, Research Scholar in
(Electronics & Communication Engineering) Reg. No.16PH0434, (Full-time)-
Change of Supervisor Orders Issued.

Ref:- (1) Lr. No. JNTUA/DA/Ph.D/M.Phil/Admns/ECE/2016, dt: 1.7.2017

(2) Candidate's representation, dt: 27.12.2018,

(3) Supervisor's endorsement on the application.

(4) Note Orders of the Vice-Chancellor dated:3.1.2019.

ORDER:

With reference to the representation of Mrs.Katta Vani., Ph.D Research Scholar in Electronics & Communication Engineering, Reg.No. 16PH0434, (Full-time), the Vice-Chancellor is pleased permit her to Dr.A.S.V.Sarma, Professor, Dept of ECE, PBRVITS, Kavali to be the new supervisor in place of Dr.D.Prathyusha Reddi, Associate Professor, Dept of ECE, PBRVITS, Kavali. These orders will come into force with immediate effect.

Director

Research & Development

Copy To:

Mrs.Katta Vani, Research Scholar, Dept of ECE, PBRVITS, Kavali.
Director of Evaluation, JNTUA, Ananthapuramu.

New Supervisor Dr.A.S.V.Sarma, Professor, Dept of ECE, PBRVITS, Kavali

Former Supervisor Dr.D.Prathyusha Reddi, Associate Professor, Dept of ECE, PBRVITS, Kavali

Copy to CI Section.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
ANANTHAPURAMU 515002(A.P)

Prof.M.VIJAYA KUMAR
Director of Admissions.

Lr. No.JNTUA/DA/Ph.D/M.Phil/M.S/Admns/ECE /2016-17
Dt:29-06-2017

Sub JNTUA-DA-Admissions in Ph.D/M.Phil/M.S. Programmes – 2016-17

Dear Applicant,

You are admitted into Ph.D. 2016-17 Program in the faculty of Electronics and Communications Engg. The details of your admission are as given below.

Admission Number	16PH0428
Name	BHASKARA RAO PERLI
Proposed Research work Title	Performance analysis of wireless communication system by using novel technologies
Supervisor's Name & Designation with Address	Prof.A.Maheswara Rao Dept. of ECE PBRVITS, Kavali-524201
Co-Supervisor's Name & Designation with Address	***
External Registration/ Full Time- RC	Full Time-PBRVITS

All the research scholars have to pay an amount of Rs.40,000/- per annum by 31st July of every year or in two spells of Rs. 20,000/- each by 31st of July and 31st January of every year. Nonpayment of prescribed fee in time may lead to cancellation of the admission.

Director of Admissions

Copy to The Supervisor & Co-Supervisor concerned.
Copy to file



SHRI VENKATESHWARA UNIVERSITY

(A University with the right to award degrees u/s 22(1)
of the UGC Act 1956 and established by U.P. Govt. Act 26 of 2010)
NH- 24, Rajabpur, Gajraula, Distt. - Amroha - 244236 (U.P.)
Ph.: +91-8194005701, 8859500741, 8194005705
www.svu.edu.in

Ph.D. Registration Certificate

This is to certify that you are registered and enrolled as a Ph.D. Research Scholar with enrolment no. SVU17010106 Dated 30-10-2017 Having been passed the CET- 2017 of SVU for the above course of study.

Name: Mr./Ms. V. PHANI BHUSHAN

S/D/o: Mr. V. SUBRAHMANYAM

Address: 11-33-990C BALAJI STREET

VENGALA RAO NAGAR, KAVALI, A.P. - 524201



Campus : NH-24, Rajabpur, Gajraula, Distt. Amroha (U.P.) Ph. : +91-8194005705

Information Office : Venkateshwara Group of Institutions, NH-58, Delhi Roorkee Bypass, Jatoli, Meerut Ph. : +91-8194005701

Information Office : A-225, Shivalik, Near Malviya Nagar Bus Terminal, New Delhi-17 Ph. : +91-8447732667



VELS
UNIVERSITY
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EDUCATION IN THE UNIVERSITY IS BASED ON A LIBERAL HUMANISTIC TRADITION
NAAC ACCREDITED
PALLAVARAM - CHENNAI - INDIA



Velan Nagar, P.V.Vaithilingam Road, Pallavaram, Chennai 600 117

**PROCEEDINGS OF THE REGISTRAR, VELS UNIVERSITY, PALLAVARAM, CHENNAI -
600 117. PRESENT- Dr.A.R.Veeramani, M.A.(Eco.),M.A.,Pol.Sci.,BL.,M.Phil.,Ph.D..**

No.Ph.D/ECE/1427/3100001/2017

Dated: 01.04.2017

To: UP17P9070006

Mr.V.Prasannanjeya Reddy
No.2-91,Budavada(Post),
J.Panguluru(Mandel)
Ongole-523167

Sir/Madam,

Sub: Ph.D. Programme –Part-Time- School of Engineering - Provisional Registration for the Ph.D. Degree Programme in respect of the candidate Mr. V. Prasannanjeya Reddy and the Research Supervisor, allotted -Orders-issued-reg.

Ref: Application of Mr. V. Prasannanjeya Reddy for provisional registration for the Ph.D. Degree in the Department / Institution for research and the Supervisor under whom the candidate proposes to conduct research.

The candidate under reference has been provisional registered for the Ph.D. Degree on Part -Time basis from 01.03.2017 in the Department of ECE where the candidate proposes to work has been approved.

The candidate [since working as a Assistant professor] should work for a minimum total period of Four Years after registration under the guidance of the Supervisor and should submit the thesis for the Ph.D. Degree before the completion of Six Years [i.e., on or before 28.02.2023]

There shall be a Doctoral Committee with profile of the Members and constituted with the approval of the University immediately (within 30 days) after registration of the candidate, for monitoring the research progress.

The candidate both Full-Time & Part-Time should submit progress reports in the prescribed form [Appendix IV of the Ph.D. Regulations] ONCE IN SIX MONTHS and the same be placed in the Doctoral Committee and send it to the Dean Research through Supervisor. The Doctoral Committee Meetings should be conducted in Vels University Campus.

The candidate will be governed by the Regulation of the Ph.D. Degree and the rules and conditions framed there under and amended from time to time.

Yours faithfully,

Registrar

REGISTRAR

**Broad Field of Research: A novel Medical Image Fusion Algorithm VELS UNIVERSITY
Subject: ECE (VISTAS)**

Copy to the Supervisor: Dr.P.Swaminathan Dean of Computing Sciences and Engineering,
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Pallavaram, Chennai-600 117

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA-533003, Andhra Pradesh (India)

Dr. V. Ravindranath,
M.Sc., (Engg), Ph.D.(ind)

**Professor of Mathematics &
Director, Research and Development**

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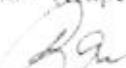
Ref: DA / Admission No.: 1300
You are provisionally admitted in Ph.D Programme

Date: 01-05-2019

1	Name of the Candidate (Address, Mobile & email id)	PAVITRA MODI Flat No 201 Anjani Apartments Janathapet North Kavali 0 Mobile : 9493030178 modi_pavitra@gmail.com
2	Faculty in which admitted	ECE
3	Supervisor Name and Designation (Address, Mobile & email id)	Dr.Y.Syamala Dr.Y.Syamala Professor Dept. of ECE Gudlavalleru Engineering College 0 Mobile : 9441748416 coolsyamu@gmail.com
4	Co Supervisor Name and Designation (Address, Mobile & email id)	Dr.B.Leela Kumari Assistant Professor Department of ECE University College of Engineering JNT University, Kakinada Mobile : 8977606564 leela8821@yahoo.com
5	Area of Research	Low Power VSLI Design
6	Topic of Research	Exploring design opportunities in digital circuits for ultra low power consumption
7	Credit Course	Research Methodologies
8	Pre-Ph.D. Paper-I	LOW POWER VLSI DESIGN - 1304117
9	Pre-Ph.D. Paper-II	VLSI TECHNOLOGY AND DESIGN - 1304202
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Directorate of Admissions
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KAKINADA-533003, Andhra Pradesh, INDIA

No. 1602

ADMISSION LETTER

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SUREKHA · MUSALI ·

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Received an amount of Rs.30,000/- (Thirty Thousand) only towards tuition fee for 1st year bearing D.D/ Challan No. 46 dated 08.09.2020.

Topic of Research:

Name & Contact details of Supervisor:

Name & Contact details of Co-Supervisor:

APRCBT - 2019 HT X

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SSC & Diploma	(2)	O	X
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(S.S)

K. R. Anand
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** Student Copy **

A compact flower slotted dual band notched ultrawideband antenna integrated with Ku band for ultrawideband, medical, direct broadcast service, and fixed satellite service applications

V. N. Koteswara Rao Devana¹  |
A. Maheswara Rao²

¹Department of ECE, JNTUA, Anantapur, India

²ECE Department, PBRVITS, Kavali, India

Correspondence

V. N. Koteswara Rao Devana, Research Scholar, Department of ECE, JNTUA, Anantapur, A.P., India.
Email: dvnkrao@gmail.com

Abstract

A compact flower slotted antenna (FSA) for dual band eliminated ultrawideband (UWB) integrated with Ku band applications is proposed. The basic FSA with modified ground structure is utilized for obtaining fractional bandwidth of 137% (3.45–18.45 GHz). The dual band eliminated frequencies are achieved by a via hole to eliminate 5.39 to 5.90 GHz (upper WLAN band) frequencies and by utilizing symmetrical inverted L-shaped parasitic elements to notch 7.30 to 7.75 GHz (downlink of X-band satellite communication link) frequencies. The FSA is having a compact size of $16 \times 22 \text{ mm}^2$ printed on low cost FR-4 substrate with two band notched characteristics, nearly omnidirectional radiation characteristics and stable gain over UWB frequency range makes it suitable for portable UWB systems.

KEYWORDS

band notched, DBS, FSS, Ku band, parasitic, ultrawideband, via, WLAN

1 | INTRODUCTION

Recently, wireless communication systems with higher data rates, wide bandwidth, and high data resolution becoming more popular. To achieve these characteristics an unlicensed ultrawideband (UWB) frequency spectrum ranging from 3.1 to 10.6 GHz is allocated by Federal Communications Commission in 2002 for commercial wireless communication applications. The UWB technology is a low profile, low cost, lower power spectral density, stable radiation patterns, flatter realized gain, and higher data rates makes it suitable for wideband wireless communication applications. In UWB systems, the design of UWB antennas becomes challenging to compromise in between simplicity, cost, and size.

Many antennas are designed with wider impedance bandwidth characteristics, such as, a rectangular structured radiating patch with lower corners are truncated with a semi-circle¹ to achieve 2.9 to 23.5 GHz (156%) of bandwidth. In Reference 2, a rectangular slot antenna with an arc structured stub is used to obtain a fractional bandwidth of 135% (3.7–19.3 GHz). A broken heart structured antenna³ is utilized to achieve 115% of fractional bandwidth from 2.9 to 10.7 GHz. A hibiscus petal pattern-radiating patch⁴ is used to obtain a fractional bandwidth of 120% from 3.04 to 11 GHz. A U-structured radiating patch⁵ is proposed to achieve an impedance bandwidth of 3.08 to 12.75 GHz (122%). However, the existing narrow band channels in UWB frequency range cause severe electromagnetic interference (EMI) with the UWB antenna systems. To eliminate EMI, the UWB antennas are designed with band eliminated characteristics. To mitigate interference with IEEE 802.16 (3.3–3.6 GHz) WiMAX, IEEE 802.11a/n (5.15–5.35/5.725–5.825 GHz) WLAN and downlink band of X-band communication link (7.25–7.75 GHz), several UWB antennas with notched band characteristics are proposed. The comparison of proposed FSA with literature antennas is reported in Table 1. In Reference 6, an Archimedean spiral-structured slot is etched in radiating patch to notch 4.6 to 6.2 GHz interference. Three half wavelength semi-circular slots and an open ended straight quarter wavelength slot⁷ are etched out in radiating patch to eliminate 5.15 to 5.825 GHz, 7.25 to 7.75 GHz, and 3.3 to 3.7 GHz band signals, respectively. By embedded M shaped slot into radiating patch and W structured slot in defected ground plane,⁸ the band rejection occurs at 3.25 to 4.2 GHz and 5.23 to 6.10 GHz, respectively. In Reference 9, the rejected band achieved between 5.12 and 5.99 GHz by etching U-shaped slot into the

Design and Parametric Analysis of Beveled UWB Triple Band Rejection Antenna

Venkata N. K. Rao Devana^{1,*} and Avula M. Rao²

Abstract—A novel beveled triple band rejection UWB monopole radiator is presented. The reference UWB antenna incorporate a beveled radiator and partial ground structure for achieving UWB bandwidth from 2.73 to 11.05 GHz. For rejecting 3.78–4.36, 5.15–5.45, and 7.2–7.9 GHz for C, lower WLAN, and X-band applications, the reference UWB element is freighted with an inverted U-shaped slot etched into a radiating patch. A symmetrical split ring resonator pair (SSRRP) is proximate to microstrip feed, and a C-shaped parasitic stub is embedded on top of defected ground plane. The antenna is designed on an FR-4 substrate with $30 \times 32.5 \text{ mm}^2$ size, having a realized average gain of 3.72 dBi and is nearly stable across the entire UWB excluding at three rejected bands.

1. INTRODUCTION

In 2002, U.S. Federal Communications Commission (FCC) allocated 7.5 GHz bandwidth ranging 3.1–10.6 GHz for unlicensed commercial UWB radio systems [1]. The frequency range allocated for UWB spectrum is different in different countries. In China, UWB spectrum is allocated from 6 to 9 GHz, whereas in Korea from 3.1 to 4.8 GHz for the lower and from 7.2 to 10.2 GHz for the upper UWB band. In UWB systems, information is broadcast by generating short duration pulses at specific intervals of time to ameliorating multipath fading effects. Recently, in the field of wireless communications, UWB technology has gained several advantages due to low power spectral density, low loss penetration, low cost, fading robustness, high data transmission rate, fidelity, secured communication, and single chip architecture. The preeminent limitation of UWB radiator is electromagnetic interference (EMI) with narrow band systems like 3.3–3.6 GHz (WiMAX), 3.7–4.2 GHz (C-band), and 5.15–5.825 GHz (WLAN). To mitigate EMI, UWB antennas are designed with multiple rejection bands. In recent years, to eliminate this interference, a number of antennas are designed with band rejection capability. Initially, microwave filters are used for band rejection, but this method is complex and costly [2]. Thus, instead of using filters, UWB antennas are designed with band rejection feature by introducing slots into radiator or ground structure [3, 4], parasitic elements on either sides of substrate [5, 6], SRR [7, 8], CSRR [9], and EBG [10]. Moreover, UWB antennas are designed with single [11], double [12], triple [13], multiple [14, 15] band notch characteristics, and an array of UWB elements with side lobe suppression are reported [16, 17].

In this paper, a bevel-shaped UWB antenna with triband rejection using a U-shaped slot for C band, SSRRP for lower WLAN, and a C-like parasitic stub for X-band rejection is presented. The designed radiator has -10 dB impedance bandwidth of 2.73–11.05 GHz with triple band notches ranging from 3.78 to 4.36 GHz for C-band, 5.15 to 5.45 GHz for lower WLAN, and 7.2 to 7.9 GHz for X-band applications. The antenna is optimized by altering parameters such as the length of the U-shaped slot, angle and gap (G) of SSRRP, and thickness of parasitic stub to achieve desired band notch functions.

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* Corresponding author: Venkata Naga Koteswara Rao Devana (dynkrao@gmail.com).

¹ ECE Department, University College of Engineering, JNTUA, A.P. India. ² Department of ECE, PBRVITS, Kavali, A.P. India.

Secured IoT Technology in Wide Area Public Networks

M. R. Sheeba

Assistant Professor & RS,
CS, Manonmaniam Sundaranar
University,
Tirunelveli, India

M. R. Arun

Associate Professor, ECE,
PBR Visvadaya Institute of
Technology and Science,
Nellore, India

F. Shabina Fred Rishma

Assistant Professor, CSE,
Cape Institute of Technology,
Levinjipuram, India.

Abstract—In current scenario, world is emerging with new technologies due to tremendous inventions and innovations day by day. Up gradations in existing systems and devices in engineering as well as technological domain are broadly getting increased. Physical objects are considerably integrated along with the information network for remote access. Major services are focused to interact industrial and domestic devices over the Internet to extend the functionality in broader sense. In this current digital era due to the availability of various embedded systems and smart sensors it helps to focus on automation using artificial intelligence. Networking them through (internet of things) IoT helps the modern world to greater extent. This paper focusses widely on the implementation of integrating IoT with industrial and domestic appliances and illustrating the benefits of integrating with each other.

Keywords—Internet of things, data, network, devices, sensors, technology, communication.

I. INTRODUCTION

IoT is the network framework to connect various physical devices associated to use in day to day at different occasions which needs to be interacted whenever required. At present whatever objects needs to be monitored, interacted can be integrated to IoT with the help of communication devices and smart sensor devices. In such conditions now a days vehicles, buildings are being networked for various reasons. The communication between these devices helps to reach the common goals. These items are embedded with hardware electronic components instruction algorithms i.e. software, data analyzing sensors, and intercommunicating network connectivity. The said items helps the objects in the collection and exchange of data items. The IoT allows every objects to be analytically sensed and remotely controlled through the already existing network infrastructure. The immediate future is that the devices will use the existing networks such as internet to interact among each other.

According to the Gartner, 260 million objects will be connected by year 2020. To execute and implement the vision and mission several private companies and government organizations have tried. Due to the continuous effort considerable growth and development happened in corresponds to the IoT network and systems [1]. Internet of things helps in the exchange of data between sensing devices and the network connected to it. The IoT facilitates the objects to be sensed remotely using the existing networks. This is the basic working phenomenon in the IoT network. Many companies and government organizations are

moving towards IoT for further improvements in the working phenomenon. The survey shows that there will be tremendous growth in the number of devices which will be connected in the near future.

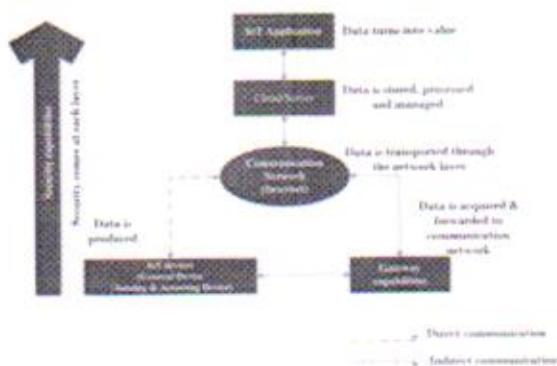


Fig. 1: IoT architecture model

II. SELF-ORGANIZING NETWORKS

In times of disasters, outages and adversities by cyber-attack the need for the data is very important. Though the communications and failure of sources of energy block the full benefits and potential of IoT. Hence there arise a need to standardize the interaction between IoT devices and its data during these critical period. There will be no communication support to provide the data from these during the conditions for the devices to survive. This paves the way for the need for a self-organized communication network for the IoT environment which builds the different way of communication among the devices. Self organization is a method of recovering and restoring the communications among devices after the allocated resource failed.

Comparing BlockChain with other Cryptographic Technologies (DAG, Hashgraph, Holochain)

Dr. M. R. Arun^{1*}, Prof. M. R. Sheeba², Prof. F. Shabina Fred Rishma³

Associate Professor, ECE, PBR Visvadaya Institute of Technology and Science , Nellore, India¹

Assistant Professor & RS, CSE, Manonmaniam Sundaranar University, Tirunelveli, India²

Assistant Professor, CSE, Cape Institute of Technology, Levinjipuram, India³.

e-mail: mrarunresearch@gmail.com, sheebasjustus@gmail.com, fredrishma@gmail.com

Corresponding Author: mrarunresearch@gmail.com

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Abstract:- With the rapid advancement in technological innovation, block Chain has become one of the hottest transformative techniques in the internet domain in recent times. As considered to be a decentralized, distributed and highly encrypted technology in data transfer, the blockchain has restored the trust for secured business transactions by the sophisticated cryptographic algorithm. Here the protocol validates that all nodes are merely synchronized with one another, thus providing security, anonymity, and data integrity without the requirement of any other third party intrusion. Block chain technology which is also known as DLT (Distributed Ledger Technology) that is a great platform for non-physical money transaction such as bitcoin and other online crypto currencies. It is seen as emerging foundational security-based technology having enormous potential across different sectors. Blockchain as a decentralized mode useful for a peer-to-peer network without the essential of any central or controlling authority server. This will, in general, reduce transaction costs, improved security, and execute the financial transaction in real-time. Block chain is significant and not the same as of now existing techniques. Since it empowers disseminated, independent decreases grating in business exchanges with safety and shares decentralized records, this paper gives a discussion on the comparative analysis of block chain technology with other existing technologies.

Keywords: Block Chain, Peer-to-peer, Bitcoin, Hashgraph, DAG, Holochain, Cryptography, Cyber security, DLT, Cryptocurrency

1. Introduction

In recent days we are supposed to hear a new technology that is used in cryptocurrency to maintain security in transactions. The cryptocurrency, which is the digital currency system that enables international monetary

transactions between two end-users without the requirement for another intermediate transaction agency [1]. In the financial sector, it has achieved huge prominence in the world economy. Bitcoin is an open-source first mere application of blockchain technology. It is just a

Historical Analysis and Scientific Overview of Coronaviruses

M.R. Arun¹, M.R. Sheeba² and F. Shabina Fred Rishma³

¹Department of ECE, PBR Visvodaya Institute of Technology and Science, Udayagiri Road, Kavali, Nellore-524201, Andhra Pradesh, India, ²Department of CS, Manonmaniam Sundaranar University, Tirunelveli Road, Abishekappatti-627012, Tamil Nadu, India and ³Department of CSE, Cape Institute of Technology, Near Azhagappapuram, Tirunelveli, Levinjipuram-629401, Tamil Nadu, India

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Abstract: Corona viruses (CoVs), enveloped to be a strand RNA virus, which are described by the name due to its crown-like spike protein substances with bulbous surface projection. CoVs cause an assortment of illnesses in birds, animals like bats, pigs, snake, chickens, and extend to human. It is a type of respiratory tract diseases. The family Coronaviridae envisions an expansive range of animal and human infections, all portrayed by a particular morphology. Coronaviruses are probably circular in shape with outer membranes. Every molecule is encompassed by a halo or "crown" which refers to the bulbous distal parts of the membrane embedded glycoproteins. Before 2003 individuals from this family were accepted to cause just gentle respiratory sickness in people. But after 2003 the virus got derived themselves in different characteristic forms creating extreme intense respiratory infection (SARS-CoV). The later raise of MERS-CoV and now recent nCoV creating COVID-19 disease are creating more challenges to humans. This paper gives the overall knowledge about various coronaviruses from historical background to till date.

Keywords: Coronavirus, COVID-19, Epidemiology, MERS-CoV, SARS-CoV.

Introduction

CoVs are normal families of viruses that can affect human beings and other living creatures. In which there are various human infecting CoVs [1] which create mild to moderate respiratory tract diseases with the basic common cold symptoms.

In such series of viruses from the family includes the MERS (Middle East Respiratory Syndrome) [2], particularly found in Saudi Arabia and nearest regions. Then SARS (Severe Acute Respiratory Syndrome), seen primarily in China leads to highest risk of serious complications in human. Among various viruses, CoVs are an important cause of creating severe critical respiratory tract infections with 50% mortality rates in elderly people and immunity challenged patients.

People living with or caregiver for someone with a coronavirus infection are most at high risk of developing the infection themselves. Coronavirus transmission is mainly due to droplets transmission of saliva while coughing and

sneezing. Cases have been exported to Asian destination such as Thailand, Japan, and South Korea external icon. Patients have experienced fever, cough, shortness of breath and pneumonia. CoVs has crown like spikes [3] that protrude from their integral membrane proteins, like the sun's corona. Such viruses cause mild to severe illnesses of the respiratory tract, normally starts from the common cold to major diseases such as SARS [4].

Common symptoms of infection include throat pain, fever, cough, head ache, and breathing difficulties like shortness of breath. Serious cases can lead to pneumonia, kidney, lungs and vital organ failure or even death. At present in 2019 a novel coronavirus came in to picture creating more harassing infection to all types of people like SARS creating more death rate. As of April 2020, this epidemic had further spread to 25 other countries with 10 lakhs confirmed CoVs cases that includes more than 50,000 deaths.

A NOVAL METHOD FOR BLOOD BANK MONITORING SYSTEM USING GSM AND RASPBERRY PI (RPI)

K.SOWMYA¹, R.S.PRATHAP SINGH²

¹M.Tech student, Dept. of ECE, PBR Visvodaya Institute of Technology & Sciences, Kavali, SPSR
Nellore(D.T),Andhra Pradesh

²Associate Professor, Dept. of ECE,PBR Visvodaya Institute Of Technology & Sciences, SPSR
Nellore(D.T), Andhra Pradesh

Abstract—“Raspberry pi primarily based blood bank system” proposed to carry blood donors to the one vicinity. The aim of this gadget is to fulfill every blood request by means of the usage of android application and raspberry pi. In the proposed system, facts about the donors may be gathered by means of the use of android application and raspberry pi by using putting in structures at locations which include hospitals, blood banks and many others. These facts may be saved in the database. User/Patients wishes to get admission to the software and desires to enter his necessities approximately the blood inside the application the necessities are matched with the database and message could be to that specific blood donor through GSM modem.

1. INTRODUCTION

Blood is one of the most critical elements of human life and it's truly referred to as 'river' of life. There are number of scenarios where urgent need of blood comes in the society. At these critical times, the online blood bank with has an automatic call routing facility will be of great a id. The new algorithm is defined to find the perfect donor

at every point of time .When there is a need this kind of a system has more advantage's compared to present systems available. This helps in to get a immediate response rather than a SMS based system or simply internet based database system. An immediate fulfilment of the blood requirement made possible through this system can help same a number of human lives.

Segmentation of Thermogram Based on Region Based Technique using Split and Merge Method

V.Phani Bhushan, K. Murali, K.S.Sagar Reddy

Abstract: The main aim of segmentation is to identify the Region of Interest for image analysis. The segregation of an image into meaningful structures is often an important phase in image analysis, object representation, visualization and also in various other image processing tasks. Image segmentation is mostly useful in applications like detection where it is difficult to process whole image at a time. In this paper Region based image segmentation is used to identify the delaminations in Thermographic image of Infrared Non-Destructive Testing. There are two basic techniques in Region based segmentation viz. Region growing method, splitting and merging method. New method based Split and Merge segmentation technique is employed to identify the defective regions in thermogram. Results obtained after segmentation as compared with state of art segmentation methods.

Keywords: - Non Destructive Testing & Evaluation, Pulse Compression, Segmentation, Split and Merge Technique.

I. INTRODUCTION

Glass Fiber reinforced Polymers (GFRP)^[10] are more suitable materials for electronics, infrastructure and aircraft applications. Due to its high mechanical strength, light weight, corrosion and temperature resistant properties, thermal insulation, smooth internal surface and cost effectiveness GFRPs have become good alternatives for CFRPs which are brittle in nature^[1,17]. The Basic principle of Nondestructive Evaluation (NDE) is the process of evaluating materials for discontinuities without destroying the serviceability of the part or system. The most commonly used Non Destructive Evaluation techniques are Liquid Penetrant, Electromagnetic Testing, Magnetic Particle Testing, Ultrasonic Testing & Thermal Infrared Testing etc.^[1,10] Out of these techniques Infrared thermography became most popular method to detect subsurface anomalies in various composite materials. The reason is that it is a non-contact type technique which provides a fast, reliable and accurate temperature profile of any composite material surface.

In order to identify the delamination defects in composite materials there exist many infrared thermographic techniques but a few of the techniques are frequently used. They are

Pulse Thermography (PT), Lock in Thermography (LT)^[12] and Pulse Phase Thermography^[3,16] etc. But these methods

do suffer from certain limitations. Pulse Thermography technique is sensitive to the local variation of emissivity coefficient. This technique can mask the visibility of defect because of Non-Uniform heating. The setbacks of Lock in Thermography are penetration depth i.e. the depth range of thermal waves is limited and depends on thermal diffusion length and even though a steady state technique it is slow. In order to overcome some of these limitations an alternative method viz. Frequency Modulated Thermal Wave Imaging (FMTWI)^[2] has been suggested to identify defects in solid composite materials. To visualize the subsurface defects and to determine the size and shape of delamination in the thermographic sample, processing of image data is an important phase. In this paper a GFRP sample is used in which 25 square shaped Teflon inserts of various dimensions are placed at various depths. These inserts are checked by means of FMTWI. The proposed segmentation algorithm is implemented over GFRP sample and results are compared with existing segmentation methods.

II. FREQUENCY MODULATED THERMAL WAVE IMAGING

To minimize the setbacks of PT & LT, Frequency Modulated Thermal Wave Imaging^[4] is introduced. In this technique the incident heat flux is changed by driving the heat sources by Linear FM signal. Linear frequency modulated heat flux is exposed on the surface of test object. The absorbed heat energy propagates through the object by conduction and produces a time varying thermal response over the surface of the object. Thermal response of heated object is monitored by Infrared camera controlled by the computer. Expression for the resulting temperature i.e. incident on the object is given by,

$$T(x,t) = T_0 e^{-x\sqrt{\pi/\alpha(f+Bt/\tau)}} e^{j(2\pi(f+Bt^2/2\tau)-x\sqrt{\pi/\alpha}(f+Bt/\tau))} \\ = T_0 e^{-x\sqrt{\pi/\alpha(f+Bt/\tau)}} [\cos(k) + j \sin(k)] \quad (1)$$

From equation (1) the diffusion length (μf_m) can be calculated as,

$$\mu f_m = \sqrt{\alpha/\pi(f+Bt/\tau)} \quad (2)$$

The thermal diffusion length (μf_m) helps to scan entire depth of the sample in one cycle (f_m). The Thermal wavelength (λ) in case of FMTWI is given by

$$\lambda = 2\pi\mu = 2\pi\sqrt{\alpha/\pi(f+Bt/\tau)} \quad (3)$$



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* Correspondence Author

V. Phani Bhushan, Department Of Eee,Pbrvtis, Kavali, India.
Email: Phani.Vpb@gmail.com

Dr.K.Murali,Department Of Eee, Nec, Nellore, India
Email: Murali.Kanic@gmail.com

Dr.K.S.Sagar Reddy, Department Of Eee, Nec, Nellore, India.
Email: Siddhu.Sindhu12@gmail.com

A NOVAL METHOD FOR BLOOD BANK MONITORING SYSTEM USING GSM AND RASPBERRY PI (RPI)

K.SOWMYA¹, R.S.PRATHAP SINGH²

¹M.Tech student, Dept. of ECE, PBR Visvodaya Institute of Technology & Sciences, Kavali, SPSR Nellore(D.T),Andhra Pradesh

²Associate Professor, Dept. of ECE,PBR Visvodaya Institute Of Technology & Sciences, SPSR Nellore(D.T), Andhra Pradesh

Abstract—“Raspberry pi primarily based blood bank system” proposed to carry blood donors to the one vicinity. The aim of this gadget is to fulfill every blood request by means of the usage of android application and raspberry pi. In the proposed system, facts about the donors may be gathered by means of the use of android application and raspberry pi by using putting in structures at locations which include hospitals, blood banks and many others. These facts may be saved in the database. User/Patients wishes to get admission to the software and desires to enter his necessities approximately the blood inside the application the necessities are matched with the database and message could be to that specific blood donor through GSM modem.

1. INTRODUCTION

Blood is one of the most critical elements of human life and it's truly referred to as 'river' of life. There are number of scenarios where urgent need of blood comes in the society. At these critical times, the online blood bank with has an automatic call routing facility will be of great aid. The new algorithm is defined to find the perfect donor

at every point of time .When there is a need this kind of a system has more advantage's compared to present systems available. This helps in to get a immediate response rather than a SMS based system or simply internet based database system. An immediate fulfilment of the blood requirement made possible through this system can help same a number of human lives.

PERFORMANCE ENHANCEMENT OF THE INDUCTION MOTOR HYBRID DRIVES THROUGH COMMON MODE VOLTAGE COMPENSATOR

¹Bhakthavachala.A, ²Dr. Tara kalyani, ³Dr.Anuradha.K,

¹Research scholar, EEE, JNTU, Hyd - 500085, India, e-

²S, Professor and Head, EEE JNTU, Hyd - 500085, India, e-mail:

³Professor and Head, EEE, VNR VJIT, Hyd -500085, India, e-mail:

Abstract— In the present years, the world is facing the global warming crisis rigorously in many countries. And it is slowly extended to one nation to the other nation. The existence of humanity is more complicated as the commercial trends are going to be like this. To limit this some of the countries are followed even/odd numbered formula, i.e. even and odd number vehicles are allowed day after a day. So therefore it is correct time to explore much about the electric vehicles. In particular, the research is based on the induction motor implementation in the electric vehicle because of extraordinary starting torque and good efficiency. The induction motors are carrying out through high-frequency pulse width modulated inverters, when applied in hybrid electric vehicles. Since the high-frequency switched inverters, it will build lots of troubles at input side of the motor. Out of all problems, common mode/differential mode voltages are some of the foremost problems. The common mode voltage is the mirror image of shaft voltage that will create voltage via motor air gap, resulting raises motor bearing current, therefore premature damage to motor steadiness and natural life. For compensating and testing the problem, some experimental model is developed. The objective of this representation is to assess the electromagnetic interference at the time of drive under test.

Keywords - Induction motor drive, Electromagnetic interference, Common mode voltage, Shunt active filter

I. INTRODUCTION

The recent trend in the progress of electrical vehicle is getting accurate value of power output in electrical drive via high-frequency PWM inverters. In particular switching frequency is more at output of inverter; it produces common mode voltage in the input side of the drive. Consequently, these voltages generate shaft voltage which creates bearing current via motor air gap due to stray capacitance. As for above evidence the amount of bearing currents and shaft voltage authorise the electromagnetic interference issues. These issues brings severe harm to insulation in- side the motor i.e., normal life and uniformity of motor [1].

Several earlier literatures articulated that, suppression of the common mode voltage in induction motor feeding a high voltage direct current (DC) supply is most familiar method [2,3,4]. Generally some previous literatures projected that; common mode voltage active filter is used to moderate the CM voltage at motor input side. Generally two methods are planned to create the common mode voltage, one is by use of passive method [5], it has resistors(R), inductors (L), capacitors(C) and also CM chokes. These RLC parameters depend on cable length in between inverter and motor [6]. Second method is an active method. This method is generally one of main familiar process in a industrial drives since most recent decade. Commonly, this suppresses bearing current, shaft voltage parameters [7-8]. The common mode canceller consists of various parts for operation of determining and re-injecting voltage at line. The exposure path containing star designed capacitors, pair of Darlington paired transistor switches, toroidal core four winding transformer and in addition to the above direct current supply also utilized. Therefore the

Fuzzy Logic Controller based Unity Power Factor Correction of Boost Converter

¹A. Bhakthavachala, ²S. Tara kalyani, ³K. Anuradha, ⁴Nukala Vengaiah

¹Assoc. prof, PBR VITS, Kavali & Research Scholar, department of EEE, JNTU, Hyderabad, India-500085.

²Professor & Head, EEE, Jawaharlal Nehru Technological University, Hyderabad, India-500085.

³Professor & Head, EEE, VNR Vignana Jyothi Institute of Technology, Hyderabad, India-500085.

⁴PG scholar, Department of EEE, PBR Visvodaya Institute of Technology & Science, Kavali, A.P, India

Corresponding Author: A. Bhakthavachala

Abstract: This paper presents an analytical study of unity Power Factor Correction (PFC) of boost converter based on Proportional-Integral (PI) Controller and Fuzzy Logic Controller (FLC). The PI, FLC and Hysteresis Current Controller (HCC) are applied to the boost converter because of their nonlinear properties and improve the converter's performance. The FLC and PI are applied in the voltage loop controller whereas the HCC is employed in the current loop controller. The effectiveness of the controllers are verified in Matlab/Simulink environment and the comparative simulation results show that the fuzzy based controller provides the better performance than that of the PI based controller.

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I. Introduction

DC link voltage has been widely utilized in the industrial applications and domestic applications and is mainly needed in drives of variable speed and in most of the domestic equipment. The diode bridge rectifiers are preferred to create this voltage at dc link because of its cheap, simple and robust nature. But the heavy usage of the rectifiers for the dc voltage results in the issues of harmonic pollution in the distributed electrical systems [1]. A simple rectifier's current waveform has high distortion at the input side and has low power factor. Of various methods proposed as solutions for these problems, the single-phase power factor correction (PFC) strategies based on active wave line current determination is one among them, the major advantages are:

- Input current's wave form having small distortion.
- Unity Power factor.
- Controlled DC voltage at the output.

The boost converters are more expensive compared to simple rectifiers but efficiently improves the power quality in the applications of single phase. Hence boost converters are preferred to the diode bridge rectifiers. Fig.1 depicts the single-phase PFC boost converter, and is the most simple control scheme in comparison with the other topologies. The main two objectives of the topology are: Track the current in the inductor to a rectified Sinusoid reference wave form and regulate the output DC voltage to reference voltage [2]. Literature [3, 4] discusses the conventional PID controller used for regulating the voltage loop in the boost converter. As PID is mainly suitable to work with constant parameters, the system is modeled near a nominal point where the parameters and the disturbance are constant. But PID gives worst results when there are any variations in the system. Thus arises the introduction of the intelligent controllers whose control is robust and performs well even under variations in the system. Of these intelligent controllers, Proportional-Integral and Fuzzy Logic Controller (FLC) are used in this paper.

This paper presents a study and operation of single phase PFC of boost converter based on PI and fuzzy logic controllers, which are used for the voltage loop, with the conventional hysteresis current controller being used in the current loop to enhance the performance of the system without requiring a mathematical model of the PFC converter [8]. The proposed controllers have been tested using MATLAB/Simulink.

II. Circuit Description

The basic circuit diagram of the DC-DC converter with front end solid state input power factor conditioner used in the proposed scheme is shown in Fig 1a.



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A Simplified Filter Topology for Compensating Common Mode Voltage and Electromagnetic Interference in Induction Motor Drives

A. Bhakthavachala^a, S. Tara kalyani^b, K. Anuradha^c

^aResearch Scholar, department of EEE, Jawaharlal Nehru Technological University, Hyderabad, India-500085

^bProfessor & Head, EEE, Jawaharlal Nehru Technological University, Hyderabad, India-500085

^cProfessor & Head, EEE, VNR Vignana Jyothi Institute of Technology, Hyderabad, India-500085

Abstract

Recently the utilization of electric vehicle technology increasing drastically, because of environmental changes arises throughout the globe. Based on these issues, this paper focuses on the drive used in the electric vehicle with more economically. In general electric vehicles the induction motor drives are used, because they have great features, such as high starting torque and high efficiency. The motor drive is driven by high switching frequency PWM inverter supplied through a DC supply, since high switching frequency common mode (CM) voltage generated at the stator input motor terminals. This will create a shaft voltage through the motor air gap and raises the motor bearing current. This causes the premature damage to the motor reliability and lifetime. To compensate this problem an advanced active filter is designed, which will suppress the common mode voltage. And also analyze the impact of electromagnetic interference (EMI) on drive under the test (DUT). The above system will initially be executed in the electrical software tools like MATLAB/SIMULATION for confirmation of the results, suitable for electric vehicle applications, especially for induction motor drives.

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Keywords: Common mode (CM) voltage, Shunt active filter, Electromagnetic Interference (EMI), Induction Motor drive.

*Corresponding author. Tel: +91 8985872077, 9848651775

E-mail Address: bhaktha1000@gmail.com

AN IMPROVED METHODOLOGY FOR ENHANCING THE POWER FACTOR OF BRIDGELESS BUCK PFC CONVERTER

¹A. Bhakthavachala, ²S. Tara kalyani, ³K. Anuradha, ⁴G. Seetha Ravamma

¹Research Scholar, Department of EEE, Jawaharlal Technological University, Hyderabad, India

²Professor & Head, EEE, Jawaharlal Technological University, Hyderabad, India

³Professor & Head, EEE, VNR Vignana Jyothi Institute of Technology, Hyderabad, India

⁴M. Tech Students, Department of EEE, PBR Visvodaya Institute of Technology, Nellore, A.P

Abstract— The bridgeless buck power factor correction (PFC) converters highlight the benefits of low output voltage and high effectiveness while their inclination existing dead angles in the input current break down the input current music and power factor (PF). Intending to decrease the dead angles, another bridgeless buck PFC converter is proposed in this paper. Through coordinating the fundamental buck circuit and the helper fly back circuit with one attractive centre, the dead angles in input current of the proposed bridgeless buck PFC converter is wiped out so the power factor and input current music are improved. The proposed bridgeless buck PFC converter is intended to work in spasmodic conduction mode (DCM) with the benefits of basic controller and nature current moulding capacity. Another logic control circuit is given. The itemized hypothetical inductions and structure thought are exhibited. The test examination among the proposed bridgeless buck PFC converter, the customary buck PFC converter and the ordinary bridgeless buck PFC converter is shown to approve the adequacy of the new converter.

I. INTRODUCTION

THE active power factor correction (PFC) converters are widely applied in power electronic equipment to meet the rigorous international input current harmonics standard like IEC 61000-3-2 limits. Commonly, the boost converter is the most popular option as the PFC front-end because of its simple topology, excellent current-shaping performance, easy control and low cost. Nevertheless, the boost PFC converter emerges two main drawbacks [4]. One is that its proficiency shows an undeniable drop around 1%-3% at low line contrasted with high line. Another is that its high output voltage (380-400V) is adverse to the exchanging misfortunes of lift PFC front-end and its down-stream DC-DC converter.

Lately, the conventional buck PFC converter as an option of lift PFC converter in low power level applications has gotten a lot of considerations by scientists and designers, since it can give high proficiency at low line and low output voltage. Some hypothetical examination and new topologies of the conventional buck PFC converter have been contemplated. Be that as it may, when the information voltage is lower than the output voltage, the created nature dead angles shown in Fig. 1 of the conventional buck PFC converter deteriorate the power factor (PF) and input current harmonics seriously. Thus, it is not easy for the conventional buck PFC converter to meet the input current harmonics standards.

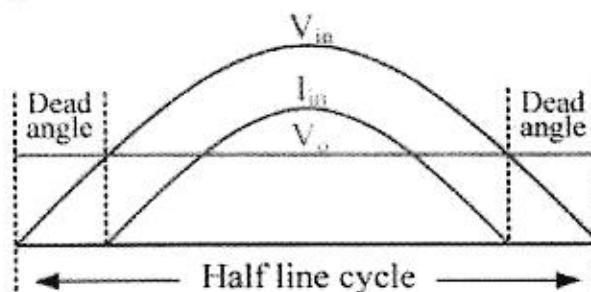


Fig. 1 Input current and input voltage of the conventional buck PFC converter.

II. LITERATURE SURVEY:

In order to improve the power factor and input current harmonics of the conventional buck PFC converter, some new control methods and new topologies were proposed. An improved peak current control scheme was proposed to improve the input current harmonics and the efficiency of the conventional buck PFC converter. A variable on-time (VOT) control method for conventional buck PFC converter was proposed to improve input current harmonics and power factor. A prediction of quadratic sinusoidal current modulation for

A NOVEL TOPOLOGY FOR FAST CHARGING OF ELECTRIC VEHICLE BATTERY**¹A. Bhakthavachala, ²S. Tara kalyani, ³K. Anuradha, ⁴M. Naga Mounika****¹Research Scholar, department of EEE, Jawaharlal Technological University, Hyderabad, India****²Professor & Head, EEE, Jawaharlal Technological University, Hyderabad, India****³Professor & Head, EEE, VNR Vignana Jyothi Institute of Technology, Hyderabad, India****⁴ M. Tech Students, Department of EEE, PBR Visvodaya Institute of Technology, Nellore, A.P****ABSTRACT**

A choice of logical converter topology plays a notable role in the battery charging of electric vehicles (EVs). In this paper, snubber less stage of rectifier cascaded with snubber less stage of the dc-dc converter is proposed in which stage I eliminates the need of front-end rectifier, and no further circuitry is required for switching operation of rectifier stage. Due to pulse width modulation (PWM) switches share the same gating signal for positive as well as negative cycle operation. Second stage converter uses asymmetrical pulse width modulation (APWM) technique in which zero voltage switching (ZVS) is achieved for all active switches, and near zero current switching (ZCS) for low side, active switches are attained during the charging range of the battery.

The size of auxiliary inductance required is decreased for ZVS with APWM compared to previously proposed APWM with snubber circuitry. Due to a reduction in the size of auxiliary inductor and absence of snubber circuit results in an efficient battery charger topology. The MATLAB simulation is done of the proposed converter to validate the results.

I. INTRODUCTION

Urban transportation has a solution in the form of electric vehicles (EVs) which can provide a solution to environmental as well as economic problems of the society which is the major discussion point now a day's. Generally, for >400 W battery charging system two-stage cascaded ac-dc and isolated dc-dc

converter for power conditioning is used. Moreover, to reduce conduction losses and variation in the DC link voltage many topologies has been already proposed.

But these are associated with drawbacks of a large number of passive elements and reduced power density. In isolated dc-dc converter stage efficiency, reliability, power density, compliance, and isolation are some important features for selecting a suitable configuration. Usually, isolated dc-dc converters with phase shifted modulation (PSM) has been preferred by many researchers, but it has various drawbacks like duty cycle loss, secondary rectifier diode having high voltage spikes, electromagnetic induction (EMI), zero voltage switching (ZVS) is associating with narrow load range for active switches. In ZVS topologies have been analyzed, but they have following drawbacks: ZVS is not achieved for leading leg switches at light load conditions, complex control and for high input voltage efficiency of the topology gets reduced. Fig. 1 shows the general overview of the proposed topology in which two stages of the converter is controlled by using PI controller separately. Stage I can maintain constant dc link voltage with low conduction and switching losses which acts as an input for stage II of the converter. In stage II isolated dc-dc converter is used so that higher power applications should easily achieve. In this paper, an EV battery charger topology is proposed which is ideally suitable for 3.8 KW battery charging. Stage I of the proposed topology does not contain a diode bridge rectifier,

INTERCONNECTION OF HYBRID PV-WIND SYSTEM WITH GRID THROUGH A MULTI INPUT TRANSFORMER COUPLED BIDIRECTIONAL DC-DC CONVERTER

¹A. Bhakthavachala, ²G.Suman, ³K.HaraSivaKumar

¹Research Scholar, Dept. of EEE, Jawaharlal Technological University, Hyderabad, India
²Assistant professor, Dept. Of E.E.E, PBR Visvodaya Institute Of Technology And Science, Nellore

³PG Scholar ,Dept. Of E.E.E,PBR Visvodaya Institute Of Technology And Science, Nellore

Abstract

In this paper, a control strategy for power flow management of a grid-connected hybrid PV-wind-battery based system with an efficient multi-input transformer coupled bidirectional dc-dc converter is presented. The proposed system means to fulfill the load demand, deal with the power flow from various sources, infuse surplus power into the grid and charge the battery from grid as and when required. A transformer coupled boost half-connect converter is utilized to outfit power from wind, while bidirectional buck-boost converter is utilized to bridle power from PV alongside battery charging/releasing control. A solitary stage full-connect bidirectional converter is utilized for bolstering air conditioning loads and association with grid. The proposed converter engineering has decreased number of power change stages with less segment check, and diminished misfortunes contrasted with existing grid-connected hybrid systems. This improves the efficiency and dependability of the system. Simulation results acquired utilizing MATLAB/Simulink show the exhibition of the proposed control system for power flow management under different methods of activity.

I. INTRODUCTION

Fast consumption of petroleum product holds, regularly expanding vitality demand and worries over environmental change propel

power age from sustainable power sources. Sunlight based photovoltaic (PV) and wind have risen as mainstream vitality sources due to their eco-accommodating nature and cost viability. Be that as it may, these sources are irregular in nature. Henceforth, it is a test to supply steady and persistent power utilizing these sources. This can be tended to by effectively coordinating with vitality stockpiling components. The fascinating reciprocal conduct of sunlight based insolation and wind speed design combined with the previously mentioned points of interest, has prompted the exploration on their mix bringing about the hybrid PV-wind systems. For accomplishing the reconciliation of numerous inexhaustible sources, the conventional methodology includes utilizing committed single-input converters one for each source, which are connected to a typical dc-transport [1] - [15]. Be that as it may, these converters are not adequately used, because of the irregular idea of the sustainable sources. Furthermore, there are various power change stages which lessen the efficiency of the system. Critical measure of writing exists on the combination of sunlight based and wind vitality as a hybrid vitality age system with center primarily around its estimating and streamlining [7], [8]. In [7], the measuring of generators in a hybrid system is examined. In this system, the sources and capacity are interfaced at the dlink, through their devoted converters. Different commitments are made on their demonstrating perspectives and

Application of Modern Heuristic Algorithm to Automatic Generation Control of Hybrid Electric Power System with GRC

Pasala Gopi¹, Dr. P. Linga Reddy²

¹Research Scholar, Dept. of Electrical Engineering, K L University, Vaddeswarm, A.P., India.
pasala.epe07@gmail.com

²Professor, Dept. of Electrical Engineering, K L University, Vaddeswarm, A.P., India.
lingareddypotla_eee@kluniversity.in

Abstract— This paper describes the application of modern heuristic optimization algorithm, called pattern search algorithm, to automatic generation control of hybrid interconnected electric system. In this paper, the pattern search algorithm has been proposed for tuning of controller. The controller parameters related to each area have been tuned by the proposed algorithm. Ant colony optimization and a refined Ziegler-Nichols tuning technique have been used as benchmarks. The superiority of the proposed load frequency controller has been demonstrated by comparing with the benchmarks. The inclusion of generation rate constraint results in challenging task for the realization of an effective controller design. This difficulty is further enhanced with step load and random load variations.

The effectiveness and validity of the proposed controller are investigated for hybrid distributed generation electric system with generation rate constraint and tie-line operation. The results demonstrate that the adopted optimization technique has presented superior convergence robustness when compared with the benchmarks without/with energy storing element (BESS) for step load and random load variations.

Keyword-Automatic Generation Control, Modern Heuristic Algorithm, Generation Rate Constraint, Step load disturbances.

I. INTRODUCTION

From the last few decades with increase in population and industries, the demand for generation of electrical energy continuously increases. But because of gradual decrement in fossil fuels and more in fuel cost, the required power demand may not be fulfilled by the conventional power generations. To overcome this difficulty, renewable power generation sources like offshore wind, bio-fuels, photovoltaic etc are gaining the popularities due to their advantages such as less capital investment, low environmental pollution and low transmission losses. Wind energy is an emerging as leading and competitive renewable energy source. In this context, renewable source (like offshore wind turbine) and non renewable source (like Thermal power system) are integrated with stand-by diesel engine generator (DEG) as well as energy storing element such as Battery storage system (BESS) to construct hybrid power system for effective control of supply and demand power balance. The power supplied by the proposed hybrid power system can be effectively delivered to the connected loads with appropriate control and coordination among various sub-systems. Battery energy storage system (BESS) is economical and stores effectively to release energy during the peak load demand. Diesel engine generator (DEG) may be introduced into the hybrid system as standby source to meet the power demand so that better control can be achieved. The offshore wind farms can transmit bulk power over long distances. Because of intermittent characteristics of offshore wind turbine generators, there is mismatch between total power generation, load demands and leads to deviation in system frequency. If this frequency deviation is not controlled, it may create instability in the system performance [1], [2].

How much area of interconnected power system should response to system frequency variation can be decided by the tie line bias. Under normal operating condition each control area takes care of its frequency variations, when any disturbances/abnormal conditions occurs the tie line manage the power flow such a way that the frequencies of the control areas remain in the specified limit. The work presented in this paper is organised as follows. The Section-II describes modelling of various energy sources, storage elements and proposed interconnected hybrid power system in the form of transfer functions. This is followed by descriptions on tuning of controller in Section-III. The simulation results and discussions of interconnected hybrid system are in Section-IV. Finally conclusions are given in Section-V.

Application of Modern Heuristic Algorithm to Automatic Generation Control of Hybrid Electric Power System with GRC

Pasala Gopi¹, Dr. P. Linga Reddy²

¹ Research Scholar, Dept. of Electrical Engineering, K L University, Vaddeswaram, A.P., India.
pasala.epe07@gmail.com

² Professor, Dept. of Electrical Engineering, K L University, Vaddeswaram, A.P., India.
lingareddypotla_ecc@kluniversity.in

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Tuning of Load Frequency PID Controller of Electric Power System using Metaheuristic Algorithms

Pasala Gopi

Research Scholar, EEE

KL University

Green Fields, Vaddeswaram, India

pasala.ece07@gmail.com

Dr. P. Linga Reddy

Professor, EEE

KL University

Green Fields, Vaddeswaram, India

lingareddypotla_eee@kluniversity.in

Abstract: This paper investigates Load Frequency Control of multi area inter connected power system having different turbines with PID controller. The gain values of controller are optimized using different Metaheuristic Algorithms. The performance and validity of designed controllers were checked on multi area interconnected power system with various Step Load Perturbations. Finally, the performance of proposed controllers was compared with conventional controller and from the result it was proved that the proposed controller exhibits superior performance than conventional controller for various Step Load Perturbations.

Index Terms—PID Tuning, Metaheuristic Algorithms, Multi-area Power System, Load Frequency Control, Step Load Perturbations.

I. INTRODUCTION

As the demand changes the system voltage and frequency deviate from the initial values causing an unpredictable small amount of change in the state of the system. An automatic control system is assigned to detect the change and it initiates a set of counter control actions in order to nullify effectively and at the earliest any deviation in the state of the system. In any interconnected system deviation of the state of the system may well disturb the state of economic operation and may even cause overloads on the interconnecting ties with the risk of having lost the continuity of operation. The obvious way to maintain a perfect power balance at each bus could be to continuously keep the generated powers in balance with the changing load power P_D and Q_D . The real power is controlled through the turbine torque while the reactive power is controlled via exciter[3].

Automatic control of generators involves two major control loops in power system equipped with large generators. These two major loops are *Automatic Voltage Regulator* (AVR) and *Automatic Load Frequency Control* (ALFC) loops. This paper mainly concentrated on Load Frequency Control (LFC). The ALFC loop regulates the real power output & corresponding

frequency of the generator power output. The primary ALFC loop senses the turbine speed and controls the operation of the control valves of turbine power input via the speed governor. When the power system is subjected to sudden load increments (ΔP_D), the turbine output ΔP_T is increased to a new value as rapidly as the primary ALFC loop permits. However, this load increase causes negative frequency error. It causes a slow growing positive integrator output and a corresponding increase in power reference setting. The signal (Δf) fed to the integrator is known as *Area Control Error* (ACE). Integral control will give rise to zero static frequency error following a step load change i.e the secondary ALFC loop eliminates the frequency error. In order to keep values of system frequency and tie-line power within the limit during the sudden and normal load conditions, there is several control techniques have been proposed for the LFC of power system. The same authors have explained a critical literature survey on different control strategies of power system LFC.

In this paper, Ant Colony Optimization (ACO) and Pattern Search (PS) PID tuning methods were used for Load Frequency Control (LFC) in three area interconnected power system. The performance of ACO-PID and PS-PID were compared with conventional PID controller.



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A Robust Decentralized Controller Design for Interconnected Power System with Random Load Perturbations using SDO Software

Pasala Gopi^{a,*}, Potla Linga Reddy^b

^a Research Scholar, Dept. of EEE, K L University, Green Fields, Guntur (Dt) -522502, India

^b Professor, Dept. of EEE, K L University, Green Fields, Guntur(Dt)-522502, India

Abstract

Because of increase in load, size and change in power system structure, the response of load frequency control problem of the interconnected power system is more complex. This paper deals with Load Frequency Control of three area interconnected Power system having Reheat, Non-reheat and Reheat turbines in all areas respectively. The response of the load frequency control problem in a multi-area interconnected power system is improved by designing a PID controller using different tuning techniques and proved that the proposed controller, which was designed by Simulink Design Optimization Software gives the superior performance than other controllers for both Step load and Random load perturbations. Finally the validity and robustness of the proposed controller was checked against various Step load and Random load perturbations.

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Keywords: Load Frequency Control; Interconnected Power System; PID Tuning Techniques; Simulink Design Optimization(SDO) Software.

1. Introduction

For large scale power system which consists of interconnected control areas, load frequency then it is important to keep the frequency and inter area tie power near to the scheduled values. The input mechanical power is used to control the frequency of the generators and the change in the frequency and tie-line power are sensed, which is a measure of the change in rotor angle. A well designed power system should be able to provide the acceptable levels of power quality by keeping the frequency and voltage magnitude within tolerable limits. Changes in the power

* Corresponding author. Tel. +918500624007
E-mail address: pasala.epe07@gmail.com



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A New Optimized PD-PI Controller using NSGA-II for Automatic Generation Control

Chittimuru.S.Reddy¹, Dr.B.Sarvesh²

Research Scholar, Dept. of EEE, JNTUA, Anantapur, Andhra Pradesh, India¹

Professor, Department of EEE, JNTUK, Kakinada, Andhra Pradesh, India²

ABSTRACT: This paper introduces a new powerful cascaded PD-PI controller for solving load frequency control (LFC) problem in power system. A two area non-reheat thermal power plant is considered and gains of PI/PID controllers are optimized using non dominated sorting algorithm-II NSGA-II. This paper compares new controller effectiveness in solving LFC problem with the performances of controllers tuned with other optimization techniques reported in the literature.

KEYWORDS: Automatic generation control (AGC); active power frequency control, cascaded controller; proportional integral derivative controller (PID); NSGA-II optimization algorithm

I.INTRODUCTION

The role of automatic generation control (AGC) is very important in power system operation and control to ensure reliability and power quality of the grid by maintaining system frequency and tie line power at their schedule values. In a multi area interconnected system, all the units are connected synchronously and therefore they work with same frequency. Any abrupt change in load in one area or in different areas simultaneously and other abnormal conditions will cause a change in the frequency of the areas and in the transferred power of the tie-lines [1]. These changes must be reduced to zero or to be minimized to the maximum possible extent automatically.

The LFC problem of an interconnected power system network is enlarged by the several researchers from time to time over last few decades in order to present better dynamic responses. Several control mechanisms have been proposed in the literature to solve LFC problem, such as classical controller [2–5], non-integer controller [6–8], sliding mode controller (SMC) [9], robust controller [10], and intelligent controller [11–14]. The authors of [11–13] proposed non-integer controller to solve LFC problem for an interconnected multi-area power system network and showed better system dynamics than the results available in the literature. Several intelligent controllers based on fuzzy logic [11], neuro-fuzzy [12], advance fuzzy [13], artificial neural network [14] were presented in the area of LFC and demonstrated their applicability to improve dynamic performances of the same. Different optimization techniques which are population based such as differential evolution (DE) [4], genetic algorithm (GA) [16], particle swarm optimization (PSO) [17], artificial bee colony algorithm (ABC) [18], bacteria foraging optimization algorithm (BFOA) [3], hybrid bacteria foraging optimization algorithm – particle swarm optimization (hBFOA-PSO) [2]. However, it was identified from recent research that all the above said algorithms had a drawback of dependency on initialization of input parameters and slow convergence rate. Also a particular evolutionary algorithm which gives better results on a set of problems may show poor performance on a different set of problems. Therefore an attempt has been made in this paper to design and implement a relatively new cascaded controller based on NSGA-II optimization technique to solve LFC problem of an interconnected power system. The dynamic responses are studied with step load perturbation (SLP) in area-1 considering overshoot, settling time of frequency and tie-line power deviations as performance indices. By minimizing time multiplied integral absolute error fitness function, stability of the interconnected system is improved. Dynamic performances of NSGA-II optimized PD-PI controller are compared with other algorithms available in the literature to prove its superiority.



Enhancement of Power System using TCSC with Fuzzy PID Controller

P.Sunil Kumar¹, CH.Swapna²

^{1,2}Electrical & Electronics Engineering, PBR VITS

Abstract-This project presents the variable effective fundamental equivalent reactance capability of TCSC for enhancing the transient stability of power systems. For obtaining the varying effective fundamental equivalent reactance, two different controllers namely a speed deviation based Self-tuning Fuzzy PID Controller [1] and a nonlinear controller are used. To validate the performance of the control schemes, the simulation studies are carried out on a single machine infinite bus system using MATLAB/ SIMULINK software package. The results of computer simulation indicate that Self-tuning Fuzzy PID controlled TCSC can not only improve the static stability of system, but also effectively damp power oscillation and enhance the transient stability of system when the power system suffers small disturbance and short circuit. In addition, it also illuminates that Self-tuning Fuzzy PID Controlled TCSC [2] is more effective than nonlinear control, traditional PID control and fixed series compensation.

Keywords-SMIB system, Transient Stability, Thyristor Controlled Series capacitor, Self-tuning Fuzzy PID Controller, Nonlinear controller, PID Controller, fixed series compensation

I. INTRODUCTION

Power system has entered a new stage of a larger system with EHV (extra high voltage) long distance transmission and inter-regional networking. The development of socioeconomic makes the modern transmission grid management and operation changed, the demand of its security, stability, high efficiency, and flexible operational control is increasing, so developing new means of regulation to enhance its controllable is emergence. Thyristor controlled series capacitor (TCSC) is a kind of new power system equipment developed from the conventional fixed series capacitor. Its effective fundamental equivalent reactance can be controlled continuously by controlling the thyristor in a relatively large range, either capacitive or inductive. As a novel method for electrical network control, TCSC can be utilized in the power system transient stability enhancement, power system oscillation damping, the SSR mitigation and load flow control [3].

Flexible AC Transmission System (FACTS) controllers use thyristor switching devices to provide greater control, speed and flexibility of ac transmission systems. The Thyristor Controlled Series Compensator (TCSC) is a second generation FACTS controller capable of providing fast variable compensation. This paper focuses on the variable effective fundamental equivalent reactance capability of TCSC for enhancing the transient stability.

There exists a class of control schemes for transient stability enhancement using TCSC [4-8]. In this paper, For obtaining the varying effective fundamental equivalent reactance, two different controllers namely a speed deviation based Self-tuning Fuzzy PID Controller and a nonlinear controller are taken for comparative studies. Self-tuning Fuzzy PID Controller is a speed deviation based controller and can provide a drastic improvement in transient stability. The second controller is a nonlinear controller based on feedback linearization technique. In addition to the transient stability enhancement, Self-tuning Fuzzy PID Controller provides power oscillation damping also. The effectiveness of the controllers are demonstrated with single machine infinite bus system using MATLAB/SIMULINK software package

Comparative Analysis of Grid side Converters for Leakage Current Reduction

B. TULASI¹, P. SUNEEL KUMAR²

¹PG Scholar, Dept of EEE, PBR Visvodaya Institute of Tech & Science., Kavali, SPSR Nellore(Dt), A.P, India,

Email: callmethulasi@gmail.com.

²Assistant Professor, Dept of EEE, PBR Visvodaya Institute of Tech & Science., Kavali, SPSR Nellore(Dt), A.P, India,

Email: sunny.303365@gmail.com.

Abstract: Design of grid side converters comprises of galvanic isolation between the grid and DC supply. Now a days, for low power applications are effecting more because of high leakage current due to parasitic effect between grid and DC supply, in order to limit the ground leakage current (which deteriorates the power quality and generates EMI), new converter topologies have been proposed. This paper proposes the comparative analysis of H5 and H6 topologies in the aspects of leakage current reduction, parasitic capacitance effect and voltage balancing across the dc mains. The performances of the topologies are also analyzed by implementing modulation techniques. Simulated and tabulated results of H5 and H6 topologies conclude the performance evaluation.

Keywords: DC-AC Power Conversion, Multilevel Systems, Pulse Width Modulated Inverter, Pulse Width Modulation.

I. INTRODUCTION

The power converter is a topology that enables the efficient and flexible interconnection of different players (which are renewable energy generation, energy storage, flexible transmission and controllable loads) to the electric power system. Hence renewable energy sources will be a major player in the future of power system based on smart grid technologies [1]. Recently, converter topologies are employing high frequency transformer in order to reduce size and weight. The trade off between high efficiency and low cost is a hard task for these kind of architectures because there are several power stages. In low power applications, as per international standards, the grid connected power converters allows the transformer less architectures without any galvanic isolation[2]. In PV-grid side converters, the ground leakage current must be less than one ampere, but it is very difficult to get minimum ground leakage current in transformer less system [3]. The schematic diagram is depicted in Fig.1, which represents the use of modulation techniques with pulse generator block. Converter can be either H5 or H6 topology with grid parameters as shown. However comparison made between H5&H6 topologies are in the aspect of ground leakage current and parasitic effect. This paper is discussed about modes operation of H5 and H6 topologies in section II. Section III details about grid

connected multi level inverter topologies. Section IV briefly details the comparative analysis between two topologies in the presence of PV grid system. Section V discussed closed loop operation of efficient topology. Section VI reports simulation results about the numerical values tabulated regarding the performance parameters and Section VII concludes the objectives of the paper and discusses about future scope.

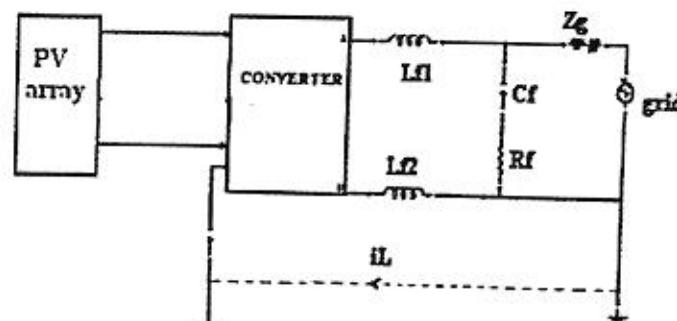


Fig.1. Path of the common mode current in transformer-less system.

II. THE CONFIGURATION OF SINGLE PHASE FIVE LEVEL TOPOLOGIES

Multilevel converters are nowadays widely adopted; the basic idea is that the dc-link voltage can be split between different capacitors, which can provide intermediate voltage levels between the reference potential and the dc-link voltage. The configurations of the H5 and H6 topologies are described in the following.

A. H5 Topology:

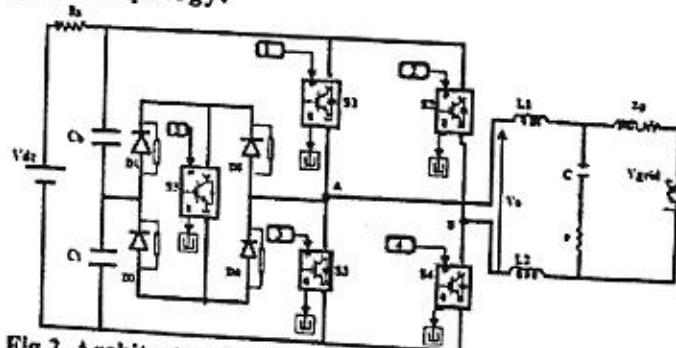


Fig.2. Architecture of the H5 topology in[2].

Dynamic Modelling and Controlling of PMSG Based on Wind Energy Conversion Energy System

M. GIRIDABU¹, A. BHAKTHAVACHALA²

¹PG Scholar, Dept of EEE, Visvadaya Engineering College, Kavali, AP, India.

²Associate Professor, Dept of EEE, Visvadaya Engineering College, Kavali, AP, India.

Abstract: This paper proposes a hybrid renewable energy conversion system uses a power converter topology with permanent magnet synchronous generator integrated with stand alone and grid connected operations. The configuration consists of a diode rectifier, a buck converter and a voltage source inverter (VSI). The advantage of using diode rectifier is that it provides a low cost solution to convert ac power into dc. A PMSG feeds an isolated load through a closed loop boost converter. The output voltage and frequency of the PMSG is variable in nature due to non uniform wind velocities and is not synchronized with the grid frequency. In order to condition and feed it to grid we need power electronic interface. In this system the PMSG output is converted to variable DC using a diode full bridge rectifier and converted to constant DC using a closed loop boost converter. The variable ac output is rectified by a diode rectifier and maintained constant by a boost converter. The converter output is fed to three phase inverter which employs a sine PWM technique, the output of which is fed to the load. The power converters and together with independent control systems can effectively improve the output voltage and frequency of the wind PMSG feeding an isolated load. The whole system is simulated by using MATLAB/Simulink.

Keywords: Three Phase Diode Bridge Rectifier, Photo Voltaic System, Fuel Cell System, Permanent Magnet Synchronous Generator (PMSG).

I. INTRODUCTION

In recent years, due to the fast depleting conventional energy resources and the concerns over climatic changes, the renewable energy sources are gaining popularity around the globe. Among the available renewable energy sources, the wind energy and the solar energy are the most mature technologies for power generation. The main advantage of renewable energy is that it is clean and inexhaustible. But the major disadvantage is that it is interim in nature and depends on seasonal pattern [1]. Therefore it is difficult to operate the power system only with renewable energy due to their characteristic difference and their uncertainty of availability. The potential of renewable energy sources is fully extracted by interfacing them to the existing grid. The main drawback of Wind is its irregularity in occurrence and how to

maximize the energy generation from wind. The wind energy can be harnessed by a wind energy conversion system (WECS), composed of a wind turbine, an electric generator, power electronic converter and the corresponding control system. Various WECS structures could be realized from the several categories of available components. However, the main objective of every structure is same that is conversion of Wind energy at varying wind velocities into the grid frequency of electricity. With special reference to the speed, two main classes are recognized for the generators of wind power application that are constant and variable speed generators as shown in Fig.1.

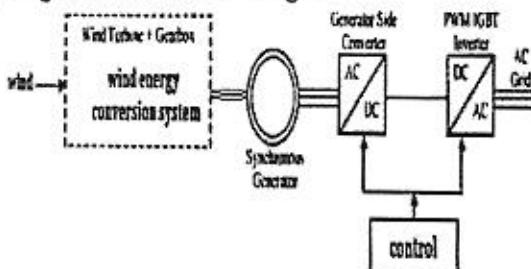


Fig. 1. Proposed Wind Energy Conversion System.

The constant speed wind turbines and induction generators were often used, in the early stages of wind power development. Some of the disadvantages of fixed speed generators are the low efficiencies, poor power quality, high mechanical stress including a runtime issue that is maximum coefficient of performance could obtained only at a particular Wind speed. Now a day's variable speed operations became more attractive because of the development of power electronics and falling cost of component and technology as well [2]. By running the wind turbine generator in variable speed, variable frequency mode, and the maximum power could be extracted at low and medium wind speeds. Among all kinds of wind energy conversion systems (WECSs), a variable speed wind turbine (WT) equipped with a multi pole permanent magnet synchronous generator (PMSG) is found to very attractive and suitable for the application in large wind farms. With gearless construction of such PMSG, advantages like low maintenance, reduced losses and costs, high efficiency and good controllability could be derived [3]. This paper presents

The Converter Command for the Doubly-Fed Induction Generator with Variable Speed used in the Wind Power Production

Mr. V.MASTHANAIAH

Asst.Professor

PBR VITS, Kavali

Email id: masti.325@gmail.com

Miss.T.JOE NIRMAL ANUSHA

PBR VITS,Kavali

Email Id: nirmalanusha@gmail.com

ABSTRACT

This paper presents a global and optimal environment of the electro-mechanical conversion chain using the doubly-fed induction generator (DFIG) in wind turbines having an active power in the stator of the order of Megawatts (MW).

The establishment of the diverse models of electric parameters and the development of the methodological tools available in the environment MATLAB/Simulink are interpreted [1]. The main components of the chain of conversion are modelled and the DFIG makes the object of a particular attention as for its control.

Analytical and numerical methods are proposed to carry out the optimal design of the entire drive including DFIG, the multiplier mechanical speed and power converter. The implementation of the environment is illustrated by solutions associated with different overall design requirement specifications including the distribution of active and reactive power on the DFIG [2]. The results show that there are different solutions as the original topology is presented dimensionally. The goal is to optimize the quality of energy generated by wind by manipulating the sizes of the active and reactive power as needed. The approach of the control of converters AC-DC-AC is used [3]. The method used is to adjust the stator reactive power so that the machine side converter and inverter supply side will be bidirectional, to adjust the wind speed to that of the doubly-fed induction generator, which is very favourable for energy production in wind systems. The results of the simulation will be presented in MATLAB/Simulink, as well as related interpretations.

Keywords

DFIG, PWM, Rectifier, Wind Energy, Wind Turbine, Converters, Modeling, MATLAB/Simulink, Continuous bus, Converters (AC-DC-AC), Park.

1. INTRODUCTION

Wind generation tends to play an important role in the total generation mix of the future power system due to the need to decrease carbon dioxide (CO_2) emissions resulting from electricity production. This is due to the existence of no exploited wind resources and to the fact that it is a clean and environmental friendly energy source with a reduced cost of installation and maintenance the wind turbines based on the doubly-fed induction generators (DFIG) is an attractive solution for the wind power generation [4]. Where the rotor is fed by a variable AC voltage sources, which can be controlled in frequencies according to variable speed of the rotor shaft due to the variation of speed wind. Then the electric power at constant frequency is simply provided from the stator of the DFIG [5]. These machines are a bit more complex than the squirrel cage induction machine. In spite of the presence of rubbing contacts (rings-brushes), a main advantage of the doubly-fed induction machine is the accessibility of its both armatures from which the power flow control can be easily occurred between machine and grid. The objective of this work is the modelling, simulation and decoupled control of active and reactive powers for a DFIG [6]. The modelling will allow determining theoretical operating characteristics of the DFIG and studying the influence of the parameters on the operation of the DFIG. The main parameters are the sliding, the stator active power, and the stator reactive power. This decoupling powers control keeps the power factor very interesting[7].

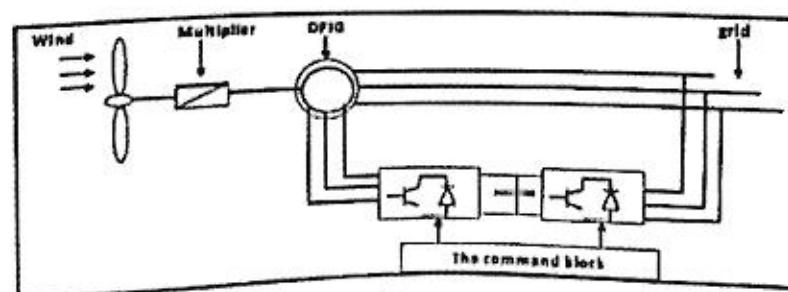


Fig 1 : DFIG in the wind energy conversion chain

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An Approach for Enhancing the Power Quality and Fault Ride-Through Capability of Distributed Power Systems

Alluri Madhusudhanachari¹, K Harshavardhan²

P.G. Scholar, Department of EEE, PBR VITS, Kavali, Nellore District, Andhra Pradesh, India¹

Assistant Professor, Department of EEE, PBR VITS, Kavali, Nellore District, Andhra Pradesh, India²

ABSTRACT: The spurious undesirable power fluctuations caused due to numerous abnormal reasons like leakage, faults and ageing of the lines may not only often influence the quality and quantity of power being supplied but also shows a severe impact on the robust and sustainable operation of the Distributed Power System (DPS). This will lead to a heavy loss to the consumers appliances and industries as it disturbs the production process.

In this paper in order to resolve the above issues we proposed an interactive approach for enhancing the distributed power quality and fault Ride-through capability of a giant class DPS using Synchro-Phasor Control Units(SPCUs)which determines the power quality deviation due to fault based on the analysis of voltage and current phasors of the individual transmission lines. The method exploits the nodal voltage and mesh current analysis where the phase voltage, impedance and admittance matrices of the network and its dual circuit are developed and utilized for smooth detection and isolation of the fault without affecting the network. In addition, this method not only detects and isolates the faults but also corrects the conventional and reactive power losses and fluctuations in DPS. The proposed algorithm is schematically developed and implemented in the Matlab Environment..

KEYWORDS: Power Quality, Fault Isolation, Quality Correction, Distributed Power System and Power Distribution.

I. INTRODUCTION

Faults and machine malfunctions have an effect on the power quality in the electrical power systems and leads to losses for both electric utilities and customers [1]. In Distributed Power System(DPS) [4], safety and secure operation of the system highly rely on the level of power system operating condition monitoring. In conventional approaches the measurements provided by the remote terminal units (RTU) at the substations are sent to the control center. This data include real/reactive power in different lines as well as bus voltages and branch currents. The unmeasured states of the system are then estimated by state estimators that reside in the control center. Normal observability in power system is defined as knowing the voltage phasors of all the buses. Fault observability [18], on the other hand, is defined such that a system becomes fault observable when the voltage at two ends of each line and the current at any end of the line are determinable. Fault situating in power systems has been a noteworthy subject for power and assurance designs as of late for the reason of system unwavering quality. Power engineers dedicate a great deal of time to create distinctive Fault finding calculations so as to defeat this test in power system. In any case, it ought to be referenced that in dispersion systems, because of huge varieties of Fault impedance, Fault area issue has a larger number of difficulties than in transmission and age systems [4]. Besides, it isn't monetarily practical to power distribution systems with cutting edge staggering expense insurance hardware.

Protection devices have been generally used to help fault area in power frameworks. Jinsang et al. remove the size of fault current and fault sort from PQ observing devices to find the fault [15]. A strategy to find the fault line segment in power distribution systems utilizing Fault Indicators (FI) is introduced in [16]. After the faulted line is

Literature Review on Power System using TCSC with Fuzzy PID Controller

M.Giri Babu & Sk Salina Sulthana

#1assistant Professor,Dept Of Eee, Pbr Vits,Kavali,Nellore(Dt),Ap.

#2student ,Dept Of Eee, Pbr Vits,Kavali,Nellore(Dt),Ap.

Abstract:

The basic control objectives of a power system are system voltage control, system frequency control, protection and economic operation. Reactive power control

is a subset of overall system control and stability. A power system is said to be well designed if it gives a good quality of reliable supply. By good quality is said meant the voltage levels are maintained within the reasonable limits. If the voltage variation is more than a pre specified value, the performance of the equipment suffers and the life of most of the equipment is sacrificed. When power is supplied to a load through transmission line keeping sending end voltage constant, the load voltage undergoes variations depending upon the magnitude of the load. The higher the load receiver is the voltage variation. The transmission line distributed parameters throughout the line, on light loads or at no loads become predominant and consequently the line supplies charging VAR (generates reactive power). In order to maintain the terminal voltage at the load is adequate, reactive reserves are needed. FACTS devices like SVC can supply or absorb the reactive power at receiving end or at load end bus in transmission

system, which helps in achieving better economy in power transfer. The fuzzy control has emerged as one of the most active and fruitful areas for research in the applications of fuzzy set theory. Fuzzy control is based on fuzzy logic a logical system which is much closer in spirit to human thinking and nature language than traditional logical system. The fuzzy logic controller (FLC) provides a means of converting a linguistic control strategy based on an expert knowledge into an automatic control strategy. Knowledge acquisition in FLC application plays an important role in determining the level of performance of a fuzzy control system. FLC based on the fuzzy model of a process is needed when higher accuracy and reliability are required. Only small efforts have been expended in applying fuzzy logic as a controller to damp out the small signal oscillations for the FACTS based stabilizers as closed-loop. Index Terms: fuzzy logic controller (FLC), fuzzy logic, FACTS, Reactive power control, SVC , power system stability

AN IMPROVED METHODOLOGY FOR ENHANCING THE POWER FACTOR OF BRIDGELESS BUCK PFC CONVERTER

¹A. Bhakthavachala, ²S. Tara kalyani, ³K. Anuradha, ⁴G. Seetha Ravamma

¹Research Scholar, Department of EEE, Jawaharlal Technological University, Hyderabad, India

²Professor & Head, EEE, Jawaharlal Technological University, Hyderabad, India

³Professor & Head, EEE, VNR Vignana Jyothi Institute of Technology, Hyderabad, India

⁴M. Tech Students, Department of EEE, PBR Visvodaya Institute of Technology, Nellore, A.P

Abstract— The bridgeless buck power factor correction (PFC) converters highlight the benefits of low output voltage and high effectiveness while their inclination existing dead angles in the input current break down the input current music and power factor (PF). Intending to decrease the dead angles, another bridgeless buck PFC converter is proposed in this paper. Through coordinating the fundamental buck circuit and the helper fly back circuit with one attractive centre, the dead angles in input current of the proposed bridgeless buck PFC converter is wiped out so the power factor and input current music are improved. The proposed bridgeless buck PFC converter is intended to work in spasmodic conduction mode (DCM) with the benefits of basic controller and nature current moulding capacity. Another logic control circuit is given. The itemized hypothetical inductions and structure thought are exhibited. The test examination among the proposed bridgeless buck PFC converter, the customary buck PFC converter and the ordinary bridgeless buck PFC converter is shown to approve the adequacy of the new converter.

I. INTRODUCTION

THE active power factor correction (PFC) converters are widely applied in power electronic equipment to meet the rigorous international input current harmonics standard like IEC 61000-3-2 limits. Commonly, the boost converter is the most popular option as the PFC front-end because of its simple topology, excellent current-shaping performance, easy control and low cost. Nevertheless, the boost PFC converter emerges two main drawbacks [4]. One is that its proficiency shows an undeniable drop around 1%-3% at low line contrasted with high line. Another is that its high output voltage (380-400V) is adverse to the exchanging misfortunes of lift PFC front-end and its down-stream DC-DC converter.

Lately, the conventional buck PFC converter as an option of lift PFC converter in low power level applications has gotten a lot of considerations by scientists and designers, since it can give high proficiency at low line and low output voltage. Some hypothetical examination and new topologies of the conventional buck PFC converter have been contemplated. Be that as it may, when the information voltage is lower than the output voltage, the created nature dead angles shown in Fig. 1 of the conventional buck PFC converter deteriorate the power factor (PF) and input current harmonics seriously. Thus, it is not easy for the conventional buck PFC converter to meet the input current harmonics standards.

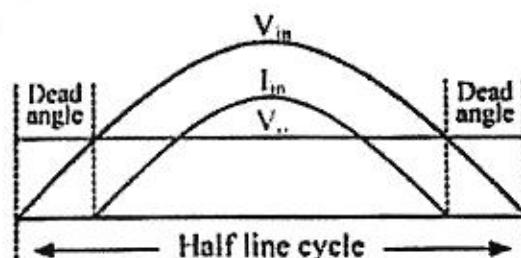


Fig. 1 Input current and input voltage of the conventional buck PFC converter.

II. LITERATURE SURVEY:

In order to improve the power factor and input current harmonics of the conventional buck PFC converter, some new control methods and new topologies were proposed. An improved peak current control scheme was proposed to improve the input current harmonics and the efficiency of the conventional buck PFC converter. A variable on-time (VOT) control method for conventional buck PFC converter was proposed to improve input current harmonics and power factor. A prediction of quadratic sinusoidal current modulation for

A NOVEL TOPOLOGY FOR FAST CHARGING OF ELECTRIC VEHICLE BATTERY

¹A. Bhaktavachala, ²S. Tarakalyani, ³K. Anuradha, ⁴M. Naga Mounika

¹Research Scholar, department of EEE, Jawaharlal Technological University, Hyderabad, India

²Professor & Head, EEE, Jawaharlal Technological University, Hyderabad, India

³Professor & Head, EEE, VNR Vignana Jyothi Institute of Technology, Hyderabad, India

⁴M. Tech Students, Department of EEE, PBR Visvadaya Institute of Technology, Nellore, A.P

ABSTRACT

A choice of logical converter topology plays a notable role in the battery charging of electric vehicles (EVs). In this paper, snubber less stage of rectifier cascaded with snubber less stage of the dc-dc converter is proposed in which stage I eliminates the need of front-end rectifier, and no further circuitry is required for switching operation of rectifier stage. Due to pulse width modulation (PWM) switches share the same gating signal for positive as well as negative cycle operation. Second stage converter uses asymmetrical pulse width modulation (APWM) technique in which zero voltage switching (ZVS) is achieved for all active switches, and near zero current switching (ZCS) for low side, active switches are attained during the charging range of the battery.

The size of auxiliary inductance required is decreased for ZVS with APWM compared to previously proposed APWM with snubber circuitry. Due to a reduction in the size of auxiliary inductor and absence of snubber circuit results in an efficient battery charger topology. The MATLAB simulation is done of the proposed converter to validate the results.

I. INTRODUCTION

Urban transportation has a solution in the form of electric vehicles (EVs) which can provide a solution to environmental as well as economic problems of the society which is the major discussion point now a day's. Generally, for >400 W battery charging system two-stage cascaded ac-dc and isolated dc-dc

converter for power conditioning is used. Moreover, to reduce conduction losses and variation in the DC link voltage many topologies has been already proposed.

But these are associated with drawbacks of a large number of passive elements and reduced power density. In isolated dc-dc converter stage efficiency, reliability, power density, compliance, and isolation are some important features for selecting a suitable configuration. Usually, isolated dc-dc converters with phase shifted modulation (PSM) has been preferred by many researchers, but it has various drawbacks like duty cycle loss, secondary rectifier diode having high voltage spikes, electromagnetic induction (EMI), zero voltage switching (ZVS) is associating with narrow load range for active switches. In ZVS topologies have been analyzed, but they have following drawbacks: ZVS is not achieved for leading leg switches at light load conditions, complex control and for high input voltage efficiency of the topology gets reduced. Fig. 1 shows the general overview of the proposed topology in which two stages of the converter is controlled by using PI controller separately. Stage I can maintain constant dc link voltage with low conduction and switching losses which acts as an input for stage II of the converter. In stage II isolated dc-dc converter is used so that higher power applications should easily achieve. In this paper, an EV battery charger topology is proposed which is ideally suitable for 3.8 KW battery charging. Stage I of the proposed topology does not contain a diode bridge rectifier,

A Reactive Power Variation based Method to Detect Islanding Condition for Inverter-Based Distributed Generators

P. RAJYA LAKSHMI¹, U. MAHESHI BABU²

¹Assistant Professor, Dept of EEE, PBR Visvadaya Institute of Technology and Science, Kavali, Nellore (Dt), AP, India.

²PG Scholar, Dept of EEE, PBR Visvadaya Institute of Technology and Science, Kavali, Nellore (Dt), AP, India.

Abstract: In this paper, an islanding recognition strategy for inverter-based distributed generators (DGs) is presented, which is based on irritating reactive power yield. Two sets of disturbances are designed in this strategy, which have distinctive amplitudes and length time. The first set of reactive power disturbance (FSORPD) is occasional with small amplitudes to break the reactive power adjust amid islanding, whereas the greatness of the second set of reactive power disturbance (SSORPD) is sufficient to constrain the recurrence to stray outside its threshold limits. Considering all the possible recurrence variety characteristics with the FSORPD in the wake of islanding, three criterions are designed for switching the disturbance from the FSORPD to the SSORPD. Since DGs situated at various positions have the same recurrence variety characteristics, the SSORPDs can be included distinctive DGs at the same time without the need of correspondence. In this manner, synchronization of the SSORPDs can be ensured for the system with different DGs and the technique can distinguish islanding with a zero non detection zone property. In addition, the strategy can be connected to the DG either working at solidarity power factor or supplying reactive power as well for its neighborhood load.

Keywords: Distributed Generators (DGs), Non Detection Zones (NDZs), Second Set Of Reactive Power Disturbance (SSORPD) First Set Of Reactive Power Disturbance (FSORPD).

L. INTRODUCTION

The inverter-based distributed generator (DG) uses renewable energy (photovoltaic, wind power, fuel cell, and micro turbine, etc.) to supply power for the network and local load [1], [2]. It is being widely applied to protect environment and make the power industry development sustainable. In order to ensure the safe operation of both the network and the DG, the DG has to be equipped with islanding detection function according to IEEE Std. 929-2000 and IEEE Std. 1547-2003 [3], [4]. Islanding is a condition in which a portion of the utility system that contains both the DG and load continues operating while its portion is electrically separated from the main utility. Unintentional islanding can result in power quality problems, serious equipment damage, and even safety hazards to utility operation personnel [5], [6]. Therefore, the

DG has to detect islanding effectively in this case and disconnect itself from the network as soon as possible to prevent the damages mentioned earlier. According to IEEE Std. 929-2000 and IEEE Std. 1547- 2003, a maximum delay of 2 s is required for the detection of an islanding and a generic system for islanding detection study is recommended as well, where the distributed network, the RLC load and the DG are connected at the point of common coupling (PCC). Generally, islanding detection methods can be classified into following three categories: 1) communication-based methods; 2) passive methods; and 3) active methods. Communication based methods do no harm to the power quality of the power system and have no non detection zones (NDZs) in the theory. However, the cost is much high because of the need of communication infrastructure and the operations are more complex as well [7].

In addition, the effectiveness cannot be guaranteed with the risk of communication breakdown [8]. Therefore, passive and active methods have been well developed. Passive methods determine the islanding condition by measuring system parameters such as the magnitude of the voltage at the PCC, the PCC voltage frequency, and phase jump [9]. Accordingly, over/under frequency protection (OFP/UFP), over/under voltage protection (OVP/UVP) and phase jump detection (PJD) are the most widely used passive islanding detection methods. These passive methods are easy to implement and do no harm to the power quality, but they may fail to detect islanding when the local load's power consumption closely matches the DG's power output [10], [11]. In order to reduce or eliminate the NDZ, active methods rely on intentionally injecting disturbances negative sequence components or harmonics into some DC parameters to identify whether islanding has occurred [12]-[14]. The active frequency drift [15], slip-mode frequency shift [16], and Sandia frequency shift [17] methods are three classical active methods by creating a continuous trend to change the frequency during islanding. Though active methods suffer smaller NDZs, they sacrifice power quality and reliability of the power system during normal operation. Moreover, some active methods have difficulty maintaining synchronization of the intentional disturbance

Enhancement of Power Quality using Hybrid Series Active Power Filter

S. MUNIRAJA¹, A. PRAVEEN²

¹Assistant Professor, Dept of EEE, PBR Visvadaya Institute Of Technology & Science, Kavali, Nellore (Dt), AP, India.

²PG Scholar, Dept of EEE, PBR Visvadaya Institute Of Technology & Science, Kavali, Nellore (Dt), AP, India.

Abstract: The debasement in power quality causes unfavourable temperate effect on the utilities and clients. Harmonics in current and voltage are a standout amongst the most regularly known power quality issues and are unravelled by the utilization of a half breed arrangement dynamic power channel (HSAPF). In this paper, another controller configuration utilizing sliding-mode controller-2 proposed to make the HSAPF more hearty and stable. An exact arrived at the midpoint of model of a three-stage HSAPF is likewise inferred in this paper. The outline idea of the powerful HSAPF has been confirmed through reproduction and test thinks about, and the outcomes acquired are examined.

Keywords: Hybrid Series Active Power Filter (HSAPF), Carrier-Based Pulse Width Modulation (CBPWM), Passive Power Filters (PPFs).

I. INTRODUCTION

In the course of recent years, the enormous increase in the use of nonlinear loads raises numerous power quality issues, such as high current harmonics, voltage distortion, and low power factor, on electrical lattice [1]. Consequently, the multiplication of nonlinear load in the system generates symphonious currents infusing into the air conditioner power lines. This distorted supply voltage and current causes breakdown of some security devices, consuming of transformers and motors, and overheating of cables. Subsequently, it is most vital to install compensating devices for the compensation of consonant currents and voltages created because of nonlinear load. Generally, passive power filters (PPFs) have been used as a compensating gadget to compensate distortion created by constant nonlinear loads. These filters [2] are designed to give a low-impedance way to harmonics and keep up great power quality with a simplest design and ease. In any case, passive filters have some disadvantages such as mistuning, resonance, reliance on the conditions of the power supply system, and vast values of passive components that prompt cumbersome implementations. For better power quality prerequisite, diverse topologies of active power filters (series active filters and shunt active filters) are associated with the nonlinear load. These filters are the most generally used solution, as they productively dispense with current distortion and the reactive power delivered by nonlinear loads.

In any case, they are by and large expensive and have high working losses [3],[4]. From now on, to defeat these drawbacks and to enhance the compensation execution with decreased cost of the APFs, a novel HAPF topology-III is presented by Peng et al. in 1988 [5], in which the APF is associated in series with the source as well as nonlinear load, and the PPF associated in parallel with the heap, which behaves as a power factor adjustment capacitor, is proposed. This topology [6] attracts substantially more regard for persevere through high-stack currents and works as a consonant isolator between the source and nonlinear load.

II. LITERATURE REVIEW

The control strategy is imperative to improve the execution of a hybrid series active power filter (HSAPF). Truly, numerous papers for a hybrid power filter have just proposed propelled techniques to lessen current harmonics made by these nonlinear loads. In [7], a direct input feed-forward controller is designed for a hybrid power filter. Be that as it may, this controller is difficult for getting both steady-state and transient-state performances with the direct control strategy because the dynamic model of the HSAPF system contains increase terms of control inputs and state variables. Because of the nonlinear characteristics of the HSAPF, a sliding-mode controller is presented in[8]. The sliding-mode control is known as a suitable control strategy for controlling nonlinear systems with indeterminate dynamics and disturbances because of its request decrease property and low sensitivity to disturbances and plant parameter variations, which reduces the weight of the prerequisite of correct demonstrating.

III. EXISTING SYSTEM

Besides, this sliding-mode control also diminishes the complicity of the criticism control design by means of decoupling the system into singular subsystems of low dimension. Because of these given properties, the usage of the sliding mode control can be found in the areas of power electronic switching devices. The rule of the sliding-mode control is characterized as to uphold the sliding-mode movement in the predefined switching surfaces of the system state space using discontinuous control. The switching surfaces should be selected in such a way that sliding movement would keep up desired dynamics movement as indicated by a specific execution basis. The customary control methods, such as linear- quadra

INTERCONNECTION OF HYBRID PV-WIND SYSTEM WITH GRID THROUGH A MULTI INPUT TRANSFORMER COUPLED BIDIRECTIONAL DC-DC CONVERTER

¹A. Bhakthavachala, ²G.Suman, ³K.HaraSivaKumar

¹Research Scholar, Dept. of EEE, Jawaharlal Technological University, Hyderabad, India

²Assistant professor, Dept. Of E.E.E, PBR Visvadaya Institute Of Technology And Science, Nellore

³PG Scholar ,Dept. Of E.E.E,PBR Visvadaya Institute Of Technology And Science, Nellore

Abstract

In this paper, a control strategy for power flow management of a grid-connected hybrid PV-wind-battery based system with an efficient multi-input transformer coupled bidirectional dc-dc converter is presented. The proposed system means to fulfill the load demand, deal with the power flow from various sources, infuse surplus power into the grid and charge the battery from grid as and when required. A transformer coupled boost half-connect converter is utilized to outfit power from wind, while bidirectional buck-boost converter is utilized to bridle power from PV alongside battery charging/releasing control. A solitary stage full-connect bidirectional converter is utilized for bolstering air conditioning loads and association with grid. The proposed converter engineering has decreased number of power change stages with less segment check, and diminished misfortunes contrasted with existing grid-connected hybrid systems. This improves the efficiency and dependability of the system. Simulation results acquired utilizing MATLAB/Simulink show the exhibition of the proposed control system for power flow management under different methods of activity.

I. INTRODUCTION

Fast consumption of petroleum product holds, regularly expanding vitality demand and worries over environmental change propel

power age from sustainable power sources. Sunlight based photovoltaic (PV) and wind have risen as mainstream vitality sources due to their eco-accommodating nature and cost viability. Be that as it may, these sources are irregular in nature. Henceforth, it is a test to supply steady and persistent power utilizing these sources. This can be tended to by effectively coordinating with vitality stockpiling components. The fascinating reciprocal conduct of sunlight based insolation and wind speed design combined with the previously mentioned points of interest, has prompted the exploration on their mix bringing about the hybrid PV-wind systems. For accomplishing the reconciliation of numerous inexhaustible sources, the conventional methodology includes utilizing committed single-input converters one for each source, which are connected to a typical dc-transport [1] - [15]. Be that as it may, these converters are not adequately used, because of the irregular idea of the sustainable sources. Furthermore, there are various power change stages which lessen the efficiency of the system. Critical measure of writing exists on the combination of sunlight based and wind vitality as a hybrid vitality age system with center primarily around its estimating and streamlining [7], [8]. In [7], the measuring of generators in a hybrid system is examined. In this system, the sources and capacity are interfaced at the dclink, through their devoted converters. Different commitments are made on their demonstrating perspectives and

Design And Implementation of A 15-Level Inverter using Facts Capability for Distributed Energy Systems

PASALA GOPI¹, ISKAPALLI NAGASEVITHA²

¹Associate Professor, Dept of EEE, PBR VITS, Kavali, Andhra Pradesh, India.

²PG Scholar, Dept of EEE, PBR VITS, Kavali, Andhra Pradesh, India.

Abstract: In this paper, a new single-phase wind energy inverter (WEI) with flexible AC transmission system (FACTS) capability is presented. The proposed inverter is placed between the wind turbine and the grid, same as a regular WEI, and is able to regulate active and reactive power transferred to the grid. This inverter is equipped with distribution static synchronous compensators option in order to control the power factor (PF) of the local feeder lines. Using the proposed inverter for small- to medium-size wind applications will eliminate the use of capacitor banks as well as FACTS devices to control the PF of the distribution lines. The goal of this paper is to introduce new ways to increase the penetration of renewable energy systems into the distribution systems. This will encourage the utilities and customers to act not only as a consumer, but also as a supplier of energy. Moreover, using the new types of converters with FACTS capabilities will significantly reduce the total cost of the renewable energy application. In this paper, modular multilevel converter is used as the desired topology to meet all the requirements of a single-phase system such as compatibility with IEEE standards, total harmonic distortion (THD), efficiency, and total cost of the system. The proposed control strategy regulates the active and reactive power using power angle and modulation index, respectively. The function of the proposed inverter is to transfer active power to the grid as well as keeping the PF of the local power lines constant at a target PF regardless of the incoming active power from the wind turbine.

Keywords: Modular multilevel converter (MMC), multilevel inverter (MLI), wind energy inverter (WEI).

I. INTRODUCTION

The role of power electronics in distribution systems has greatly increased recently. The power electronic devices are usually used to convert the nonconventional forms of energy to the suitable energy for power grids, in terms of voltage and frequency. Traditionally, utilities have to use capacitor banks to compensate the PF issues, which will increase the total cost of the system. The modern ways of controlling the PF of these power lines is to use small distribution static synchronous compensators (D-STATCOMs). The D-STATCOMs are normally placed in parallel with the distributed generation systems as well as the power systems

to operate as a source or sink of reactive power to increase the power quality issues of the power lines. Using regular STATCOMs for small-to-medium size single-phase wind applications does not make economic sense and increase the cost of the system significantly. This is where the idea of using smarter WEIs with FACTS capabilities shows itself as a new idea to meet the targets of being cost-effective as well as compatible with IEEE standards. The proposed inverter in this paper is equipped with a D-STATCOM option to regulate the reactive power of the local distribution lines and can be placed between the wind turbine and the grid, same as a regular WEI without any additional cost. The function of the proposed inverter is not only to convert dc power coming from dc link to a suitable ac power for the main grid, but also to fix the PF of the local grid at a target PF by injecting enough reactive power to the grid.

In the proposed control strategy, the concepts of the inverter and the D-STATCOM have been combined to make a new inverter, which possesses FACTS capability with no additional cost. The proposed control strategy allows the inverter to act as an inverter with D-STATCOM option when there is enough wind to produce active power, and to act as a D-STATCOM when there is no wind. There are a large number of publications on integration of renewable energy systems into power systems. A list of complete publications on FACTS applications for grid integration of wind and solar energy was presented. Several other applications of custom power electronics in renewable energy systems exist, including [17] an application of a custom power interface where two modes of operation, including an active power filter and a renewable energy STATCOM. Another application [18] looks at the currentsource inverter, which controls reactive power and regulates voltage at the point of common coupling (PCC). Varma et al. [19], [20] propose an application of photovoltaic (PV) solar inverter as STATCOM in order to regulate voltage on three phase power systems, for improving transient stability and power transfer limit in transmission systems. The authors called their proposed system PV-STATCOM. Similar to wind farms (when there is no wind), solar farms are idle during nights. We proposed a control strategy that makes the solar farms to act as STATCOMs during night when they are not able to produce active power.

Grid Interconnection of Renewable Energy Sources at the Distribution Level with Power-Quality Improvement Features

¹A. Bhakthavachala, ²S. Tara kalyani, ³K. Anuradha, ⁴Gudimitla Haribabu

¹Assoc. prof, PBR VITS, Kavali & Research Scholar, department of EEE, JNTU, Hyderabad, India-500085.

²Professor & Head, EEE, Jawaharlal Nehru Technological University, Hyderabad, India-500085.

³Professor & Head, EEE, VNR Vignana Jyothi Institute of Technology, Hyderabad, India-500085.

⁴PG scholar, Department of EEE, PBR Visvadaya Institute of Technology & Science, Kavali, A.P, India

Abstract — Sustainable power source assets (RES) are in actuality dynamically related in spread systems utilizing power electronic converters. This paper presents a novel control methodology for finishing most extraordinary favorable circumstances from these grid-interfacing inverters when presented in 3-phase 4-wire course systems. The inverter is controlled to execute as a multi-work device by intertwining dynamic power filter value. The inverter would in this manner have the capacity to be utilized as:

- 1) Power converter to implant power created from RES to the grid, and 2) shunt APF to compensate current unbalance, stack current sounds, stack open power demand and load impartial current.

These limits may be master either solely or in the meantime. With such a control, the mix of grid-interfacing inverter and the 3-phase 4-wire direct/non-straight unbalanced load at motivation behind typical coupling appears as balanced direct load to the grid. This new control thought is appeared with expansive MATLAB/Simulink reenactment considers and affirmed through automated banner processor-based lab exploratory results.

Record Terms—Active power filter (APF), passed on age (DG), spread system, grid interconnection, power quality (PQ), sustainable power source.

I. INTRODUCTION

ELECTRIC utilities and end customers of electric power are winding up logically stressed over dealing with the creating vitality request. Seventy five percent of total overall vitality ask for is given by the expending of oil based commodities. Regardless, extending air sulllying, an unsafe environmental deviation concerns, reducing non-sustainable power sources and their growing expense have made it essential to look towards inexhaustible sources as a future vitality game plan. Since the earlier decade, there has been a monstrous eagerness for a few countries on sustainable power source for power age. The market movement and government's helpers have furthermore enlivened the sustainable power source fragment advancement.

Sustainable power source (RES) facilitated at dissemination level is named as scattered age (DG). The utility is concerned in light of the high passage level of sporadic RES in scattering structures as it may speak to a peril to compose similar to soundness, voltage heading and power-quality (PQ) issues. Along these lines, the DG structures are required to agree to strict particular and managerial frameworks to ensure shielded, strong and successful operation of general framework. With the progress in power equipment and propelled control development, the DG structures would now have the capacity to be successfully controlled to redesign the system operation with improved PQ at PCC. In any case,

Power Quality Improvement in Grid Connected Wind Energy System

Mr.PasalaGopi & Ms. Koduru Sravanthi
pasala.cnc07@gmail.com
sravanthik1989@gmail.com

Abstract: Renewable energy resources (RES) are being increasingly connected in distribution systems utilizing power electronic converters. This paper presents a novel control strategy for achieving maximum benefits from these grid-interfacing inverters when installed in 3-phase 4-wire distribution systems. The inverter is controlled to perform as a multi-function device by incorporating active power filter functionality. The inverter can thus be utilized as: 1) power converter to inject power generated from RES to the grid, and 2) shunt APF to compensate current unbalance, load current harmonics, load reactive power demand and load neutral current. All of these functions may be accomplished either individually or simultaneously. With such a control, the combination of grid-interfacing inverter and the 3-phase 4-wire linear/non-linear balanced load at point of common coupling appears as balanced linear load to the grid. This new control concept is illustrated with extensive MATLAB/Simulink simulation studies and validated through digital signal processor-based laboratory experimental results.

Keywords: Active Power Filter (APF), Distributed Generation (DG), Distribution System, Grid Interconnection, Power quality (PQ), Renewable Energy.

I. INTRODUCTION

Electric utilities and end users of electric power are becoming increasingly concerned about meeting the growing energy demand. Seventy five percent of total global energy demand is supplied by the burning of fossil fuels. Increasing air pollution, global warming concerns, burning fossil fuels and their increasing cost have made it necessary to look towards renewable sources as a future energy solution. Since the past decade, there has been an increasing interest in many countries on renewable energy power generation. The market liberalization and government's incentives have further accelerated the renewable energy sector growth. Renewable energy source integrated at distribution level is termed as distributed generation (DG). The utility is concerned due to high penetration level of intermittent RES in distribution systems as it may pose a threat to network in terms of stability, voltage regulation and power-quality (PQ) issues. Therefore, the DG systems are required to comply with technical and regulatory frameworks to ensure safe, reliable and efficient operation of overall network. With the advancement in power electronics and digital control technology, the DG systems can now be actively controlled to balance the system operation with improved PQ at PCC.

However, the extensive use of power electronics based linear and non-linear loads at PCC generate harmonic currents, which may deteriorate the quality of power [2]. Generally, current controlled voltage source inverters used to interface the intermittent RES in distributed

systems. Recently, a few control strategies for grid connected inverters incorporating PQ solution have been proposed. In [4] an inverter operates as active inductor at a certain frequency to absorb the harmonic current. But the exact calculation of network inductance in real-time is difficult and may deteriorate the control performance. A similar approach in which a shunt active filter acts as active conductance to damp out the harmonics in distribution network is proposed in [5]. In [6], a control strategy for renewable interfacing inverter based on theory is proposed. In this strategy both load and inverter current sensing is required to compensate the load current harmonics. The non-linear load current harmonics may result in voltage harmonics and can create a serious PQ problem in the power system network.

Active power filters (APF) are extensively used to compensate the load current harmonics and load unbalance at distribution level. This results in an additional hardware cost. However, in this paper authors have incorporated the features of APF in the conventional inverter interfacing renewable with the grid, without any additional hardware cost. Here, the main idea is the maximum utilization of inverter rating which is most of the time underutilized due to intermittent nature of RES. It is shown in this paper that the grid-interfacing inverter can effectively be utilized to perform following important functions: 1) transfer of active power harvested from the renewable resources (wind, solar, etc.); 2) load reactive power demand support; 3) current harmonics compensation at PCC; and 4) current unbalance



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EMI Reduction in DC-Fed Induction Motor by Active Common-Mode Compensator

A. Bhaktha Vachala

Associate Professor,
Department of EEE,
PBR VITS Kavall,
Nellore, AP, India.

V.Sindhuja

PG Scholar
Department of EEE,
PBR VITS Kavall,
Nellore, AP, India.

ABSTRACT

A novel common-mode (CM) EMI active filter for dc fed motor drives is proposed. The active filter performs both the compensation of the CM voltage at the motor input and the mitigation of the leakage high-frequency CM currents, thus increasing the drive reliability and the vehicle electromagnetic compatibility (EMC). The filter scheme is based on a voltage feedback action and also includes a feed-forward action by exploiting a suitably estimated CM current. An optimized design of the CM voltage detection/injection systems is implemented. Moreover, the active filter is supplied by a smaller voltage than the dc link value; this permits a more performing amplifier to be used. The active filter behavior is analyzed theoretically and its performance is assessed by simulation. The realized proposed system shows a good efficiency and compactness.

Index Terms- Active filter, electromagnetic conductive interference, induction motor drive, vehicles.

INTRODUCTION

DC fed motor drives are currently used in a broad variety of applications. In particular, they are suited to vehicle applications (road and marine vehicles, aircrafts, etc.) and can be simply operated in a dc distribution system, such as in the case of some residential/commercial building dc grids [1], [2]. With reference to vehicles, the evolution of their electrical architectures has shown a growing use of electrical loads, such as drives and actuators. For example, the

more electric vehicle (MEV) [3], [4] concept encourages the employment of electrical power systems aimed at a better use of the high power loads. This is possible due to the introduction of power electronics to optimize fuel economy, environmental emissions, performance, and reliability of the vehicles, including sea, undersea, and air vehicles [1]–[5]. Therefore, a massive use of switching power converters is expected to improve the flexibility of the load management and overall vehicle energy saving. On the other hand, as far as the pulse width-modulated (PWM) drives are concerned, two main problems are encountered, which are related to the inverter high switching frequency operation. The first is the electromagnetic interference (EMI) toward the on-board power supply lines that can degrade the operation of other sensitive devices and systems coexisting in the vehicle environment. The second problem is related to the

drive reliability. Indeed, the CM voltage on the stator windings creates a shaft voltage by capacitive coupling through the motor air-gap, and consequently, electrostatic discharges are generated through the bearing lubricating film. The motor bearings suffer for such currents that are the cause of a dramatic reduction of the motor lifetime [6]–[8]. An additional problem is given by vibrations and noise generated by motor drives in both civil (passengers' comfort) and military (acoustic discretion) applications, producing bearing damage, which, in turn, amplifies the phenomenon. Technical literature exhibits several studies dedicated to the control and mitigation of the EMI in motor drives used both in industrial and in vehicular

PERFORMANCE IMPROVEMENT OF BRIDGELESS BUCK POWER FACTOR CORRECTION CONVERTER

¹A. Bhakthavachala, ²S. Tarn Kalynut, ³K. Anuradha, ⁴J. Padmavathi

¹Research Scholar, department of EEE, Jawaharlal Technological University, Hyderabad, India

²Professor, EEE, Jawaharlal Technological University, Hyderabad, India

³Professor, EEE, VNR Vignana Jyothi Institute of Technology, Hyderabad, India

⁴M Tech Students, Department of EEE, PBR Visvadhyam Institute of Technology, Nellore, A.P

Abstract— The bridgeless buck power factor correction (PFC) converters include the feature of low output voltage and high current while their inclination existing dead angles in the information current fall into current music and power factor. In bending to diminish the dead angles, the bridgeless buck PFC converter is proposed in this paper. Through incorporating the principle buck circuit and the assistant flyback circuit with one attractive centre, the dead angles in input current of the proposed bridgeless buck PFC converter is wiped out and the power factor and information current和谐 are improved. The proposed bridgeless buck PFC converter is intended to work in irregular conduction mode (DCM) with the benefits of straightforward controller and current molding capacity. Another control circuit is given.

INTRODUCTION:

Presently, single-stage ac–dc converters are generally applied in power supplies of home apparatuses, for example, continuous power supplies and battery chargers. Specifically, the power utilization of data innovation hardware has quickly expanded [1]. In this case, ac–dc converters are best regarding high productivity, minimal effort, and diminished weight. When all is said in done, the ac–dc converter is more flexibly for this gear, which requires a lower output voltage, for example, a 48-V dc output response, is developed of an ac-to-dc front-end converter with a power factor (P.F.) correction (PFC) work and a confined dc–dc

converter. The ac-to-dc front-end converter in the principal stage is required so as to give low-inclusive current harmonics in order to satisfy different guidelines, for example, IEEE 519 or IEC 61000-3-2 (JIS 61000-3-2). Consequently, various PFC converters and control techniques have been explored. The least difficult design of the ac–dc converter with a PFC work comprises of a diode rectifier and a chopper circuit.

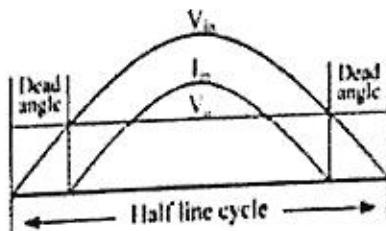


Fig. 1. Input current and input voltage of the conventional buck PFC converter.

As of late, the traditional buck PFC converter as an option of lift PFC converter in low power level applications has gotten a lot of considerations by scientists and specialists, since it can give high effectiveness at low line and low output voltage. Some hypothetical examination and new topologies of the customary buck PFC converter have been contemplated. However, when the information voltage is lower than the output voltage, the created nature dead angles appeared in Fig. 1 of the customary buck PFC converter crumble the power factor (PF) and information current harmonics truly. Along these lines, it is difficult for the traditional

Abstract: For high and medium electric power/voltage applications with the quality power, the multilevel inverters have become more popular. In this research paper for power quality improvement a new topology is proposed called Six Switch Cascaded Transformer (SSCT). The validity and performance of proposed topology is compared with H-Bridge Cascaded Transformer (HBCT). The simulation results show that the proposed SSCT multilevel inverter with filter gives low Total Harmonic Distortion (THD) over the HBCT multilevel inverter with filter. The THD generated by SSCT is 2.28% but at other hand, the HBCT generates THD of 2.56%.

Keywords: Cascaded Multilevel Inverter, Power Quality, H-Bridge Inverter, THD, Voltage Source Inverter

I. INTRODUCTION

In recent years, many industrial applications require higher power applications and some motor drives and utility applications require medium voltage and power. As a result, multilevel inverter has designed to achieve the high power at medium voltages, and these inverters are applicable to Power Grids, Electric vehicles, Batteries and renewable energy sources. The concept of multilevel inverter [1]-[4] was introduced in 1975 as to overcome the disadvantages of two-level inverters (Voltage source inverters which produced two levels i.e. +Vdc and -Vdc having more harmonic content) and to reduce the ripples in the output voltage. A multilevel inverter not only achieves the high power but also reduces the THD problems, and so on. A multilevel inverter uses high switching frequency pulse width modulation technique which gives the higher output voltage. Multilevel inverters can be basically classified into three topologies.

Neutral Point Clamped Multilevel Inverters [2] the DC source voltage can be converted into capacitor voltage and the number of levels is increased by increasing the number of diodes and diodes are used as clamping devices. The advantages of using this topology are it can be operated in Single DC Source, requires fewer components due to the usage of fewer capacitors and thereby reduces the overall cost of the multilevel inverter. The disadvantages are obtained limited output voltage and for more than three levels the capacitor unbalancing occurs and efficiency decreases.

In capacitor clamped multilevel inverters [4-7], the number of levels are increased by using the capacitors and these are also called as flying capacitor multilevel inverters. The capacitors charge float on the earth potential. It overcomes the disadvantages of NPCMLI by using the capacitors as clamping diodes. Capacitors can be pre-charged before using it in an inverter. To provide the balanced configuration, only one switch should be ON at a time. The advantages of capacitors clamped multilevel inverter are analyzing of the branch should be independent, voltage balancing of the capacitor and gives

better power quality performance. Capacitor pre-charging is difficult in capacitor clamped multilevel inverter.

- The Cascaded H-Bridge Multilevel Inverters [4], are the basic, well known and most commonly used multilevel inverters which are applicable to many applications as it requires less number of components when compared to other topologies. This multilevel inverter consists of H-bridge cells or modules which are connected in series as shown in the figure. 1 to produce the stepped output voltage waveform. The Stepped output voltage is obtained by increasing the number of H-Bridge cells and then the harmonics can be reduced to obtain the quality power. Each H-bridge cells consists of DC source with four switches to obtain the three phase output voltage i.e., +Vdc, 0, and -Vdc.

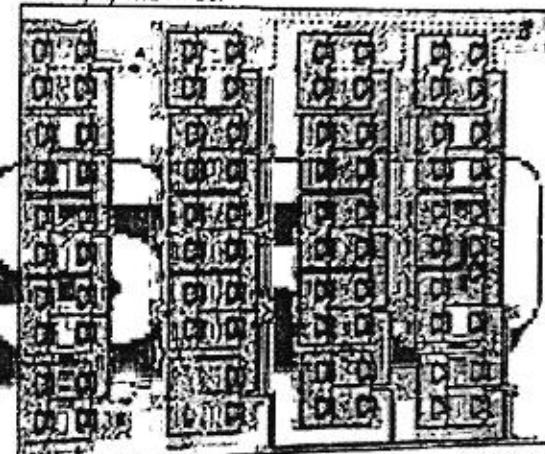


Fig. 1: Cascaded H-Bridge multilevel inverter for 11-level

II. MULTILEVEL INVERTERS WITH SINGLE DC SOURCE

The cascaded multilevel inverters play an important role in medium and high voltage applications as it requires fewer components compared to other topologies. In CHBMLI, increasing the levels increases the DC sources as each H-Bridge needs separate DC sources for each phase and availability of occurring short circuit at the input side. In some applications such as batteries in electric vehicles needs an only single source to reduce the size and cost of the inverter and high-frequency transformers are used for easy isolation.

To overcome the disadvantages of cascaded H-Bridge MLI, new families of topologies have been designed with single DC source and high frequency cascaded transformers. Some topologies with Single DC source are

- H-Bridge Cascaded Transformer (HBCT) Multilevel Inverter
- Combined H-Bridge cascaded transformer (CHBCT) multilevel inverter.
- Asymmetric Cascaded multilevel inverter.
- Sub multilevel inverter

Power Quality Improvement using Six Switch Cascaded Transformer

G. Suman¹ K. V. Harish Kumar Reddy²

¹Assistant Professor ²M. Tech. Scholar (Power Electronics)

^{1,2}Department of Electrical & Electronics Engineering

^{1,2}Visvadaya Engineering College, Kavali, Andhra Pradesh, India

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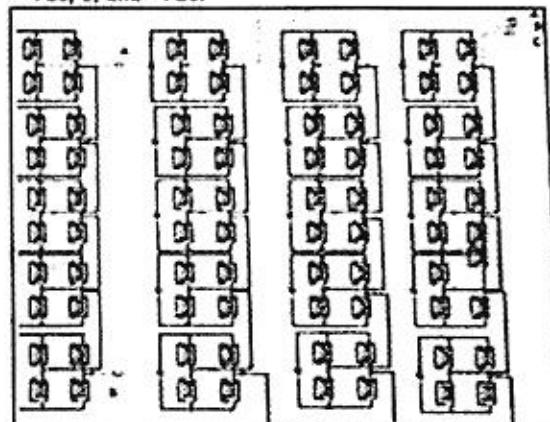
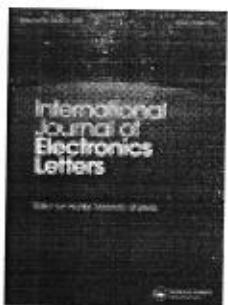


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A novel fan shaped UWB antenna with band notch for WLAN using a simple parasitic slit

V. N. Koteswara Rao Devana & A. Maheswara Rao

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Compact UWB monopole antenna with quadruple band notched characteristics

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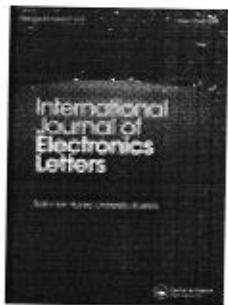
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V N Koteswara Rao Devana & Dr. A. Maheswara Rao

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Arduino Based Oil Tank Truck Alarm System for Illegal Fuel Hoarding Using GSM Module

R. NAVITHA DEVI¹, R. S. PRATHAP SINGH²

¹PG Scholar, Dept of ECE, PBR Visvadaya Institute of Technology & Science, Kavali, Nellore (Dt), AP, India.
²Associate Professor, Dept of ECE, PBR Visvadaya Institute of Technology & Science, Kavali, Nellore (Dt), AP, India.

Abstract: Illegal fuel hoarding usually done by irresponsible drivers when they transport the oil from terminal to the gas stations. Many technologies already used to prevent that case, but it has proved ineffectiveness until now. Therefore, the authors designed and created the automatic alarming system designed specially for oil tank truck. The system used microcontroller, GSM (Global System for Mobile communication) module, GPS (Global Positioning System), and ultrasonic sensors. Algorithm created based on survey done in the oil terminal and observation toward irresponsible driver habits when stealing the oil. Experiment results have proven that this system can do basic task to protect oil distribution from oil terminal to gas station, gas station to gas station, then returns to oil terminal. The application of this system is expected to be useful for reducing fuel scarcity due to illegal fuel hoarding and potentially help the gas station owners from financial losses with the much cheaper and effective system.

Keywords: AT mega 2560 microcontroller, Oil Theft, Low Power CMOS, UART.

I. INTRODUCTION

Automation is mandatory to handle all type of systems. It is made possible by embedded design which is a combination of both computer and mechanical system, often with real-time computing constraints. In today's world, it is common to control most of the devices, by automation since it optimizes by reducing the size and cost of the product and increase the reliability and performance. Embedded systems are based on Microcontroller and their applications range from portable devices to large installations and it also extends to large complex systems. Specialized internal communications network which requires for vehicle control such as assurance of message delivery of non-conflicting messages. It is very common to transportation system that has been affected by many causes such as fuel theft, premature dry out, fuel leakage, and improper fuel consumption in engine and disputes during the fuelling of vehicle. These issues cause a drastic loss in fuel level, which in turn makes the authorities to get into a great trouble. It leads to an excessive impact to the authorities because fuel theft is a major problem faced by the owners and drivers. It is a local error that occurs in the vehicle transported, because fuel theft offers the unauthorized persons in a

beneficiary part. Since it leads to huge loss for the investors but at the same time, it paves a way for the people who involve in illegal activities.

The government estimates that the availability of oil in the country will only survive in the next 11 years. The oil reserves depletion will then causing fuel shortages in various regions. This condition then became worse by illegal fuel hoarding that are done by irresponsible oil tank truck drivers when the truck transports oil between oil terminal to the gas station and gas station to the gas station then returns to the oil terminal. Illegal fuel hoarding are usually done by simply open the bottom loader trunk then with a little tricks, the valve can be opened without damaging the seal. Companies have applied many technologies to prevent this case. The first one was a cheap solution, simply applied the GPS (Global Positioning System) tracker to the trucks. GPS tracker used to monitor on a real time basis the location, route taken, and speed of the truck [3]. From the recorded route, we can analyze whether the driver was deviated from his route or not. If the route was deviated, we can imply that the driver did the illegal oil hoarding. But we can't detect if such activity done in the correct route. Furthermore, the monitoring can't be maximum done if the amount of the trucks is too many, for example, one hundred trucks per oil terminal. The second method was a costly method but it can detect the change in oil level. The device generally use pressure sensors or float gauges to check the liquid level in the tank [4]. Still, the use of float gauges are not effective to be used on the moving liquid storage, especially when the route of the trucks are hilly, as the measurement of liquid level can change easily. This method requires the tanks to be modified and well maintained.

A. Back Ground

In the aspect to facilitate and enhance the vehicle's features such as speed, mileage and volumetric level of fuel by providing it with the detection of level and restrict illicit activities using sensor. It is implemented using Vehicle Area Network (VAN) and embedded design. It suggests a computerized technique in heavy vehicles. Due to the high costs, theft more and more every day and the results in a large loss. In the proposed system, owner of the vehicle

An Adaptive Resource Allocation and Management in Full Duplex Heterogeneous Network

S. HAREESH¹, R. S. PRATAP SINGH²

¹PG Scholar, Dept of ECE, PBR Visvadaya Institute of Technology and Science, Nellore, AP, India.

²Associate Professor, Dept of ECE, PBR Visvadaya Institute of Technology and Science, Nellore, AP, India.

Abstract: Network is a set of devices connected by communication link this link can be used to Transferring of information from one device to another device Full-Duplex enables Simultaneous transmission and reception on the same frequency spectrum. Full-Duplex communication is considered as infeasible for a long time due to strong self-interference. In this paper our aim is to design Full-Duplex cellular networks with co-channel femto cells. Transmission power is high, cancellation of self-interference can be done. Residual-interference may impact to perform significantly. A new radio resource management scheme assigning downlink and uplink transmission, the gain of Self-interference cancellation is developed. Three available transmission modes of a frequency resource block and cross over between their achievable capacities are identified for mode selection of Resource -Block (RB), users then assigned resource blocks and transmit power levels are determined such that the total utility sum is maximized. To handle new femto cells, the transmit power levels of femto cells and their connected users are adjusted by co-ordination algorithm both data transmission and mode selection of a macro cell are protected.

Keywords: DACA, TDMA, FDMA, CDMA, OFDMA.

I. INTRODUCTION

In Full-Duplex Communication, A node transmits and receives wireless signals simultaneously on the same frequencies spectrum. In this communication transmission power and channel gains are high.

II. EXISTING METHOD

OFDMA-Orthogonal Frequency-Division Multiple Access is a multi-user version of the popular orthogonal digital modulation scheme. Multiple access is achieved in OFDMA by assigning subsets of subcarriers to individual users.

III. PROPOSED METHOD

To overcome the drawbacks of OFDMA and MAC protocol, here we introduced a new method in the proposed system, DACA.

A. DACA

Duplexing Aware Cellular Access Aim is to maximize the utility of the sum of the users. DACA also provides co-

ordination of co-channel femtocells which are overlaid on macrocells using common frequency spectrum. The total utility sum is maximized.

B. Procedure of DACA

Design of a radio resource management architecture for FD cellular Networks, identification of RB's transmission modes and crossover points between mode capacities. Which enabled networking and selection of a transmission mode? Design of an intracellular scheduler that decides transmission modes of RB's, associated users and power levels for downlink and uplink jointly to compact imperfect self-interference cancellation. Design of co-ordination algorithm, mechanism of co-channel femtocells that handles both new and conventional intercell interference scenarios.

IV. PRESENT DAY MOBILE COMMUNICATION

The present day cell correspondence utilizes an essential unit called cell, every phone comprises of a little hexagonal region with a base station situated at the focal point of the phone which speaks with the client. To suit different clients TDMA, FDMA, CDMA, OFDMA, and DACA are utilized.

A. Fundamental technique

When all is said in done, versatile station or supporter unit conveys to a settled base station, which imparts to the desired client at the flip side, portable station comprises of handset, control hardware, duplexer and a receiving wire, base station comprises of handset, channel multiplexer alongside reception apparatuses mounted on the tower, base station are likewise connected to a power hotspot for the transmission of the radio signs for correspondence and are called to a settled spine organize. To maintain a call automatically connected mobile from coverage area of one base station to coverage area of another base station it is called handoff. Larger coverage area can be divided into small segments called cell, each cell has own coverage area group of cells assembled together to form a cluster. Consider a node that transmits and receives wireless signals simultaneously on the same channel, the received signal R of the node is the sum of those transmitted by itself S_{self} and other network S_{other}

$$R = S_{self} + S_{other} + \sigma \quad (1)$$

Where σ Gaussian noise

Image Watermarking using QR Decomposition

V. PHANI BHUSHAN¹, D. MALATHI²

¹Associate Professor, Dept of ECE, PBR Visvadaya Institute of Technology & Science, Kavali, Nellore (Dt), AP, India.

²PG Scholar, Dept of ECE, PBR Visvadaya Institute of Technology & Science, Kavali, Nellore (Dt), AP, India.

Abstract: In this work, a new image watermarking algorithm on colour images is proposed. The proposed algorithm divides a cover image into three colour bands of red, green and blue. Then the following tasks are done on all three channels separately. First, each colour band is divided into patches of small sizes then the entropy of each patch is calculated. At this step a threshold is found based on the average entropy of all patches and following is applied to all patches which have entropy lower than the threshold. A wavelet representation of each patch is given by applying a discrete wavelet transform. Then Singular value decomposition, orthogonal-triangular decomposition, and a chirp z-transform are used to embed a watermark on the cover image. Several signal processing attacks are applied on watermarked images in order to robustness of the algorithm. The Proposed algorithm is compared with one conventional and two state-of-the-art algorithms. Experimental results show superiority of the proposed algorithm compare with other algorithm in the area of image watermarking.

Keywords: Water Marking, Steganography, LSB Technique, Singular Value Decomposition.

I. INTRODUCTION

Due to the rapid growth of the role of social networks and communications in everyday lives, taking and sharing images frequently has become a widespread practice, where a remarkable division of modern movable phones and computers, as well as digital cameras, handle high resolution imaging. However, transferring the foregoing images from a device to another one may be seriously exposed to the risks of security, manipulation and copyright attacks, unless it has been carefully taken care of by embedding the data into the media contents through watermarking [1], [2], [3], [4], [5]. Watermarking provides a vital platform aiming at protecting multimedia materials from a variety of undesired operations and illegal interferences. Such as distribution and manipulation, meaning that for a reliable performance, they need to generate seamless watermarks which could handle large volumes of data robustly and securely. The foregoing properties of watermarking schemes will be discussed in more details in what follows. One of the most important characteristics of a watermarking algorithm is the robustness of the resulting multimedia information against

possible attacks made through image processing techniques. Moreover, the watermark needs to be imperceptible, i.e. it should distort the data available in the original image. Furthermore, the data capacity is one of the main criteria in assessing the performance of a watermarking procedure, which stands for the largest amount of data that can be passed through the algorithm while preserving the visual appearance of the cover image.

Last but not least, security of a watermarking technique is of paramount importance, as it denotes the resistance of the process against unauthorized detection, embedding or removal. The studies reported on watermarking schemes in the literature heretofore [6], [7], [8], [9], [10] have categorized them into three major classes, namely, non-blind, semi-blind and blind. The underlying notion of the foregoing perception lies in the fact that in non-blind watermarking, both the original image and the watermark are required for embedding and extraction, whereas in semi-blind watermarking only the watermark image is needed, and in the blind variant, neither of them is necessary. Alternatively, watermarking algorithms can be classified based on the domain within which they operate, i.e. either the spatial domain or frequency, where the latter modify the parameter values according to the frequency-domain representation of the cover image [11]. On the other hand, watermarking in the spatial domain revises the pixel values, and consequently demands a comparatively lower computational complexity and cost, but suffers from the deficiency that relatively less amounts of information could be embedded into the cover image, which may result in a lack of robustness against signal processing operations [12], [13], [14].

II. OVERVIEW OF EXISTING METHOD

An information hiding system has been developed for confidentiality. However, in this chapter, we study an image file as a carrier to hide message. Therefore, the carrier will be known as cover-image, while the stego-object known as stego-image. The implementation of system will only focus on Least Significant Bit (LSB) as one of the steganography techniques as mentioned in below [14].

A. Least-Significant Bit (LSB) Technique

The least significant bit (in other words, the 8th bit) of some or all of the bytes inside an image is changed to a bit

Nonlocal Centralized and Adaptive PCA Based Denoising Technique for Color Images

V. PHANI BHUSHAN¹, P. KAVITHA²

¹Associate Professor, Dept of ECE, PBR VITS, Kavali, AP, India.

²PG Scholar, Dept of ECE, PBR VITS, Kavali, AP, India.

Abstract: We present an efficient image denoising method combining quad tree-based nonlocal means (NLM) and locally adaptive principal component analysis. It exploits nonlocal multi scale self-similarity better, by creating sub-patches of different sizes using quad tree decomposition on each patch. To achieve spatially uniform denoising, we propose a local noise variance estimator combined with denoiser based on locally adaptive principal component analysis. Experimental results demonstrate that our proposed method achieves very competitive denoising performance compared with state-of-the-art denoising methods, even obtaining better visual perception at high noise levels.

Keywords: Image Denoising, Non Local Means Denoising, Wavelet Domain, Pixel Wise Implementation.

I. INTRODUCTION

The main challenge in image denoising is to suppress noise efficiently while preserving significant image details, such as edges and textures. To this end, diverse de-noising methods have been proposed. Early smoothing methods, such as Gaussian filter, anisotropic filter, total variation, and bilateral filter, perform noise removal solely based on the information provided in a local neighborhood, which results in disturbing artifacts around edges. Later, transform-domain-based de-noising methods were proposed successively. The main idea in these methods is to separate signal and noise in a transformed domain (e.g., the wavelet domain). Noise in this transformed domain is removed by shrinking low-valued coefficients corresponding to noise and leaving large coefficients intact. Better techniques also exploit the spatial redundancy in a local neighborhood, but even so their local nature still limits their denoising performance. Then on local means (NLM) denoising method, which employs a different philosophy from the local denoising methods. Basically, this method estimates a noise-free pixel as a weighted average of all pixels in the image, where the weights are determined based on the similarity between the local neighborhood of the pixel being estimated and the local neighborhoods of other pixels.

NLM exploits the fact that images typically contain a large number of similar neighborhoods, which can contribute to denoising. Subsequently, many methods were proposed either to accelerate NLM or to improve its denoising performance. Furthermore, some methods combine the nonlocal principle with other techniques, resulting in state-of-the-art denoising performance, such as block-matching and 3D filtering (BM3D), learned simultaneous sparse coding (LSSC), and non locally centralized sparse representation (NCSR). The goal of image denoising methods is to recover the original image from a noisy measurement,

$$v(i) = u(i) + n(i), \quad (1)$$

where $v(i)$ is the observed value, $u(i)$ is the "true" value and $n(i)$ is the noise perturbation at a pixel i .

The best simple way to model the effect of noise on a digital image is to add a Gaussian white noise. In that case, $n(i)$ are i.i.d. Gaussian values with zero mean and variance σ^2 . Several methods have been proposed to remove the noise and recover the true image u . Even though they may be very different in tools it must be emphasized that a wide class share the same basic remark: denoising is achieved by averaging. This averaging may be performed locally: the Gaussian smoothing model (Gabor), the anisotropic filtering (Perona-Malik, Alvarez) and the neighborhood filtering, by the calculus of variations: the Total Variation minimization (Rudin-Osher-Fatemi), or in the frequency domain: the empirical Wiener filters (Yaroslavsky) and wavelet thresholding methods (Coiffman-Donoho). Formally we define a denoising method D_h as a decomposition

$$v = D_h v + n(D_h, v), \quad (2)$$

Where v is the noisy image and h is a filtering parameter which usually depends on the standard deviation of the noise. Ideally, $D_h v$ is smoother than v and $n(D_h, v)$ looks like the realization of a white noise. The decomposition of an image between a smooth part and a non smooth or oscillatory part is a current subject of research. Suitable functional spaces for this decomposition. The primary scope of this latter study is not denoising since the oscillatory part contains both noise and texture. The denoising methods should not alter the original image u .

Power Monitoring System for Automatic Metering and Billing

A. SUMAN KUMAR REDDY¹, V. KALYAN CHAKRAVARTHY²

¹Associate Professor, Dept of ECE, PBR Visvadaya Institute of Technology & Science, Kavali, Nellore (Dt), AP, India.

²PG Scholar, Dept of ECE, PBR Visvadaya Institute of Technology & Science, Kavali, Nellore (Dt), AP, India.

Abstract: Electricity is one of the fundamental necessities of human beings, which is commonly used for domestic, industrial and agricultural purposes. To measure the consumption of the current the normal electric meter requires manpower, involves wastage of paper and it is a time taking process. To overcome this we are replacing the normal electric energy meter with a smart energy meter which will communicate with consumer and electricity board. This paper focuses on developing a monitoring system for an automatic metering and billing system. The proposed system replaces traditional meter reading methods and enables remote access of existing energy meter by the energy provider. This system enables the electricity department to get the meter readings regularly without the person visiting each house. The smart energy meter communicates the information on consumption of electricity bill directly to the electricity board based on which the bill will be generated and sent to the consumer. In case if the electricity bill is not paid the smart energy meter automatically disconnects the power supply and if the bill is paid then the power supply is automatically reconnected. This system can be used in apartments to get the individual readings of the customers by interfacing more number of electric meters to the same system.

Keywords: Smart Energy Meter, Internet of Things, Microcontroller, GSM.

I. INTRODUCTION

In today's world everything depends on electric current because of the rapid increment in technology [1]. Due to this, the consumption of electricity is increased. Though electricity is very essential in day to day life, the proper utilization of it must be done. Hence it needs to be monitored and controlled as per the need since electricity consumption is increasing day-by day. A smart meter is an electronic device that records the consumption of electric energy and communicates the information to the electricity supplier for monitoring and billing [2]. If any consumer did not pay the bill, the electricity worker needs to go to their houses to disconnect the power supply. The wide proliferation of wireless communication propose and explore new possibilities for the next generation automatic meter reading whose goal is to help collect the meter measurement automatically and possibly send commands to the meters [3]. This system provides up-to-date information

on electricity consumption and in doing so it helps people to manage their energy usage and reduce their energy bills by switching off appliances which are unnecessary consuming electricity. The micro controller reads the data from energy meter and it sends a message to the user for every 50 units of power consumption, so the consumer can be able to know how many units of current is consuming in his home [4]. The wireless meter reading puts more control into the hands of both utilities and consumers by giving them more detailed information about power consumption. This allows utilities to better regulate supply.

So, remote wireless meter reading system and management kinds of network technologies has become a trend now. In the work presented here, a technique has been developed to read electricity meter readings from a remote server automatically using the existing GSM networks for cellular phones. This technique can be applied for gas or water meters as well. The meters send the meter readings like kilo-watt-hour (kWh), voltage, current, bill, etc. by SMS to a central server. The central server then stores the information in database for analysis and sends the bill to the customer mobile phone. The SMS based data collection can be done very quickly and efficiently. Data can be collected after any desired time interval such as hourly, daily, weekly, or monthly basis. As there is no human intervention in the entire process, there is no chance of human error and corruption. In the extremely bad weather conditions like heavy snow, rain, storm, etc the system will not hamper on collecting data as long as GSM networks are stable. The development cost of the SMS based remote meter will be higher than conventional meter but the electric supplier revenue will increase in the successive months because it will eliminate the possibility of corruption done by the customer or as of a reader. Remote meter can be used in residential apartments and especially in industrial consumers where bulk energy is consumed [5] [6].

II. SYSTEM CONFIGURATION

Smart meters enable two-way communication between the meter and the central system, which can be done via GSM module or Wi-Fi module. The heart of the system is micro controller. The micro controller reads the data from energy meter and it sends a message to the user for every 50 units of power consumption. Hence the consumer can able to know how many units of current is consuming in his

An Implementation of Adaptive Multipath Routing Algorithm for congestion control

N.Krishna Chaitanya, Research Scholar, ECE Department, JNTUCE, KAKINADA

S.Varadarajan, Professor, ECE Department, S V University College of Engineering, TIRUPATI

Abstract:- This paper proposes a better adaptive multi path routing technique for routing the data packets effectively from source to destination under congestion at a router. In traditional adaptive multi path routing techniques, if congestion occurred at a router then the route is changed from source to destination. In a single path routing algorithm, all the data packets transmitted through a single path, where the time taken to transmit the packets is more. This drawback is eliminated by using multi path routing technique, where the packets are transmitted through different paths. The proposed method provides a better solution for minimizing the congestion by rerouting the data packets over other paths, which are not utilized by the same in multi-path routing. This method avoids the unnecessary dropping of packets at a congested router and improves the network performance.

Keywords: Congestion, multi-path routing, Packets, router

I. INTRODUCTION

Most of the routing techniques in a network are based on a single path. As the number of data packets transferring increases, the data traffic increases in the network, as a result congestion will occur. To avoid this, multi-path routing [5] is preferred. In multi-path routing, the total available data is split and transferred among several paths.

Many multi-path routing protocol techniques have been proposed in networks. Some of the multi path routing techniques are Simultaneous Multi Path Communication (SMPC) [1], and Distribution and Congestion Minimized Multipath (DCMM) routing [2]. The existing methods are used to reduce the congestion in multipath routing.

In multi-path routing, still there is every possibility of occurrence of congestion. This paper proposes a method to avoid the congestion occurring in multipath routing. It reduces the unnecessary retransmissions and delay for data

packets, which will effect on the performance of the network. In order to avoid congestion, multi path routing along with load balancing is used [3, 4].

The rest of the paper organized as follows. Section 2 provides the overview on the existing multipath routing techniques. In Section 3, we introduce the proposed Adaptive Multipath Routing for Congestion Control (AMR-CC). The Section 4 discusses the flow chart used in this method. Section 5 presents the simulation results, and section 6 concludes the paper.

II. EXISTING METHODS

One of the multipath routing techniques is Simultaneous Multi-Path Communication [3]. There are two types of SMPC's available; they are (i) SMPC-I & (ii) SMPC-P. Here both the techniques are based on bandwidth control.

In SPMC-I [1], all paths for communication are treated equally. The bandwidths of each path are controlled independently. In this technique, it is possible to control the bandwidth for each path with no information of any other path.

In SMPC-P [1], the priority will be given to the paths that are used for data transfer. If the total communication bandwidth used for data transfer is greater than the available bandwidth, it uses priority control scheme. In this, the communication bandwidth is controlled by decreasing the bandwidth of one of the paths in ascending order of priority level among the paths having a lower priority.

In these methods, still there exists a problem because of reducing the transmission bandwidth in the network, which will increase the data transmission delay and reduces the network performance.



Traffic Aware Congestion Control Priority Based Efficient Adaptive Multipath Routing in Wired Networks with New Queuing Technique

N. Krishna Chaitanya¹ · S. Varadarajan²

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Abstract

This paper proposes a novel technique for data transmission from source to destination by using adaptive multipath routing with route adaptability. In this method, each packet is assigned with priority during transmission by considering the recent traffic of the system. Here an original queue up system is proposed to reduce delay at the router level, so that load on the router is reduced. Here in this paper a new routing technique called Traffic Aware Congestion Control Priority based Efficient Adaptive Multipath Routing is compared over a number of multipath routing techniques such as Multi Protocol Label Switching (MPLS) and Minimum Delay and Maximum Flow (MDMF), and Bandwidth Guaranteed Delay Guaranteed (BGDG). Here the proposed algorithm is simulated using NS-2 and simulation results are compared with MPLS, MDMF and BGDG routing techniques with various Quality of Service (QoS) parameters. Simulation results clearly show that proposed technique outcomes recovered likened to existing systems.

Keywords Multipath routing · Congestion · Priority · Queue

1 Introduction

Now a days, data transmission through the wired network has became very vital. Most of the research takes place in wireless networks [1]. But still, there is more scope for research in wired data networks, especially in congestion control. There is a more demand for real time data transfer in most of the internet applications [2]. Internet users are demanding for most reliable connectivity, high throughput, minimum delay and data priority [3, 4] the major constraints in internet are bandwidth, and associated delays. With the increase of number of internet users, traffic also increases. This causes congestion in the network [5]. A better solution for congestion control is by the usage of load distribution through multiple pathways [6]. The major challenging issue in multipath routing is to identify the

✉ N. Krishna Chaitanya
krishna50n@outlook.com

¹ ECE Department, JNTU College of Engineering, Kakinada, India

² S V University College of Engineering, Tirupati, India



DESIGN AND IMPLEMENTATION OF 64 BIT PARALLEL SELF-TIME ADDER (PASTA)

M.Haritha¹

harithareddy417@gmail.com¹

M.Pavitra²

¹PG Scholar, Dept of ECE, PBR Visvodaya Institute of Technology & Science, Kavali, AP, India

²Associate Professor, Dept of ECE, PBR Visvodaya Institute of Technology & Science, Kavali, AP, India

ABSTRACT: Adders being core building blocks in different VLSI circuits like microprocessors, ALU's etc. performance of adder circuit highly affects the overall capability of the system. In this paper we will present the design and performance of Parallel Self-Timed Adder. It is based on a recursive formulation for performing multibit binary addition. The operation is parallel for those bits that do not need any carry chain propagation. Simulation and Synthesis of the proposed paper are obtained by using Xilinx ISE 13.2. Results show that the proposed paper yields good results when compared with the existing Carry select adder.

Keywords: CSA, PASTA.

I. INTRODUCTION

Addition is the most common and often used arithmetic operation in microprocessor, digital signal processor, especially digital computers. Also, it serves as a building block for synthesis all other arithmetic operations. Thus performance of any circuit is mainly determined by speed of adder circuit. Circuits may be classified as synchronous or asynchronous. Synchronous circuits are based on clock pulse whereas an asynchronous circuit, or self-timed circuit, is not governed by a clock circuit or global clock instead, they often use signals that indicate completion of operations. Such a system tends to have better noise and electromagnetic compatibility properties than synchronous systems due to the absence of a global clock reference. Asynchronous operation by itself does not imply low power, but often suggests low power opportunities based on the observation that asynchronous circuits consume power only when it is active. The synchronous adders perform slowly due to its incremental nature of operation and therefore it is not recommended for fast and parallel adders. The basic building block of combinational digital adders is a single bit adder. The simplest single bit adder is a half adder (HA). The full adders (FA) are single bit

adders with the carry input and output. The full adders are basically made of two half adders in terms of area, interconnection and time complexity. This paper proposes the design of parallel self timed adder (PASTA). The design of PASTA is regular and uses half adders along with multiplexers with minimum interconnection requirement. The interconnection and area requirement is linear which makes it feasible to fabricate in a VLSI chip. The design operates in a parallel manner for those bits that do not require any carry propagation. It is self timed, which means that as soon as the addition is done, it will signal the completion of addition thereby overcoming the clocking limitations.

The rest of the paper is organized as the following. In section II CSA is explained. In Section III PASTA is designed, in Section IV Comparison results of the PASTA and CSA is discussed and finally ends with a conclusion in Section V.

II. Description of the Related Art

Multiplexer are one of the basic circuits of digital arithmetic. The speed at which a multiplexer can deliver the product of two binary numbers becomes critical in certain applications where repetitive multiplications are required. Applications requiring repetitive multiplications include various digital signal processing functions, such as Finite Impulse Response (FIR) filters, and 3D rendering. Such applications require both high throughput and fast response time. The design of multiplexer employed in these applications can have a significant effect on overall application performance.

Since multiplication is essentially repeated addition, it stands to reason that digital multiplexer rely heavily on adder circuits. Commonly used adder circuits include the half-adder, the full-adder, and the carry-look ahead adder. The half adder takes two 1-bit inputs, and returns two outputs, a sum bit and a

A Fire Alarming System for Monitoring Environmental Fire Issues based on YCbCr Method

L. SATHYA SUJITHA¹, N. VENKATA SAICHAND²

¹PG Scholar, Dept of ECE, PBR VITS, Kavali, AP, India.

²Assistant Professor, Dept of ECE, PBR VITS, Kavali, AP, India.

Abstract: Fire detection system in the surveillance system monitors the indoor environment and issues alarm as part of the early warning mechanism with ultimate goal to provide an alarm at early stage before the fire become uncontrollable. Conventional fire detection systems suffer from the transparent delay from the fire to the sensor which is looking at a point. The reliability of the fire detection system mainly depends on the positional distribution of the sensors. This paper proposes novel method of fire detection by processing image sequence acquired from a video. The proposed video based fire-detection system uses adaptive background subtraction to detect foreground moving object and then verified by the rule based fire color model to determine whether the detected foreground object is a fire or not. YCbCr color space is used to model the fire pixel classification. In addition to the motion and color the detected fire candidate regions are analyzed in temporal domain to detect the fire flicker. Some Morphological operations are used to enhance the features of detected fire candidate region. All of the above clues are combining to form the fire detection system. The performance of the proposed algorithm is tested on two sets of videos comprising the fire, fire colored object and non-fire. The experimental results show that the proposed system is very successful in detecting fire and /or flames.

Keywords: Fire Detection System, Video Based Fire Detection System, Fire Colored Object, Moving Object Segmentation.

I. INTRODUCTION

Fire detection system is the most important component in the surveillance system. Fire has been one of the major disasters, even though it is so important to fulfil certain activities in day-to-day life. Fire disasters will cause severe damage to human properties and cause terrible mental and physical injuries, if they are not detected at the right stage. Fire detection systems play an important role in safeguarding places against fire. To minimize fire risk and its impact, any company should apply sound fire detection method. A key aspect of fire protection is to identify a developing fire quickly and to alert the building's occupants and fire emergency organizations. A necessity of a Fire Detection System is the detection of fire conditions as early as possible, to provide enough time for Automated Systems/

Fire personnel for effective counter actions. Conventional fire detection systems detect and forecasts fire by using by-products of combustible such as smoke, flame, temperature which takes a significant time to develop the required level to trigger heat sensors and smoke sensors. Though these systems are widely used, they sometimes lead to high missing alarm rates, because of the lack of accurate fire information. The fire alarm cannot be sent out immediately, if the sensors are far from the fire because sensors are monitoring at narrow point. Accordingly, it is difficult to draw effective fire detection and obstruct the fire control or extinguishment and safe evacuation of occupants, especially in an indoor situation.

Present indoor fire detection systems mainly use conventional smoke detectors and fire extinguishers. Conventional fire detection techniques are based on the particle sampling, temperature sampling, relative humidity sampling, air transparency testing and smoke analysis in addition to the traditional ultraviolet and infrared sampling. Therefore fire detection techniques depend on the by-products of the combustible. In case of a fire, minimum detection latency is crucial to minimize the damages to the property and save lives. These sensors are inherently suffered from the time delay from the fire to the sensor. Furthermore, these are point sensors, looking at a point and the fire may not affect that point. Therefore the reliability of the conventional fire detection systems mainly depends on the positional distribution of the sensors. The system to be more accurate the sensors shall be densely distributed. Computer vision based fire detection systems have overcome these limitations since it detects the combustible instead of its by products. Furthermore, it detects through a camera, which is a volume sensor and covers a wide range from a single camera. Rinsurong kawong et al. Have proposed a method for early fire detection based on Lucas Kanade optical flow algorithm in real time in a video stream captured by normal camera.

The optical flow techniques implemented to calculate the flow analysis of fire, which used to extract the fire from the other moving objects. The work of Rinsurongkawong et al. consists of four steps. Those are the foreground object detection, chromatic feature detection, growth rate analysis and the fire dynamic and behaviour analysis. Moving

Environment Pollution Awareness through Vehicle Tracking System Using IOT

A Srinivasa Rao^{#1}, K Niranjan Kumar^{#2}, Ch Venkateswara Rao^{#3}, Ch Amarnath Sharma^{#4}

^{#1,2,4} Assistant Professor, Dept. of ECE, PBR Visvodaya Institute of Technology & Sciences Kavali, SPSR Nellore(D.T), Andhra Pradesh

^{#3} Assistant Professor, Dept. of ECE, Visvodaya Engineering College Kavali, SPSR Nellore(D.T), Andhra Pradesh

¹akurathi.srinivasarao@gmail.com

²kkniranjan Kumar@gmail.com

³venky_494@gmail.com

⁴sarma.chakrala@gmail.com

ABSTRACT- As we know that due to increase in population and traffic there is a need for placing vehicle trackers in automobiles so that we can have a live track on vehicle location. Our idea is to add an extra feature such as air pollution sensor to that module and to make the environment pollution details also visible to every one through the graphical user interface used by the passenger in order to track vehicle location. By this we hope that passengers may also have awareness about the environmental pollution in different locations along vehicle track. Due to this awareness there is a larger chance for reducing usage of automobiles by passengers at locations where they found higher pollution levels.

KEYWORDS- live track, pollution sensor, environmental pollution, LPC2148 processor

I INTRODUCTION

Automobiles running on diesel or gasoline fuels causes air pollution and these are main reasons for issues related to health of passengers and people living nearby. The effects of carbon dioxide on human beings at good health condition are summarised as follows:

TABLE I
CO₂ Normal Levels

CO ₂ level in ppm	Effects
600 - 1000 ppm	Complaints of stiffness and odors
1000 ppm	ASHRAE, OSHA standards
1000 - 2500 ppm	General drowsiness
2500 - 5000 ppm	Adverse health effects expected
5000 - 10000 ppm	Maximum allowed concentration for 8 hours working period
30000 ppm	Maximum allowed concentration for 15 minute working period

TABLE III
CO₂ Dangerous Levels

CO ₂ level in ppm	Effects
30000 - 40000 ppm	slightly intoxicating, breathing and pulse rate increase, nausea
50000 ppm	above plus headaches and sight impairment
100000 ppm	unconscious, further exposure death

FPGA Implementation of Reconfigurable FIR Filter using Carry Bypass Adder

Shaik Rizwan¹, Shaik Rasool²

Assistant Professor, Dept. of ECE, PBR Visvadaya Institute of Technology and Science, Andhra Pradesh, India^{1,2}

Abstract: Software-Defined Radio (SDR) is a radio communication system where components that have been traditionally implemented in hardware (e.g. mixers, filters, amplifiers, modulators/demodulators, detectors, etc.) are instead implemented by means of software on a personal computer or embedded system. Reconfigurable Finite Impulse Response (RFIR) filter plays an important role in SDR systems, whose filter co-efficient change dynamically during runtime. In this paper, Low Cost Carry Bypass adder Reconfigurable Finite Impulse Response (LC-CBA-RFIR) is introduced to perform the RFIR filter operations. DRAM-based Reconfigurable Partial Product Generators (DRPPG) consists of MUX and dual port distributed RAM, which has co-efficient to perform a FIR filter operation. With the help of Verilog code, the RFIR filter architecture was verified in Modelsim software. The same Verilog code was used to analyse the FPGA performances such as LUT, flip flop, slice and frequency. After implementing FPGA, all the performance improved in LC-CBA-RFIR method compared to the conventional methods.

Keywords: Reconfigurable FIR, Carry bypass adder, DRAM-based Re-configurable partial product generator

I. INTRODUCTION

Finite Impulse Response filter plays an important role in several signal processing applications in communication schemes, which performs interference cancellation, channel equalization, spectral shaping, matched filtering and more. Nowadays, various implementation and architecture methods have been presented to improve the performance of filters in terms of system complexity and speed. The FIR filter used in the majority of the Digital Signal Processing applications is based on electronic systems. The FIR filter coefficients change rapidly during execution time, in several application scenarios such as a digital up-converter, digital down converter, multi-channel filter and software-defined radio systems. Compared to the conventional non RFIR filter designs with reconfiguration / without reconfiguration, RFIR filters were consuming less resource and power. The discrete FIR filtering detects extensive utility in low-power and high performance Embedded Computing Systems that range from wireless transmitters/ receivers to image and video processing units. Present day research work mainly focused on the design of fully Integrated Circuits that used for wireless applications and employee in the most advanced fabrication methodologies. The main problems in portable telecommunication equipment are long battery life as well as weight, reduced cost and size, which needs low-power and small area integrated devices. The adaptive filter significantly used in the DSP applications. The tap delay line FIR filters whose weights updated by the "Widrow-Hoff Least Mean Square" algorithm used as an adaptive filter not only because of its simplicity and but also due to its satisfactory convergence performance.

So, the adaptive filter significantly employed in DSP applications. The shared LUT design for DA based Reconfigurable FIR Digital Filter minimized the hardware cost by decomposing the RAM. The power efficient FIR filter implementation for DSP applications based on FPGA with the support of Xilinx 14.5. Several forms of the structures were analyzed and observed that the pipeline FIR filter structure take a number of registers and indirectly it consumes more resources and power. So it is fit only for high speed DSP application. In multi-media applications and mobile communications, RFIR filters are required because of their main advantage like low-cost, less area, low power and high speed operation. The pipelined modified booth multiplier is used for RFIR filter architecture. This architecture has changed the order of the filter to reach significant savings in power consumption than existing architectures but this strategy is not possible for the low-power applications. Low power 8-bit based RFIR filter with minimum power consumption system improved efficiency but it used only for 8-bit data. Digital RFIR filter method consists of low power serial multiplier and serial adder, shift/adder, shift/multiplier combinational booth multiplier, folding transformation in linear phase architecture. The normal adder has a long critical path and consumes more power. Also, hardware utilization and the execution time is more in previous works. In this work, the CBA is used instead of normal adder. Due to the CBA adder, the RFIR architecture achieves better performance in terms of less area, power, and delay. In FPGA implementation, the number of LUTs, slice and flip-flop decreased in CBA-RFIR for different kinds of Virtex devices such as Virtex - 4 and Virtex - 5. This paper is composed as follows. In section 2, described some previous related work. In Section 3, shows Proposed LC-CBA-RFIR design architecture. In Section 4, mentioned experimental setup and results. The conclusion is made in Section 5.



**PARVATHAREDDY BABUL REDDY
VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE**
(Affiliated to J.N.T.U.A, Approved by AICTE and Accredited by NAAC with 'A' Grade)
KAVALI - 524201, S.P.S.R Nellore Dist., A.P. India. Ph: 08626-243930
DEPARTMENT OF MECHANICAL ENGINEERING

AY : 2018-19

S.NO	Title of paper	Name of the Student	roll number	Name of the Guide	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
1	Design and Analysis of a Diesel Engine Outlet bi metal value for open and closed condition	VULUVALA MADHUSUDHAN REDDY	15731D1502	V. Pavan Kumar	USART	2018-19	ISSN [ONLINE]: 2395-1052	http://isett.com/Content/PDF/Documents/JISARTV5/632821.pdf
2	Mechanical Characterization,Influence Process Parameters And Magnetic Field On Machining Characteristics Of Al/Cu Metal Matrix Composites In	BETHU SIVA TEJA	15731D1503	T.MUNEIAH	International Journal of Innovative Research in Advanced Technology	2018-19	ISSN 2319-8885	http://www.isett.com/upload/134765/ISETR17191-350.pdf
3	DESIGN OF CYLINDER FIN BODY USING DIFFERENT FIN PROFILES OF HERO	KAKU MAHESH	15731D1505	Dr.S PRakash	JISRAF--UGC Approved	2018-19	ISSN: 2277-7881	http://www.academia.edu/32458495/DESIGN_OF_CYLINDER_FIN_BODY_USING_DIFFERENT_FIN_PROFILES_OF_HERO.pdf
4	FABRICATION AND TESTING OF FSW (FRICTION STIR WELDING) OF ALUMINUM ALLOYS USING DIFFERENT TOOL PROFILES	IMMARAJU PENCHALA PRASAD	15731D1511	Dr. B Konda Reddy	INTERNATIONAL JOURNAL O	2018-19	ISSN:2277-7881	https://www.academia.edu/37852067/FABRICATION_AND_TESTING_OF_FSW_FRICITION_STIR_WELDING_OF_ALUMINUM_ALLOYS_USING_DIFFERENT_TOOL_PROFILES.pdf
5	Design and Development of Aircraft Wing RIB Optimized Weight Saving Using Optistruct	P VIJAY KUMAR	15731D1514	B. SUNEEL KUMAR	International Journal of Scientific	2018-19	ISSN 2319-8885	http://isett.com/uploads/154326/ISETR17213-360.pdf
6	Modeling and Analysis of a Drive Shaft Made of Different Materials	SHAIK ROHITH	16731D1502	B. AMARA BABU	International Journal of Scientific	2018-19	ISSN 2319-8885	http://isett.com/uploads/154325/ISETR17249-371.pdf
7	Optimization of Process Parameters using Taguchi Method While Machining H13 Hot Die Steel Material on Die Sink EDM	NALISETTY VIMALA PRATHA VENKATA DEVANDRA ADIYA	16731D1508	C. M. M. RAO	International Journal of Scientific	2018-19	ISSN 2319-8885	http://isett.com/uploads/1543162/ISETR17249-372.pdf
8	Design and Structural Analysis of Missile Nose Cone Using Different Materials	16731D1510	Y. RAJESH KUMAR	International Journal of Advanced	2018-19	ISSN 2348-2170	http://isett.com/uploads/154346/ISETR17255-216.pdf	
9	EXPERIMENTAL INVESTIGATION OF PROCESS PARAMETERS FOR MACHINING OF ALUMINIUM ALLOY 6082 WITH GRAPHITE TOOL ON EDM	UDAYAGIRI LAKSHMI PRASANNA	17731D1501	B.Suneelkumar	Journal of Emerging Technologies	2018-19	ISSN-2349-5162	http://www.letir.org/papers/IETR1907577.pdf
10	STATIC ANALYSIS OF ROLLING BALL BEARING BY USING HYPERMESH	YETURU SIVA KRISHNA	17731D1504	Y Rajesh Kumar	Journal of Emerging Technologies	2018-19	ISSN-2349-5162	http://www.letir.org/papers/IETR1906145.pdf
11	Analysis of Gas Turbine Combustor with Varying Air Inlet Velocity and Methane Fuel	KAMANURU GURUVENU	17731D1506	B Konda Reddy	Journal of Emerging Technologies	2018-19	ISSN-2349-5162	http://www.letir.org/papers/IETR1905156.pdf
12	DESIGN AND ANALYSIS OF AUTOMOTIVE BUMPER USING COMPOSITE MATERIALS	YEDDULA SARATH	17731D1508	T Muniesah	Journal of Emerging Technologies	2018-19	ISSN-2349-5162	http://www.letir.org/papers/IETR1906Q42.pdf

Head of Department
MECHANICAL ENGINEERING
Parvathareddy Babul Reddy Visvodaya Institute of Technology & Science
KAVALI - 524 201, Nellore District, A.P.



PARVATHAREDDY BABUL REDDY

VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE

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KAVALI – 524201, S.P.S.R Nellore Dist., A.P. India. Ph: 08626-243930



DEPARTMENT OF MECHANICAL ENGINEERING

COLLABORATIVE -INTERNATIONAL JOURNAL – SUMMARY

SCHEMES	NO. OF INTERNATIONAL JOURNALS				
	2019-2020	2018-2019	2017-2018	2016-2017	2015-2016
INTERNATIONAL JOURNAL	1	12	4	14	11

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MECHANICAL ENGINEERING

Parvathareddy Babul Reddy Visvodaya Institute of Technology & Science

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1	Design And Coupled Field Analysis Of Exhaust Manifold By Using Different Materials	B V Harish kumar	16731D1503	A.Madhava Rao	International Journal of Research	2019-20	p-ISSN: 2348-6848 e-ISSN: 2348-19712/19350	https://journals.pen2print.org/index.php/jir/article/download/19712/19350


Head of Department
MECHANICAL ENGINEERING & SCIENCE
MECHANICAL INSTITUTE OF TECHNOLOGY & SCIENCE
PAR VISWADAM INSTITUTE OF TECHNOLOGY & SCIENCE
KAVALI - 524 201, Nellore District, A.P.

Design And Coupled Field Analysis Of Exhaust Manifold By Using Different Materials

B.V. Harish Kumar¹, A.Madhava Rao²

¹P.G. Scholar, ²Guide, Asst. Professor

^{1,2} Branch: M.TECH, Machine Design (MD)

^{1,2} PBR Visvodaya institute of technology & science, Kavali

Mail Id : ¹bvharishkumar@yahoo.com, ²maddy.2009avula@gmail.com

ABSTRACT:

Exhaust manifold receives the exhaust gases comes out from chamber and passes to environment. They usually assembled with cylinder. The exhaust manifold is mounted on the cylinder head of the engine.

Back pressure can be produced at two places, i.e., when the exhaust valve opens and cam overlap taking place. Pressure measurements at the exhaust valve during the start of the exhaust stroke at bottom dead centre (BDC) to cam overlap at the end of the exhaust stroke/beginning of the intake stroke at top dead centre (TDC). The exhaust gases emitted from the cylinder come out at temperatures of nearly 800°C and with pressures ranging from 100 to 500 kPa. The exhaust manifold is subjected to high temperatures and pressures which will lead to thermo mechanical failure.

This project aims in redesigning an exhaust manifold by determining Thermal stresses and deflections exhibited under various operating conditions with different materials and temperatures. The objective is to ensure the suitability of the design for a particular material from the view point of reliability and serviceability. High end cad cam software such as Unigraphics and Ansys is used for modeling and analysis. The 3d Model of exhaust manifold is subjected to thermal and structural loads and results are tabulated according to the procedure for the Exhaust manifold.

CAD TOOL: UNIGRAPHICS

CAE TOOL: ANSYS

Keywords:- Exhaust manifold, Cast iron, Metal matrix, Turbulence effect, Thermal stress

INTRODUCTION

1.1 EXHAUST MANIFOLD

Exhaust manifold receives the exhaust gases comes out from chamber and passes to environment. The usually assembled with cylinder. Cast iron is material used for exhaust manifolds. Factors to be considered during the design and development of exhaust manifold

A. Runner length This is arguably one of the most important factors. First would be to make sure that the runners are as equal length as possible. The idea being that the exhaust pulses will be spaced out evenly and arriving at the turbine wheel on the turbo at their own time in the firing order.

B. Runner volume Runner volume needs to be considered when building a turbo manifold. While a larger runner diameter does facilitate lower exhaust backpressure for better flow on the top-end, it does cause a lower exhaust velocity. A lower exhaust velocity will cause longer spool times, and less transient response out of the turbo.

C. Collectors A collector's job is to tie all of the cylinder's pipes together in one common place and send them into a single exit pipe. A collector is generally a conglomeration of pipes all merged together, allowing for a smooth transition from the primaries or secondaries into the rest of the exhaust.

Design and Analysis of a Diesel Engine Outlet bi metal Valve for open and closed conditions

V. Madhu Sudhan Reddy¹, V. Pavan Kumar²

^{1,2} p.b.r.visvodaya institute of technology & science kavali, nellore (dist), andhra pradesh

Abstract- The valves used in the IC engines are of three types: Poppet or mushroom valve or Sleeve valve or Rotary valve. Of these three types, Poppet valve is most commonly used. Since both the inlet and exhaust valves are subjected to high temperatures of 1930°C to 2200°C during the power stroke, therefore, it is necessary that the materials of the valves should withstand these temperatures. The aim of the project is to design analysis of an exhaust valve for a four wheeler diesel engine using theoretical calculations. 2D drawings are drafted from the calculations and 3D model is done in solid works. Transient Thermal Analysis and Thermal analysis is done on that component using open and closed conditions. For 5000 cycles at the time of when valve is closed is 127.651 sec and valve is opened 127.659 sec. The materials used for exhaust valve for tail end will be same thru out the analysis where as head material will be silicon chromium steel and titanium carbide will be changed alternatively for head and will analysis both transient & thermal analysis for both closed and open end conditions. After developing model in solid works will be doing analysis by using cosmos simulation analysis

Keywords- IC Engine, Exhaust Value, head end, tail end Silicon Chromium Steel, titanium carbide, Transient Thermal analysis, thermal analysis, open condition, closed condition

I. INTRODUCTION

1.1 INTRODUCTION TO IC ENGINE VALVE About Valves

Engine Valve is one of the main parts which are used in all IC Engines. Each cylinder in the engine has one inlet and one exhaust valve. Now a days engine are designed with multi valves viz., two inlet and one exhaust two inlet and Two exhaust valves which prevents air pollution and improves engine efficiency

Function of Inlet Valve

The inlet which operates by the action of Tappet movement, allows air and fuel mixture into the cylinder

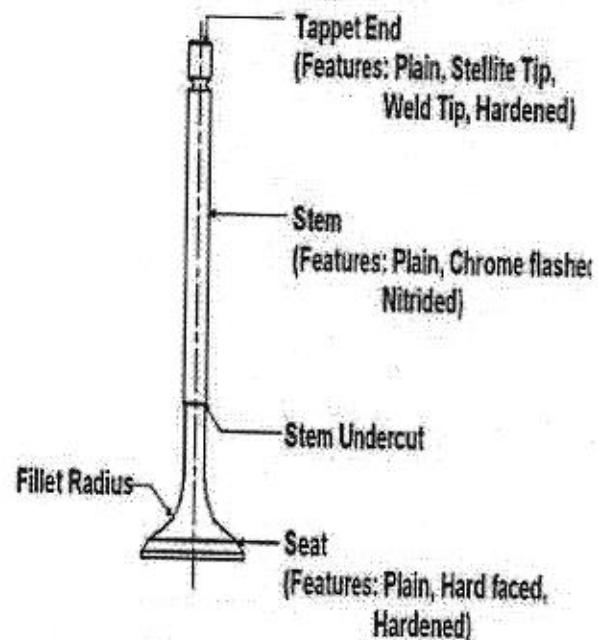
Function of Exhaust valve

The exhaust valve allows burnt gases to escape from the cylinder to atmosphere.

Valve Efficiency

Depends on the following characteristics like Hardness, Face roundness and sliding properties capable to withstand high temperature etc. As compared to inlet, exhaust valve operates at high temperature as exhaust gases (around 800 Deg C) escape through it. As it resulting in early ways and gets corrosion, austenitic steel is used for manufacture of exhaust valve and martens tic steel is used for manufacture of inlet valve. The manufacturing process involves upset and forging, heat treatment and machining (turning and grinding) and special processes like TIG welding, Projection Welding, PTA Welding, Friction Welding, Induction Hardening and Nitriding.

Important Features on the valve



1.2 INTRODUCTION TO CAD

Mechanical Characterization, Influence of Process Parameters and Magnetic Field on Machining Characteristics of Al/Cu Metal Matrix Composites in EDM

BETHU SIVA TEJA¹, THANJAVURU MUNEIAH²

¹PG Scholar, Dept of Mechanical, PBR Visvodaya Institute of Technology & Science, Kavali, AP, India.

²Assistant Professor, Dept of Mechanical, PBR Visvodaya Institute of Technology & Science, Kavali, AP, India.

Abstract: Metal Matrix Composites (MMC) are an important group of structural materials used in automotive, defense and aerospace applications because of their low density, high specific strength and modulus, excellent physical and mechanical properties compared with the corresponding monolithic materials. Among a variety of MMCs produced in last few decades, Aluminum matrix composites reinforced with various particles have attracted many researchers. In the present work Aluminum is reinforced with the Copper of different weight. Percentages(0%,10%,15%,20%), using stir casting technique. The objective of work is to study the Mechanical Characterizations like Tensile Strength, Compression Strength, Hardness of all the different composition. Electro Discharge Machining (EDM) is an unconventional machining process which is most successful and extensively recognized process for machining very hard materials, intricate profiles and small holes with high accuracy. Only electrically conductive materials can be machined by this process. Here the Pure Aluminum and Copper shows the good conductive materials. The Al-Cu Metal Matrix Composites is machined using the Graphite electrode on spark Erosion Machine-SN35. The objective of the work is to experimentally study the influence of process such as samples (Different % Compositions), Current (I), Voltage (V), Pulse ON Time (T_{ON}), Pulse OFF Time (T_{OFF}) using with and without Magnetic field to study Material Removal Rate (MRR), Tool Wear Rate (TWR), and Surface Roughness (R_a). The process parameters are optimized for maximum Material Removal Rate, Minimum Tool Wear Rate, and Minimum Surface Roughness based on experimental results by using analysis of Variance done by DOE and optimization for best machining can be done by response surface methodology.

Keywords: Metal Matrix Composites (MMC), Electro Discharge Machining (EDM) Aluminum and Copper (Al-cu), Material Removal Rate (MRR), Tool Wear Rate (TWR), and Surface Roughness (R_a).

I. INTRODUCTION

Metal matrix composites (MMCs) comprise, a pure metal or alloy as framework material, and the reinforcement as particulates, bristles or continuous fiber. Metal matrix composites have some alluring properties which incorporate elevated temperature applications, high transverse strength, high electrical conductivity, predominant thermal conductivity and high wear resistance. Contingent on the application in benefit, an assortment of composites with various blends of matrix materials and reinforcements are being delivered through different fabrication methods. These composites are manufactured by the expansion of a reinforcement phase to the matrix utilizing one of the accompanying procedures in particular powder metallurgy, spray atomization and co-deposition, plasma spraying, stircasting (compo casting) and squeeze casting. MMCs with fiber reinforcements are the underlying examinations through appropriate procedures. Costly assembling cost, anisotropy and limited optional preparing prompted the utilization of particles/short fibers/whiskers as reinforcements in BMMCs. Reinforcing with ceramic particulates stretched

out its applications to a more prominent flexibility and extensive variety of properties. Metal matrix composites reinforced with ceramic particles are broadly utilized because of their high specific modulus, strength and wear resistance.

Mechanical Characterization on Al-Cu Metal Matrix Composites: al-cu composites were developed successfully by stir casting technique tensile test results shows as the copper content in the specimen increases the tensile strength increases gradually up to 15% copper content in the specimen. On the further increase in the copper content there is decrease in the tensile strength due to porosity. Compression test results shows as the copper content in the specimen increases the compression strength increases gradually up to 15% copper content in the specimen. On the further increase in the copper content there is decrease in the compression strength due to formation of the cracks. Hardness test results shows as the copper content in the specimen increases the hardness increases gradually up to 15% copper content in the specimen. On the further increase

DESIGN OF CYLINDER FIN BODY USING DIFFERENT FIN PROFILES OF HERO HONDA PASSION

¹ K. Mahesh, ² Dr. S. Praksah,

¹ Register no: 15731D1505, M. Tech, Dept of Mechanical Engineering, P.B.R. VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE, Kavali, Nellore (Dist), AP, India.

² Professor, Dept of Mechanical Engineering, P.B.R. VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE, Kavali, Nellore (Dist), AP, India.

Abstract:

The Engine cylinder is one of the major automobile components, which is subjected to high temperature variations and thermal stresses. In order to cool the cylinder, fins are provided on the cylinder to increase the rate of heat transfer. By doing thermal analysis on the engine cylinder fins, it is helpful to know the heat dissipation inside the cylinder.

. The main aim of the project is to Design cylinder fins. Materials used for cylinder fin body are Aluminum alloys.

Parametric models of cylinder with fins have been developed to predict the transient thermal behavior. The 3D modeling software used is Pro/Engineer.

Pro/engineer is introduced by PTC Company. PTC means Parametric Technology Corporation.

We also design that Part using Reverse Engineering Process. And also we study what type of cooling systems and what are the modules used for designing. We know that what is the Importance for Designing and what the methods used for Manufacturing.

In this paper we are changing the fin section from straight section to curvature section and Taper section also calculate the heat dissipation rate.

In this we are know the Procedures in Manufacturing. Now days we are using Aluminum for Manufacturing because it's lower weight.

Analysis is done in Solid works. Solid works is 3D Modeling and Simulation Software.

Analysis is done in COSMOS Module.

1. Introduction

An extended surface (also known as a combined conduction-convection system or a fin) is a solid within which heat transfer by conduction is assumed to be one dimensional, while heat is also transferred by convection from the surface in a direction transverse to that of conduction.

Heat transfer is classified into three types. The first is conduction, which is defined as transfer of heat occurring through intervening matter without bulk motion of the matter. A solid has one surface at a high temperature and one at a lower temperature. This type of heat conduction can occur, for example, through a turbine blade in a jet engine.

The outside surface, which is exposed to gases from the combustor, is at a higher temperature than the inside surface, which has cooling air next to it. The second heat transfer process is convection, or heat



FABRICATION AND TESTING OF FSW (FRICTION STIR WELDING) OF ALUMINIUM ALLOYS USING DIFFERENT TOOL PROFILES

Author-1 I. Penchala Prasad, M. Tech Pursuing Student, Author-2 Dr. B Konda Reddy, Associate Professor.

Department of Mechanical Engineering,

P.B.R. VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE Kavali, Nellore (Dist), Andhra Pradesh.

Abstract - Friction-stir welding (FSW) is a novel green solid state joining process particularly used to join high strength aerospace aluminum alloys which are otherwise difficult to weld by conventional fusion welding. Unlike other solid state joining technique, in Friction stir welding a third body contact by tool will generate the additional interface surfaces and finally all the surfaces are coalesced with each other by applied pressure and temperature and form solid state weld.

This work shows overview of Friction stir welding which includes the basic concept of the process, microstructure formation, influencing process parameters, typical defects in FSW process and some recent applications.

In this project, FEA analysis is performed for friction stir welding of different aluminum alloys. The welds are produced by varying the process parameters; the rotational speed was varied between 900 to 1800 rpm and the welding speed varied between 40 and 300mm/min. A parametric model with the weld plates and cutting tool is done in ProE.

The effects of different (square and round) tool pin profiles on the friction stir welding are also considered for analysis. Different tool pin profiles are square, circular square with thread. We are using Vertical milling machine for doing welds. And also we are doing Tensile testing, Hardness and Microscopy for Structure at welding spots. Modeling is done in proe software and analysis is done in Ansys. The best parameters found from the experiments are 1800 rpm square is better for welding using HSS tool.

1. Welding

Welding is the process of joining together two pieces of metal so that bonding takes place at their original boundary surfaces". When two parts to be joined are melted together, heat or pressure or both is applied and with or without added metal for formation of metallic bond.

FRICITION WELDING PROCESS:

divided into two types they are listed below.

- Friction welding
- Friction stir welding

ADVANTAGES

condition

- Improved safety due to the absence of toxic fumes or the spatter of molten material.
- Easily automated on simple milling machines — lower setup costs and less training

DISADVANTAGES:

- Exit hole left when tool is withdrawn.
- Heavy duty clamping of parts is required

FRICTION WELDING:

-state joint process that produces coalescence of materials under compressive force contact of workpieces rotating or moving relative to one another to produce heat and to plastically displace material from the faying surfaces

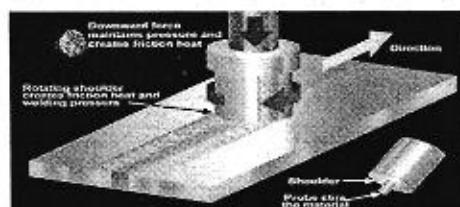


Figure-1 Friction stir welding process.

2. EXPERIMENTAL WORK:

Introduction to Experimental work:

The base materials used for this investigation is AA6061 and AA5083 aluminum alloys with standard composition has been presented in Table.1 & 2. The raw material is cut in to pieces with the size of 100x75x6 mm for processing. A vertical milling machine is converted in to Friction Stir welding machine for welding process.

Then, a small hole with the same diameter as the pin

Design and Development of Aircraft Wing RIB Optimized Weight Saving Using Optistruct

P. VIJAYA KUMAR¹, B. SUNEEL KUMAR²

¹PG Scholar, P.B.R.Visvadaya Institute of Technology & Science, Kavali, Nellore (Dt), AP, India.

²Assistant Professor, P.B.R.Visvadaya Institute of Technology & Science, Kavali, Nellore (Dt), AP, India.

Abstract: This master thesis work presents the development of a parameterized automated generic model for the structural design of an aircraft wing. Furthermore, in order to perform finite element analysis on the aircraft wing geometry, the process of finite element mesh generation is automated. Aircraft conceptual design is inherently a multi-disciplinary design process which involves number of disciplines and expertise. In this thesis work, it is investigated how high-end CAD software's can be used in the early stages of an aircraft design process, especially for the design of an aircraft wing and its structural entities wing spars and wing ribs. The generic model that is developed in this regard is able to automate the process of creation and modification of the aircraft wing geometry based on a series of parameters which define the geometrical characteristics of wing panels, wing spars and wing ribs. Two different approaches are used for the creation of the generic model of an aircraft wing which are "Knowledge Pattern" and "Power Copy with Visual Basic Scripting" using the CATIA V5Software. A performance comparison of the generic wing model based on these two approaches is also performed.

Keywords: CAD, EKL (Engineering Knowledge Language), CATIA V5Software.

I. INTRODUCTION

Aggressive weight targets and shortened development time-scales in the civil aircraft industry naturally calls for an integration of advanced computer aided optimisation methods into the overall component design process. Airbus has in a number of recent studies used Altair's topology, sizing and shape optimisation tools in an attempt to achieve lighter and more efficient component designs. Considered components include wing leading edge ribs, main wing box ribs, different types of wing trailing edge brackets as well as fuselage doorstops and fuselage door intercostals. The designs for most of these components are to some extent driven by buckling requirements but also by for example stress and stiffness requirements. Finite element based topology, sizing and shape optimisation tools are typically used as part of a two-phase design process. Firstly, a topology optimisation is performed to obtain a first view on an optimal configuration for the structure – an initial design with optimal load paths. Next, the suggested configuration is interpreted to form an engineering design and this design is then optimized using detailed sizing and shape optimisation methods with real design requirements. Numerous examples from the automotive industry have demonstrated the ability of such an approach to quickly generate optimum components for stiffness, stress and vibration designs. The success of the above optimisation scheme relies on a topology optimisation to suggest a good initial design. Numerous examples have shown that the major weight savings are achieved when selecting the type of design and

not when doing the detailed design optimisation. The aerospace industry is very aware of this and often spends considerable time studying different design alternatives.

Efficient designs have therefore evolved through decades of manual optimisation. However, topology optimisation methods may still have a place as new sizes/types of aircraft are designed and as new materials and manufacturing processes continue to appear. This paper studies the use of Altair's finite element based topology, sizing and shape optimisation tools for design of aircraft components. Aircraft components are often stability designs and topology optimisation methods still completely lack the ability to deal with buckling criteria. The present work therefore uses the traditional compliance based topology optimisation method to suggest an optimal design configuration, which is engineered to provide the design with some stability. Finally, a detailed sizing/shape optimisation is performed including both stability and stress constraints. At the start of the droop nose optimisation program Airbus UK and Altair Engineering both had very limited experience applying the topology, sizing and shape optimisation to the design of aircraft components. The very short work program left very little time to investigate how to best represent load/boundary conditions and how to best handle local and global buckling criteria in the detailed sizing/shape optimisation. A lot of problems were encountered during the work, and not all of the problems could be resolved in the short time frame. The work

Modeling and Analysis of a Drive Shaft Made of Different Materials

SK. ROHITH¹, B. AMARA BABU²

¹PG Scholar, Dept of Mechanical Engineering, PBR Visvodaya Institute of Technology & Science, Kavali, AP, India.

²Associate Professor, Dept of Mechanical Engineering, PBR Visvodaya Institute of Technology & Science, Kavali, AP, India.

Abstract: In this paper, the rotor problems and vibration phenomena associated with simple models are often observed in the real world, in this sense topics treated essential for an understanding of the vibration analysis and seeing what makes rotors different in nature from other structure. In present work an attempt has been to estimate deflection, stresses under subjected loads & natural frequencies using FEA and a comparison is made with conventional steel drive shaft. Materials are taken steel, aluminum boron epoxy, aluminum silicon carbide, carbon epoxy. Comparing the results which one gives better performance and withstanding values next proceed to proto type model.

Keywords: Drive Shaft, Structural Analysis, Vibration Analysis, Ansys, Catia.

I. INTRODUCTION

Almost all automobiles (at least those which correspond to design with rear wheel drive and front engine installation) have transmission shafts. Drive shafts are usually made of solid or hollow tube of steel or aluminium. Over than 70% of single or two-piece differentials are made of several-piece propeller shaft that result in a rather heavy driveshaft. The Graphite/ Carbon/ Fiberglass/ Aluminium driveshaft tube was developed as a direct response to industry demand for greater performance and efficiency in light trucks, vans and high performance automobiles. The weight reduction of the drive shaft can have a certain role in the general weight reduction of the vehicle and is a highly desirable goal, if it can be achieved without increase in cost and decrease in quality and reliability. It is possible to achieve design of composite drive shaft with less weight to increase the first natural frequency of the shaft and to decrease the bending stresses using various stacking sequence. By doing the same, the torque transmission and torsional buckling capabilities are also maximized. The use of composite drive shafts in race cars has gained great attention in recent decades. When a steel drive shaft breaks, its components, are thrown in all directions such as balls, it is also possible that the drive shaft makes a hole in the ground and throw the car into the air. But when a composite drive shaft breaks, it is divided into fine fibers that do not have any danger for the driver. The aim of present work deals with the replacement of a conventional steel drive shaft with Aluminum Boron Epoxy, Carbon Epoxy, Boron Nitride and Aluminum Silicon Carbide Material drive shaft for an automobile application.

II. LITERATURE REVIEW

Nowadays, composite materials are used in large volume in various engineering structures including spacecraft's, automobiles, boats, sports' equipment, bridges and buildings.

The objectives of the present study call for a closer review of the following fields

- Automotive drive (propeller) shafts
- Polymer matrix composite materials in automobile field
- Design and theoretical analysis of composite drive shafts
- Design and analysis of adhesively bonded tubular joints
- Design optimization
- Finite element analysis of cylindrical parts
- Fabrication and testing of composite material angle-ply shafts.

The literature review is carried out to understand and assess the current status of the above areas. Donley et al. (1996) demonstrated the use of building block method for complicated systems such as drive shaft, axle shafts, axle tubes, carrier differential case, and pinion shafts. Farishidianfar, et al. (1999) have proposed to consider manufacturing and other practical constraints when selecting the optimum driveline configurations. Theng (2004) has discussed how accidents are due to the vehicle approaching resonance resulting in vibrations of large amplitude and dislocation of spline end of drive shaft. The results of an extensive series of tests on the strength in torsion of thin-walled aluminum tubes were published by Lindquist (1932). Even though no theoretical analysis was attempted, the tests constituted the bulk of the experimental evidence in the study of Donnell (1934) who, in 1934, developed a theoretical solution for the torsion of round thin-walled tube for which the walls became unstable. The results of thin-shell theory were given by a few simple formulae and curves which covered all cases. As far as anisotropic materials are concerned, general theories of anisotropic shells were developed by Ambartsumyan (1964).

Optimization of Process Parameters using Taguchi Method While Machining H13 Hot Die Steel Material on Die Sink EDM

NALISETTY VIMALA¹, C. M. M. RAO², CHAVVA VENKATA SUBBA REDDY³

¹PG Scholar, Dept of Mechanical, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

²Professor, Dept of Mechanical, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

³Professor, Dept of Mechanical, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

Abstract: Electrical Discharge Machining (EDM) is an unconventional machining process which is most successful and extensively recognized process for machining very hard materials, intricate profiles and small holes with high accuracy. Only electrically conductive materials can be machined by this process. In the present work, hot die steel (H13) is machined using an Electrolytic Copper electrode on Spark Erosion Machine- SN35. The objective of the work is to experimentally study the influence of process parameters such as Current (I), Voltage (V), Pulse ON Time (TON), Pulse OFF Time (TOFF) and magnetic field on Material Removal Rate (MRR), Tool Wear Rate (TWR) and Surface Roughness (Ra). The process parameters are optimized for maximum Material Removal Rate, minimum Tool Wear Rate and Surface Roughness based on experimental results by using Taguchi and ANOVA Method.

Keywords: Electrical Discharge Machining, Current, Voltage, H13 Hot Die Steel, Taguchi Method.

I. INTRODUCTION

Electrical Discharge Machine (EDM) is now become the most important accepted technologies in manufacturing industries since many complex 3D shapes can be machined using a simple shaped tool electrode. Electrical discharge machine (EDM) is an important 'Non-traditional manufacturing method', developed in the late 1940s and has been accepted worldwide as a standard processing manufacture of forming tools to produce plastics mouldings, die castings, forging dies etc. New developments in the field of material science have led to new engineering metallic materials, composite materials, and high tech ceramics, having good mechanical properties and thermal characteristics as well as sufficient electrical conductivity so that they can readily be machined by spark erosion. At the present time, Electrical discharge machine (EDM) is a widespread technique used in industry for high- Precision machining of all types of conductive materials such as: metals, metallic alloys, graphite, or even some ceramic materials, of whatsoever hardness. Electrical discharge machine (EDM) technology is increasingly being used in tool, die and mould making industries, for machining of heat treated tool steels and advanced materials (super alloys, ceramics, and metal matrix composites) requiring high precision, complex shapes and high surface finish.

Traditional machining technique is often based on the material removal using tool material harder than the work material and is unable to machine them economically. An electrical discharge machining (EDM) is based on the eroding effect of an electric spark on both the electrodes

used. Electrical discharge machining (EDM) actually is a process of utilizing the removal phenomenon of electrical-discharge in dielectric. Therefore, the electrode plays an important role, which affects the material removal rate and the tool wear rate. Since EDM does not make direct contact between the electrode and the work material, it eliminates mechanical stresses, chatter and vibration problems during machining. Hence, very hard and brittle materials can also be machined easily and also to the desired form. It removes electrically conductive materials by means of rapid, repetitive spark discharges from a pulsating direct-current power supply with dielectric flow between the work piece and the electrode. Pulse current is one of the primary input parameters of an EDM process and together with discharge duration and relatively constant voltage for the given tool and work piece materials. Alternatives for machining an ever increasing number of high strength, wear resistant and corrosion resistant material.

II. LITERATURE REVIEW

Some survey on research papers require to deliberate in this chapter connected towards Electrical Discharge Machining [1]. From the readings out in these papers and thesis is mostly concerned through the EDM settings such as the discharge current, applied voltage, pulse on time, pulse off time, duty cycle, etc. and in what way these parameter will affect the machining outputs like MRR, Ra, TWR etc. technique with mixed level design and analyze for performing a minimum number of runs. B. Sidda Reddy et al. [2] Studied that influence by design four factors such as current, servo control, duty cycle and open circuit voltage

Design and Structural Analysis of Missile Nose Cone Using Different Materials

P. V. DEVENDRA ADITYA¹, Y. RAJESH KUMAR²

¹PG Scholar, Dept of Mechanical Engineering, PBR Visvadaya Institute of Technology And Science, Kavali, Nellore (Dt), AP, India.

²Asst Prof, Dept of Mechanical Engineering, PBR Visvadaya Institute of Technology And Science, Kavali, Nellore (Dt), AP, India.

Abstract: A new nose cones concept that promises a gain in performance over existing conventional nose cones is discussed in this paper the term nose cone is used to refer to the forward most section of a rocket, guided missile or aircraft. The cone is shaped to offer minimum aerodynamic resistance. The aerodynamic design of the nose cone section of any vehicle or body meant to travel through a compressible fluid medium (such as a rocket or aircraft missile or bullet), an important problem is the determination of the nose cone geometrical shape for optimum performance. This project evaluates the missile nose cone analysis by using the following materials such as Titanium Grade-I, Ti-6Al-4V and Ti-6Al-6v-2Sn. These are significantly stronger than commercially pure titanium. A cone model is taken from the concepts of blunt nose cone and designed in the CAD software catia. Further this nose cone design is imported to the Analysis software named as Ansys and performs the Structural analysis. Finally the results are compared and tabulated.

Keywords: CAD, CATIA V5, ANSYS, OREX.

I. INTRODUCTION

In current use, a rocket is a self-impelled accuracy guided ammo framework, instead of an unguided self-moved ammo, alluded to (in that these too can likewise be guided). Rockets have four framework segments: focusing on or potentially rocket direction, flight framework, motor, and warhead.

A. Nose Cone

The term nose cone utilized to allude to the forward most segment of a rocket, guided rocket or flying machine. The cone is molded to offer least streamlined obstruction. Nose cones additionally intended for movement in and submerged and in fast land vehicles. In a satellite vehicle, the nose cone may change into the satellite itself in the wake of withdrawing from the last time of the rocket or it might be utilized to shield the satellite until the point that orbital speed is ace, by then isolating from the satellite.

B. Nose Cone Design

Given the issue of the streamlined plan of the nose cone area intended to movement liquid medium, (for example, flying machine, rocket or projectile), an essential issue is the

assurance ideal execution. For some applications, such an errand requires a strong of transformation shape that encounters insignificant protection from fast movement through, which comprises of versatile particles. Generally regarding to the shapes the nose cones are classified into four types as follows:

- Conical
- Bi-conical
- Spherically Blunted
- Elliptical

According to the above classification of the shapes of nose cone, here we are considering the both Conical (they can scatter the air to one side with its tip than others) and Elliptical (less mean shear stress distribution and lowest tip temperature) shaped nose cones than Spherical and Bi-conical shaped nose cones with different materials and performing the structural analysis by ansys software.

C. General Dimensions

In the majority of the accompanying nose cone shape conditions, L is the general length of the nose cone and R is the scope of the base of the nose cone. y is the range at whatever point x, as x shifts from 0, at the tip of the nose cone, to L. The conditions depict the 2-dimensional profile of the nose shape. The full exhibit of progress of the nose cone is formed by pivoting the profile around the centerline (C/L). Note that the conditions delineate the 'ideal' shape; sound nose cones are every now and again collecting or streamlined reasons.

II. THEORETICAL BACKGROUND

A. Titanium Alloy

Titanium composites are metals that contain a blend of titanium and synthetic components. Such composites have high pliable and durability (even at extraordinary temperatures) as shown in Fig.1. They are light in weight, have phenomenal erosion opposition withstand outrageous temperatures. Titanium alone is a solid, light metal. It is more grounded than normal, low-carbon steels, however 45% lighter. It is additionally twice as solid as frail aluminum compounds however just 60% heavier. Titanium has exceptional erosion protection from ocean water, and is utilized in propeller shafts, military applications, air ship, rocket. The following are the different titanium materials used to do the structural analysis:

EXPERIMENTAL INVESTIGATION OF PROCESS PARAMETERS FOR MACHINING OF ALUMINIUM ALLOY 6082 WITH GRAPHITE TOOL ON EDM

U.LakshmiPrasanna¹,B.Suneel kumar²,Dr.K Venkata Rao³

¹M.Tech research scholar,Dept of Mechanical,PBR VITS, Kavali,AP,India.

²Assistant Professor,Dept of Mechanical,PBR VITS, kavali ,AP,India.

³Professor,Dept of Mechanical, Vignan's foundation for science technology and research,Vadlamudi,Guntur, AP, India.

ABSTRACT: Now a days, the production of complicated shapes of different components with high accuracy is very difficult and take much time by conventional machining process. To get-rid of the one non conventional machining process which is used very widely in EDM, it is necessary to optimize the process parameters like pulse on-time (T_{ON}), pulse off-time (T_{OFF}), discharge current (I), voltage (V) for maximization of material removal rate (MRR), minimum tool wear rate (TWR), minimum surface area (R_a) for various materials like aluminium alloy 6082. The aluminium alloy 6082 is machined using graphite electrode on spark erosion machine. basically EDM is well-established non-conventional machining process used for manufacturing geometrically complex or hard and electrically conductive material parts that are extremely difficult -to- cut by other conventional machining processes. erosion pulse discharge occurs in small gap between work piece and the electrode, this removes the unwanted material from the parent metal through melting and vaporizing in the presence of dielectric fluid. the presence of metal particles in dielectric fluid diverts its properties, which reduces the insulating strength of the dielectric fluid and increases the spark gap between work piece and electrode. as a result, the process becomes more stable and surface finish increases. the EDM process is mainly used for making dies, moulds, parts of aerospace, automotive industry and surgical components etc.. The process parameters are optimized for maximum material removal rate (MRR), tool wear rate (TWR) and surface roughness (R_a) based on experimental results by using DOE and optimization for best machining can be done by response surface methodology.

Key words: electrical discharge machining, current, voltage, aluminium alloy 6082, Graphite tool, RSM.

I.INTRODUCTION:

Presently now a days, the generation of confused states of various segments with high precision is troublesome and take much time by traditional machining procedure like machine machines, to overcome this imperfection utilizing the non-regular machining procedure like EDM. The right determination of machining condition is one of the most significant viewpoints to mull over in most of assembling forms and especially, in procedures identified with Electrical Discharge Machining (EDM). EDM has risen as an exceptional methodology for machining conductive metals that are generally troublesome or difficult to machine with customary techniques. It is a fit for machining geometrically mind boggling and hard material parts, that are exact and hard to-machine, for example, heat treated device steels, composites, super amalgams, pottery, carbides, and so on being broadly utilized in bite the dust and form making enterprises, aviation, flight and atomic ventures. Inside EDM process, the working hole between the instrument and work piece is exceptionally little (in the scope of 10-100 μm). In this outrageous little hole, the machined garbage on the off chance that present, at that point causes superfluous interference in the machining. Likewise the expulsion of this flotsam and jetsam from the machining hole is troublesome. Likewise in the wake of machining, the geology of the machined surface by customary EDM brings about cavity development and surface breaks, because of numerous reasons like arcing, short and open circuiting an imprudent power caused during dielectric blast. Flushing the garbage completely and totally from the machining hole is one of the real difficulties in EDM process. Aggregation of trash in machining hole space causes idle heartbeats, for example,

STATIC ANALYSIS OF ROLLING BALL BEARING BY USING HYPERMESH

Y Siva krishna^{1*} and Y Rajesh Kumar²

¹M.Tech research scholar, ²Assistant Professor

Dept. of Mechanical Engineering, PBRVITS, Nellore, AP, India-524201

ABSTRACT: - In this paper we rolling bearings normally used to reduce friction in rotary motion. The parts comprises of bearing rings, rolling elements and a cage. A Ball bearing consists of hardened, spherical balls that spins between two surfaces and reduces friction. The purpose of a ball bearing is to reduce rotational friction and support radial and axial loads. Design of bearings based on parameters like bore diameter, depth and load ratings of dynamic and static loads were considered in this work. A three dimensional model of ball bearing was done using CATIA and finite element mesh was done for the same using Hyper Mesh software. RADIOSS was used to solve the model and displacements and stresses were reported. The high stress regions were identified and design changes were proposed if necessary. The bearing life was also calculated based on the rotational speed and load factors.

KEYWORDS: - CATIA, HYPERMESH.

1. Introduction:

The analysis and estimates of main bearings of aircraft engines by taking the deep groove ball bearing .The SD model of deep groove ball bearing is established by using pro-E software and then converted into a finite element model. The stiffness, steering and fatigue life of the deep groove ball bearing is investigated by ANSYS software which results in some theoretical discussion improving the service life of main bearings of the aircraft engine. The outer contact area of the deep groove ball bearings is approximately elliptical. The inner and outer race on contact stress will decrease when the number of rolling increase, the inner race and outer race on contact stress will decrease when the rolling diameter increase. The radial deformation will decrease when the rolling number and the rolling diameter increase, but it will increase when the inner and outer curvature coefficient increase. To reduce cost and improve the accuracy of life prediction, the numerical simulation method is used to simulate the fatigue life of the bearing is very effective.

2. LITERATURE REVIEW AND OBJECTIVE:

Contemplated the examination and appraisals of primary heading of flying machine motors by taking the profound score metal ball .The SD model of profound furrow metal roller is built up by utilizing master E programming and afterward changed over into a limited component model. The solidness, directing and exhaustion life of the profound section metal roller is researched by ANSYS programming which results in some hypothetical exchange improving the administration life of fundamental heading of the airplane motor. The external contact territory of the profound score metal rollers is around curved. The internal and external race on contact pressure will diminish when the quantity of moving increment, the inward race and external race on contact pressure will diminish when the moving width increase. The radial misshaping will diminish when the moving number and the moving breadth increment, yet it will increment when the internal and external bend coefficient increment.. To diminish cost and improve the precision of life forecast, the numerical reenactment technique is utilized to reproduce the weariness life of the bearing is powerful.

They contemplated the static conduct and life of the metal balls. The hypothetical reason for the disfigurement, Stiffness and change the substance edge and life of heading with rakish substance are appeared. In view of that, a non-straight numerical model for the investigation of the static conduct of metal rollers has been created. The assurance of the metal roller life identified with the cross area investigation of the static conduct from the outcomes, it is presumed that the scientific model palatably depicted the static conduct of metal balls from the purpose of disfigurement and solidness. It is additionally inferred that it is

Analysis of Gas Turbine Combustor with Varying Air Inlet Velocity and Methane Fuel Inlet Temperature

K Guruvenu^{1*} and B Konda Reddy²

¹M. Tech research scholar, ²Professor

Dept. of Mechanical Engineering, PBRVITS, Nellore, AP, India-524201

ABSTRACT

Numerical investigation of combustion effectiveness and properties of methane air mixture is tested in gas turbine can type combustor through three-dimensional computational fluid dynamics by using ANSYS CFX 14.5. In this study we designed two models of combustors. Using modified and basic model we compared the performance and efficiency of combustors, we seen approx. 23% reduction in temperature and 76% decrement in emissions. Using modified model methane air mixture is tested under normal and preheated conditions which helps to analyze the combustion properties and how the emissions (CO_2 & NO_x) will vary, we seen approx. 9% increment in temperature and 57% decrement in emissions.

KEYWORDS: Gas turbine combustor, ANSYS 14.5, Computational Fluid Dynamics

I. INTRODUCTION

Gas turbine engines are mostly used in the modern world to generate the power or thrust, they are called mostly eligible to generate thrust for aircrafts. The combustor is one of the parts of turbine engine, we have different stages in gas turbine engine. In this study we deal with combustion stage or combustion chamber. In this stage the power or energy is added to the engine in the form of heat and it helps to rotate the multistage turbines to generate power to run the compressor etc. the main aim of the combustor is to design it with low volume less emissions. Flow field in the combustion is the main part which has to be studied and analyzed both in academics and industries, it has the commercial importance to analyze and predict at various phenomena during combustion. Gas turbine combustor has to be developed and designed to meet many mutual conflicting design requirements i.e., High combustion efficiency over a wide operating envelope, Low NO_x emissions, Low smoke, Low flame stability limits, Good starting properties, Low pressure drop and sufficient cooling air to maintain low wall temperature levels with structural durability. Numerical simulations on combustor flow fields had become unavoidable way to accelerate the design modifications which have the best efficiency and to optimize their performances. Numerical calculations over the software also facilitates the understanding and visualization of physical phenomena which costs high or often inaccessible by experimental way. The use of CFD codes to predict the flow fields with in a gas turbine combustor has been motivated for many studies. In this work three dimensional turbulent fluid flow analysis is carried out by using swirl stabilized gas turbine combustor model with compressible CFD computations were performed using ANSYS CFX employing k-ε turbulence model for closure and eddy dissipation model for combustion. In this work we analyzed the different properties over basic combustor design and modified combustor design with Methane-Air mixture at same input conditions and fuel preheated performance is analyzed for modified combustor to calculate or predict how NO_x mass fraction will vary.

II. GEOMETRY

The basic geometry of the gas turbine can-type combustor chamber is shown in Fig. 1. The size of the combustor is 590 mm in the Z direction, 250 mm in the Y direction, and 230 mm in the X direction. The primary inlet air is guided by vanes to give the air a swirling velocity component. The total surface area of primary main air inlet is 57 cm². The fuel is injected through six fuel inlets in the swirling primary air flow. There are six small fuel inlets, each with a surface area of 0.14 cm². The secondary air is injected in the combustion chamber through six side air inlets each with an area of 2cm². The secondary air or dilution air is injected at 0.1 m from the fuel injector to control the flame temperature and NO_x emissions. The can-type combustor outlet has a rectangular shape with an area of 0.0150 m². For modified two extra air inlet slits (vertical and horizontal) of 10 and 15mm near primary inlet and near nozzle inlet is added because of that we can reduce the combustor wall temperature levels and increase its life.

DESIGN AND ANALYSIS OF AUTOMOTIVE BUMPER USING COMPOSITE MATERIALS

Y Sarath ^{1*} and T Muneiah²

¹M.Tech research scholar, ²Assistant Professor

Dept. of Mechanical Engineering, PBRVITS, Nellore, AP, India-524201.

ABSTRACT: - Automobile bumper subsystem is a frontal and rear structure of the vehicle that has the purpose of energy absorption during low velocity impact. The bumper beam is the main structure for absorbing the energy of collisions. Automotive bumper beam is one of the key systems in car. Bumper beam design to prevent or reduce physical damage to front or rear end of the Motor vehicle in collision conditions they protect the hood, trunk, grill, fuel, exhaust and cooling system as well as safety related equipment such as the parking light, head lamp and tail light etc. A good design of the car bumper must provide safety for passengers and should have low weight.

1. INTRODUCTION

Car accidents are happening every day. Most drivers are convinced that they can avoid such troublesome situations. Nevertheless, we must take into account the statistics – ten thousand dead and hundreds of thousands to million wounded each year. These numbers call for the necessity to improve the safety of automobiles during accidents. Automobile bumper subsystem is a frontal and rear structures of the vehicle that has the purpose of energy absorption during low velocity impact. The bumper beam is the main structure for absorbing the energy of collisions. Automotive bumper beam is one of the key system in car. Bumpers beam design to prevent or reduce physical damage to front or rear end of the Motor vehicle in collision conditions they protect the hood, trunk, grill, fuel, exhaust and cooling system as well as safety related equipment such as the parking light, head lamp and tail light etc. A good design of the car bumper must provide safety for passengers and should have low weight.

Car accidents are unpredicted, which happens every day. Nearly 1.3 million people die in road crashes each year, on average 3287 deaths a day. An additional 20 to 30 million are injured or disabled. These statistics are alarming and raises a concern over safety of passengers and car system. One of the safety features are in build in the front of automobile that is bumper beam system. Bumper became standard equipment of automobile in 1925. The uses of bumper has evolved from a mechanism being placed on the front and rear of the car to protect the body and safety features of motor vehicle from getting damage due to low speed collisions. They protect the hood, trunk, grill, fuel, exhaust and cooling system. They also protect the equipments such as parking lights, headlamps, tail lamps, radiator system and major engine part. Therefore, the bumper should be designed in such a way that they absorb major part of energy through energy absorbing device and transfer rest of it to chassis of automobile.

The simulation of motor vehicle is done for low velocity impact test, on the other hand, it should absorb all the energy excluding the energy absorbed by body panel, bumper over, reinforcement, radiator support, Et-cetera,. According to United Nations Economic Commission for Europe(ECE) Regulation number 42. Although, nowadays bumper is being designed more for aesthetics of motor vehicle rather than the actual functionality. The styling of bumper has become more important than structural design of the bumper. Nevertheless, the standards and regulations governing the design of the bumper should not be compromised in any circumstances. The study carried out by Federal Motor Vehicle Safety Standards and Regulations (FMVSS) highlights how the present day bumpers on motor vehicles are connected to the fenders rather than frame of the motor vehicle where it would be of more use and steady during low speed collision. The design of automobile parts and assemblies, components must be positioned with tight tolerances, so as to maintain automotive aerodynamics and functionality of components with respect to each other. Furthermore the support structures must not deform bumper components by applying unnecessary stresses. Therefore energy absorbing devices are installed in the bumper beam system. This device absorbs major part of energy during the impact and transfers rest to the surrounding.



PARVATHAREDDY BABUL REDDY
VISWODAYA INSTITUTE OF TECHNOLOGY & SCIENCE
(Affiliated to J.N.T.U.A, Approved by AICTE and Accredited by NAAC with 'A' Grade)
KAVALI - 524201, S.P.S.R Nellore Dist., A.P. India. Ph: 08626-243930
DEPARTMENT OF MECHANICAL ENGINEERING



S.NO	Title of paper	Name of the Student roll number	Name of the Guide	Departme nt of the teacher	Name of journal	Year of publication	Link to the recognition in UGC enlistment of the Journal
1	Design and Analysis of Flywheel for Punching Machine Operation	K. MADHUSUDH ANAREDDY 13731D1504	B. SUNEEL KUMAR	ME	International Journal of Advanced Technology and Innovative Research	2017-18	ISSN 2348- IJATR17259-218.pdf http://ijatir.org/uploads/436251
2	Influence of Process Parameters and Magnetic Field in Electrical Discharge Machining of Untreated High Speed Steel (M2)	PV NANI KRISHNA 15731D1501	K. VENKATA RAO	ME	International Journal of Scientific Engineering and Technology Research	2017-18	ISSN 2319- IJSETR15445_964.pdf http://ijsetr.com/uploads/52643
3	Influence of Process Parameters and Magnetic Field in Electrical Discharge Machining of Untreated High Speed Steel (M2)	PV NANI KRISHNA 15731D1501	Dr.N.SESHAIAH	ME	International Journal of Scientific Engineering and Technology Research	2017-18	ISSN 2319- IJSETR15445_964.pdf http://ijsetr.com/uploads/52643
4	Multi Response Optimization of Process Parameters for Ball End Milling Using Taguchi Based Grey Relation Analysis	PADMA SRAVYA N 15731D1512	C. MADAN MOHAN RAO	ME	International Journal of Scientific Engineering and Technology Research	2017-18	ISSN 2319- 8885 http://ijsetr.com/uploads/53162 4USETR15406-943.pdf

B.1C
B.1C
Head of Department
MECHANICAL ENGINEERING
MECHANICAL ENGINEERING & SCIENCE
PVR Viswodaya Institute of Technology & Science
KAVALI - 524 201, Nellore District, A.P.

Design and Analysis of Flywheel for Punching Machine Operation

K. MADHUSUDHAN REDDY¹, B. SUNEEL KUMAR²

¹PG Scholar, Dept of Mechanical Engineering, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

²Assistant Professor, Dept of Mechanical Engineering, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

Abstract: A flywheel is an inertial energy-storage device. It absorbs mechanical energy and serves as a reservoir, storing energy during the period when the supply of energy is more than the requirement and releases it during the period when the requirement of energy is more than the supply. The performance of a flywheel can be attributed to three factors, i.e., geometry of flywheel, rotational speed and material strength. In the present work, a flywheel design problem is formulated for punching machine which has to make holes of 30 holes/minute on a steel plate of 18mm thickness with space limitation that is the diameter of flywheel should not exceed 1000mm, hence it can be observed that the design of the flywheel is to be carried out (based) on the availability of space limitation and accordingly the fluctuation of energy, and dimensions of the flywheel were determined. The stresses induced in the flywheel were considered for safe design.

Keywords: FEM, RPM, ANASYS, FEA.

I. INTRODUCTION

A flywheel is an inertial energy-storage device. It absorbs mechanical energy and serves as a reservoir, storing energy during the period when the supply of energy is more than the requirement and releases it during the period when the requirement of energy is more than the supply. A flywheel used in machines serves as a reservoir which stores energy during the period when the supply of energy is more than the requirement and releases it during the period when the requirement of energy is more than supply. In case of steam engines, internal combustion engines, reciprocating compressors and pumps, the energy is developed during one stroke and the engine is to run for the whole cycle on the energy produced during this one stroke. In I.C. engines, the energy is developed only during power stroke which is much more than the engine load, and no energy is being developed during suction, compression and exhaust strokes in case of four stroke engines and during compression in case of two stroke engines. The excess energy developed during power stroke is absorbed by the flywheel and releases it to the crankshaft during other strokes in which no energy is developed, thus rotating the crankshaft at a uniform speed. The flywheel absorbs energy, its speed increases and when it releases, the speed decreases. Hence a flywheel does not maintain a constant speed, it simply reduces the fluctuation of speed.

In machines where the operation is intermittent like punching machines, shearing machines, riveting machines, crushers etc., the flywheel stores energy from the power source during the greater portion of the operating cycle and gives it up during a small period of the cycle. Thus the energy from the power source to the machines is supplied practically at a constant rate throughout the operation. The flywheel does not maintain a constant speed, it simply reduces the fluctuation of speed. In other words, a flywheel controls the speed variations caused by the fluctuation of the engine turning moment during each cycle of operation. It does not control the speed variations caused by the varying load. The stored kinetic energy is to absorb the variations in torque during a machine cycle, a flywheel smooths the fluctuating speed of a machine and reduces undesirable transient loads. A flywheel limits the speed variation over one cycle and has minimal effect on the average speed. Flywheels resist changes in rotational speed by their moment of inertia. The amount of energy stored in a flywheel is proportional to the square of its rotational speed. The way to change a flywheel's stored energy is by increasing or decreasing its rotational speed by applying a torque aligned with its axis of symmetry,

II. LITERATURE SURVEY

S. M. Dhengle, Dr. D. V. Bhope, S. D. Khamankar evaluated the stresses in the rim and arm using finite element method and results are validated by analytical calculations. The models of flywheel having four, six and eight no. arms are developed for FE analysis. The FE analysis is carried out for different cases of loading applied on the flywheel and the maximum Von mises stresses and deflection in the rim are determined. From this analysis it is found that Maximum stresses induced are in the rim and arm junction. Due to tangential forces, maximum bending stresses occurs near the hub end of the arm. It is also observed that for low angular velocity the effect gravity on stresses and deflection of rim and arm is predominant. M.lavakumar, R .prasannasrinivas (2013) presented a paper on the design and analysis of flywheel to minimize the fluctuation in torque, the flywheel is subjected to a constant rpm. The objective of present work is to design and optimize the flywheel for the best material. The flywheel is modeled with solid 95 (3-D element), the modeled analyses using free mesh. The FEM mesh is refined subject to convergence criteria. Preconditioned conjugate gradient

Influence of Process Parameters and Magnetic Field in Electrical Discharge Machining of Untreated High Speed Steel (M2)

P.V NANIKRISHNA¹, N. SESHAIAH², K. VENKATA RAO³

¹Dept of Mechanical Engineering, PBR Visvadaya Institute of Technology and Science, Kavali, Andhra Pradesh, India.

²Dept of Mechanical Engineering, PBR Visvadaya Institute of Technology and Science, Kavali, Andhra Pradesh, India

³Dept of Mechanical Engineering, Vignan University, Guntur, Andhra Pradesh, India.

Abstract: Electrical Discharge Machining (EDM) is an unconventional machining process which is most successful and extensively recognized process for machining very hard materials, intricate profiles and small holes with high accuracy. Only electrically conductive materials can be machined by this process. In the present work, Untreated High Speed Steel (M2) is machined using an Electrolytic Copper electrode on Spark Erosion Machine- SN35. The objective of the work is to experimentally study the influence of process parameters such as Current (I), Voltage (V), Pulse ON Time (T_{ON}), Pulse OFF Time (T_{OFF}) and magnetic field on Material Removal Rate (MRR), Tool Wear Rate (TWR) and Surface Roughness (R_a). The process parameters are optimized for maximum Material Removal Rate, minimum Tool Wear Rate and minimum Surface Roughness based on experimental results by using Non-dominated Sorting Teacher Learner Based Optimization (NSTLBO) Algorithm.

Keywords: Electrical Discharge Machining, Current, Voltage, Pulse ON Time, Pulse OFF Time, Non-Dominated Sorting Teacher Learner Based Optimization.

I. INTRODUCTION

Materials such as tool steel, Nickel based alloys and Inconel are commonly used in die molding, aerospace and turbine components. Machining of these materials using conventional machining processes is difficult due to high hardness, toughness and wear and corrosion resistance. Electrical Discharge Machining (EDM) is now used extensively to machine hard materials. The main goals of Electrical Discharge Machining are to achieve a better stability and higher productivity. The process is affected by many parameters like current, voltage, Pulse ON Time, Pulse OFF Time, polarity, dielectric flushing, magnetic field, rotating electrode etc. These process parameters effect Material Removal Rate, tool wear rate, duty factor, wear ratio, recast layer thickness, heat affected zone and surface roughness. Optimization of process parameters is very important in order to reduce the machining time, to improve process stability and to increase production.

II. LITERATURE REVIEW

To improve the machinability of EDM considerable amount of research has been done on effects of Pulse ON time, Pulse OFF Time, Voltage, Current and duty factor on material removal rate, tool wear rate, relative wear ratio, and surface roughness. As the peak current and discharge voltage increases, the workpiece temperature increases during EDM, the MRR is also increased [1]. A higher discharge current and longer pulse ON duration leads to rougher surface [2, 3]. A higher feed voltage increased working gap between the tool electrode and the workpiece, which facilitated the

flushing of debris from the machining area and therefore lead to a faster machining process [4]. Using magnetic field, the debris expelled from machining gap, machining stability is improved and lead to increased MRR, decreased Surface Roughness and reduced recast layer thickness [5]. Signal to Noise ratio (S/N) and Analysis of Variance (ANOVA) is used to analyse the effect of process parameters on MRR and also to identify the optimum cutting parameters which concluded that the current and Pulse OFF time are the most significant parameters [6]. Optimization of the various machining parameters for the electrical discharge machining (EDM) processes on Inconel 718 super alloy is done using a multi objective particle swarm optimization (MOPSO) algorithm and is recommended for the multi objective optimization of the responses [7]. Optimization of MDN 300 steel in the die sinking EDM was done by using Taguchi method which revealed that discharge current, pulse on time, and pulse off time have been found to play a significant role in EDM operations [2]. In the present study, optimization of process parameters Current (I), Voltage (V), Pulse ON Time (T_{ON}), Pulse OFF Time (T_{OFF}) to maximize Material Removal Rate and minimize Tool Wear Rate and Surface Roughness is carried out using Non-dominated Sorting Teacher Learner Based Optimization Algorithm.

III. EXPERIMENTAL SETUP AND METHODOLOGY

A. Materials

Untreated High Speed Steel M2 is the material used as workpiece during the experimental work. M2 is the "standard" and most widely used industrial HSS. Untreated

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P.V NANIKRISHNA¹, N. SESHAIAH², K. VENKATA RAO³

¹Dept of Mechanical Engineering, PBR Visvodaya Institute of Technology and Science, Kavali, Andhra Pradesh, India.

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Multi Response Optimization of Process Parameters for Ball End Milling Using Taguchi Based Grey Relation Analysis

N. PADMA SRAVYA¹, C. MADAN MOHAN RAO²

¹Dept of Mechanical Engineering, PBR Visvadaya Institute of Technology and Science, Kavali, AP, India.

²Dept of Mechanical Engineering, PBR Visvadaya Institute of Technology and Science, Kavali, AP, India.

Abstract: Aim of the present study is to optimize process parameters in ball end milling of untreated high speed steel M2 for minimum surface roughness and frequency of cutter vibration. As per design of experiments, fifteen experiments were conducted at three levels of spindle speed, feed and depth of cut and experimental results of surface roughness and frequency of cutter vibration were collected. A Laser Doppler Vibrometer was used to measure vibration of cutter in the form of Acousto Optic Emission signals and then the signals were processed and transformed in to frequency domain using a Fast Fourier Transformer. The multi responses were converted in to single response by calculating grey relation grade using grey relation analysis for the fifteen experiments. Further, the grey relation grades of the process parameters were analyzed and optimized by using Taguchi and Analysis Of Variance techniques. The optimization was validated with response surface methodology technique.

Keywords: Taguchi, Ball End Milling, Tool Vibration, GRA, RSM, Optimization.

I. INTRODUCTION

In micro milling the relative motion between work piece and cutting tool generates dynamic excitation due to deformation of metal that results in vibration of tool. Micro milling is an important process of mechanical micromachining, with practical application in aerospace, automotive, mould and die, biomedical, military and microelectronics packaging industries. The excitations of tool effects surface quality of the product. These vibrations are to be maintained minimum to reduce surface roughness and tool wear. The relative motion between the work piece and tool results in vibration of mill cutter, it is necessary to measure vibration of cutter as close as to machining. For this vibration of mill cutter is measured by Laser Doppler Vibrometers (LDV). Laser Doppler vibrometer (LDV) is a velocity and displacement measurement technique. The use of LDV has spread in a variety of fields. It is used for the analysis of all kinds of vibrating systems, speed and position measurement. The LDV is capable of giving reliable information of tool vibration, and the surface roughness is measured by using Micro Surf. Untreated High Speed Steel M2 is the material used as work piece during the experimental work. M2 is the "standard" and most widely used industrial HSS. It has small and evenly distributed carbides giving high wear resistance, though its decarburization sensitivity is a little bit high. The characteristic properties of high speed steel include: High working hardness, High wear resistance, Excellent toughness, Compressive strength , High retention of hardness and red hardness.

Ball end mill cutter is used to machine the work piece. It is made of tungsten carbide. Specifications of the mill cutter used in this work as shank diameter of 3mm and tip diameter of 2mm. Different cutting parameters are considered and experiments were conducted according to design of experiments. The results obtained by the experimental work are analyzed by Analysis of variance (ANOVA), which is used to analyze the ratios to identify significant cutting parameters having more influence on the tool life. The ANOVA give optimum cutting parameters for higher tool life. Response surface methodology (RSM) is used to develop the empirical models for prediction of surface roughness, tool wear and power consumption in milling process. Product/Process design is typically complex due to varying customer demands and technology advances. Several responses must generally be considered in complex product/process designs. Therefore, simultaneously optimizing multiple responses is of priority concern among manufacturers. Design of experiments (DOE) is extensively adopted in industry to improve processes, product design or obtain an optimal parameter-setting for process parameters. When utilizing DOE, response surface methodology (RSM) is frequently employed to obtain the optimal parameter-setting following analysis of variance (ANOVA) for identifying significant factors. Through RSM, an equation (i.e., response surface) representing the approximate relationship between a single response and control factors can be obtained based on experimental data. A contour plot is used to characterize the response surface graphically and determine the optimal parameter-setting.



PARVATHAREDDY BABUL REDDY

VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE

(Affiliated to J.N.T.U.A, Approved by AICTE and Accredited by NAAC with 'A' Grade)

KAVALI – 524201, S.P.S.R Nellore Dist., A.P. India. Ph: 08626-243930



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1	Material Optimization of BBC 120F Rock Drill Bit	P.SRINIVASULLU	13731D1506	C. MADAN MOHAN RAO	International Journal of Scientific Engineering and Technology Research	2016-17	ISSN 2319-8885	http://ijetr.com/uploads/3526140SETR14310-499.pdf
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5	Effect of glass fiber additive on tensile, impact and water absorption and crushing strength properties of bamboo reinforced composite	APV MANO HARIIKA	13731D1512	K.Mankantesh	International Journal of Engineering Trends and Applications	2016-17	ISSN (Online):2349-9745	https://ijsp.org/research-paper-0317/jisp_p6307.pdf
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7	Design and Analysis of Hot Runner Injection Mould for Water Bottle Caps	N DIVYA	14731D1502	Dr. S.S.N.MalleswaraRao	International Journal of Scientific and Research Publications	2016-17	ISSN 2250-3154	http://www.ijsp.org/research-paper-0317/jisp_p6307.pdf
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9	An Experimental study on Measurement of Cutter Vibration and Optimization of process Parameters in Micro Milling Of Ti-6Al-4V	M.MOUNIKA, 14731D1507	[Dr. N.SESHAIAH]	International Journal of modern trends in Engineering and research 2016-17	https://www.jimter.com/papers/volume-3/issue-11/an-experimental-study-on-vibration-and-optimization-of-process-parameters-in-micro-milling-of-ti-6al-4v.pdf	https://www.jimter.com/papers/volume-3/issue-11/an-experimental-study-on-vibration-and-optimization-of-process-parameters-in-micro-milling-of-ti-6al-4v.pdf
10	An Experimental study on Measurement of Cutter Vibration and Optimization of process Parameters in Micro Milling Of Ti-6Al-4V	M.MOUNIKA, 14731D1507	K. VENKATA RAO	International Journal of modern trends in Engineering and research 2016-17	http://ijsetr.com/uploads/361245IJSETR14145-437.pdf	http://ijsetr.com/uploads/361245IJSETR14145-437.pdf
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12	Experimental Investigation of Surface Roughness and Temperature On Surface Grinding of AISI1040 Steel using MQL Technique	S.SARIKA 14731D1508	K. MANIKANTESH	International Journal of Scientific Engineering and Technology Research 2016-17	http://www.ijetjournal.org/volume-4/issue-2/IJETA-V4I2P4.pdf	http://www.ijetjournal.org/volume-4/issue-2/IJETA-V4I2P4.pdf
13	Experimental Evaluation of Optimal Parameters for Abrasive Water Jet Machining Process of Granite	AVL.MRUDULA, 15731D1513	Dr. Ch V S Parameswara Rao	International Journal of Engineering Trends and Applications 2016-17	http://www.ijetjournal.org/volume-4/issue-2/IJETA-V4I2P4.pdf	http://www.ijetjournal.org/volume-4/issue-2/IJETA-V4I2P4.pdf
14	Experimental Evaluation of Optimal Parameters for Abrasive Water Jet Machining Process of Granite	AVL.MRUDULA, 15731D1513	Dr. S.S.N. Malleswara Rao	International Journal of Engineering Trends and Applications 2016-17	http://www.ijetjournal.org/volume-4/issue-2/IJETA-V4I2P4.pdf	http://www.ijetjournal.org/volume-4/issue-2/IJETA-V4I2P4.pdf

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 Head of Department
MECHANICAL ENGINEERING
MR Viswade Institute of Technology & Science
KAVALI - 524 201, Nellore District, A.P

Material Optimization of BBC 120F Rock Drill Bit

P. SREENIVASULU¹, C. MADAN MOHAN RAO²

¹PG Scholar, Dept of ME, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

²Professor, Dept of ME, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

Abstract: BBC120F Drifter is a Pneumatic Rock Drill intended for use on drill rigs in the following areas: Underground Mining-Long Hole Drilling, Surface Quarrying-Bench Drilling, and Construction-Grout Hole Drilling, Metallurgical Industry-Tap Hole Drilling in Blast Furnace. A popular all-round machine, the BBC120F Drifter has earned a reputation of economy and reliability. The powerful BBC120F Drifter has a moderate weight and this facilitates manual handling of the unit which can be mounted on simple and light rigging structures. In this thesis, different configurations of rock drill bit will be modelled in 3D modelling software Pro/Engineer. The temperature distribution, heat transfer rate will be analyzed by thermal and deformation, stress & frequency will be analyzed by static, modal analysis done in ANSYS. Static, modal and Thermal analysis with different materials for rock drill bit (Polycrystalline diamond, Tungsten carbide and Diamond), and Steel used for the Shaft. The Static analysis will be done with different speeds (150, 190 & 250).

Keywords: BBC120F Drifter, Centre punching, Drill bits, PDC.

I. INTRODUCTION

Drilling is a cutting process that uses a drill bit to cut or enlarge a hole of circular cross-section in solid materials. A popular all-round machine, the [1]BBC120F Drifter has earned a reputation of economy and reliability. Failure of PDC drill bit often happen during drilling operation due to cutter damage such as chipped cutter, lost cutter, broken cutter and junked damage. Establishing a centring mark or feature before drilling, such as by:

1. Casting, moulding, or forging a mark into the workpiece
2. Centre punching

Technical Data ROC 442PC-00

Dimensions	Standard equipment	Optional equipment
Weight kg	300	• Winch driven compressor base air inlet
Length mm	4196	• Pneumatic hydraulic power pack
Width mm	2190	• Hydraulic powered two speed suction motors
Height mm	1590	• 2½ tonne track deck chain with cleaning belt
Ground clearance mm	250	• Hydraulic track stabilizer
Gross power rating kW	3.6/4	• Swing hook
Drilling		• 7 bar air line and oil lubrication system
Drill bit speed, rev/s	25	• Air line water separator
Torque force, kN	45	• Single boom system
Travel force, kN	412	• Pneumatic operator's chain feed for max 3005 mm (120 in) drill rods
Hull climbing ability	2%	• Manual drill support
Feed		• Foot assisted drilling control panel
Feed force, kN	17	• Swing arm control panel for traversing and boom positioning
Feed rate, m/s	0.4	• Extra air nozzles for cleaning or raising air ends (e.g. grinding equipment)
Travel length, mm	4130	• Mounting bracket for optional dust collector
Travel length, rev	4130	• Topical hydraulic oil ISO VG 68 (temp > 40 deg.)
Feed range	4-30°	
Rock drill BBC 120F	Total air consumption, l/s at 1 bar hammer operating pressure	
Water pump, max	45.75	ROC 442PC-00 with rock bit
SDS-51		BBC 130F
SDS-51	64.75	BBC 51
Hole range, rev	64-115	COP 118
COP 118		
Hole range, rev	48-89	Basic unit
Standard hole diameter at single pass drilling with no SDS maximum rev. rev	41	340-370
Dust collector DCT 140E		350-380
	All the above figures with no options included	350-370
	Larger sizes for smaller rock diameter	385-421
	Higher sizes for larger diameter	470-470

Fig1. BBC 120F Rock Drill Bit Specifications.

A. Types of Drillings

1. Spot Drilling: Spot facing, which is facing a certain area on a rough casting or forging to establish, essentially, an island of precisely known surface in a sea of imprecisely known surface Constraining the position of the drill bit using a drill jig with drill bushings.

2. Deep Hole Drilling: Deep hole drilling is defined as a hole depth greater than ten times the diameter of the hole. These types of holes require special equipment to maintain the straightness and tolerances. Other considerations are roundness and surface finish.

3. Gun Drilling: Gun drilling was originally developed to drill out gun barrels and is used commonly for drilling smaller diameter deep holes. The depth-to-diameter ratio can be even greater than 300:1. The key feature of gun drilling is that the bits are self-centering; this is what allows for such deep accurate holes. The bits use a rotary motion similar to a twist drill; however, the bits are designed with bearing pads that slide along the surface of the hole keeping the drill bit on centre. Gun drilling is usually done at high speeds and low feed rates.

4. Trepanning: Trepanning is commonly used for creating larger diameter holes (up to 915 mm (36.0 in)) where a standard drill bit is not feasible or economical.[14] Trepanning removes the desired diameter by cutting out a solid disk similar to the workings of a drafting compass. Trepanning is performed on flat products such as sheet metal, granite (curling stone), plates, or structural members

Design and Analysis of Wind Turbine Gearbox Test Rig

S. Vaneela¹ C.Madan Mohan Rao² B.Konda Reddy³

¹M.Tech Student ²Professor ³Associate professor

^{1,2,3}Department of Mechanical Engineering

^{1,2,3}PBR Visvadaya Institute of Technology and sciences, Kavali, AP, INDIA.

Abstract— Energy associated with high speed wind in certain regions will be exploited to generate electrical power with the aid of wind turbines. Primary drawback of wind turbine is generation of electrical power with low speed and high torque. But this needs to be converted to high speed and low torque power. Gear system will be used in wind turbine to do so. If any functional problem arises with this gear system it needs to be rectified. As the gear system will be installed at elevated height in wind turbine its maintenance becomes tedious. Hence predictive maintenance is most preferred than general maintenance in case of gear system of wind turbine. For carrying out predictive maintenance user should have idea about useful life of gear system. So far no practical system is available which can evaluate the useful life of gear system. Hence this project is taken up to design a system which can evaluate the useful life of gear system of wind turbine. To begin with configuration having all subsystems will be identified. Then all the subsystems designed to arrive at their dimensions. All the dimensional models are transformed to solid model using CATIA V5. Structural analysis is carried out using ANSYS software in order to ascertain the design adequacy.

Key words: Wind turbine, Gear box, turbine, analysis of gear box, analysis of turbine, CATIA V5, ANSYS

I. INTRODUCTION

In the dynamic environment components of wind turbines have good profitable conditions. Components of turbines located in weather patterns are impacted by strong, deep temperatures, ice, and snow, hot and humid climates.

The load on components, combined with the tough environmental conditions, the engineering of main and subsystem most particularly the gearbox. The interaction between gearbox and wind turbine with the different combinations of rotor blades, towers, generators and resulting loads that are related to different site conditions. Multi-body recreations, FE methodologies of finish frameworks, and the approval on test rigs and on location establishments are all piece of the gearbox improvement handle. Test and sensor plans should be discussed between wind turbine manufacturer, gearbox manufacturer and component supplier.

The test rig is driven by a motor and gearbox. The gearbox with a shift stage adapts the torque and speed to the input level of the gearbox. The generator is connected to the output shaft of the gearbox via an original wind turbine. Original rubber bushings from the wind turbine isolate the gearbox torque arm from the foundational support structure. The mounting point of the drivetrain relates to the first mounting edge of the wind turbine drivetrain. The ground underpins, gearbox lodging and planet bearer of the planetary stages are considered as a versatile components. The technology for those considerations is based on a mode reduction of the finite element models.

II. PROPOSED WORK

To design and analyse the wind turbine Gearbox test Rig by modelling in CATIA V5 and analyzing in ANSYS software in order to ascertain the design adequacy.

A. Wind Turbine:

A wind turbine is a device that converts kinetic energy from the air into electrical power. Wind turbine used for charging batteries may be referred to as a wind charger. The result of over a millennium of wind mill development and modern engineering, today's wind turbines are produced in an extensive variety of vertical and level pivot sorts. The littlest turbines are utilized for applications, for example, battery charging for helper control for water crafts or processions or to power movement cautioning signs. Possibly greater turbines can be used for making duties to a family unit control supply while offering unused power back to the utility supplier by methods for the electrical cross section



Fig. 1:

B. Horizontal axis wind turbine:

Horizontal-axis wind turbines (HAWT) have the primary rotor shaft and electrical generator at the highest point of a tower, and should be pointed into the air. Little turbines are pointed by a straightforward wind vane, while extensive turbines by and large utilize a wind sensor combined with a servo engine. Most have a gearbox, which changes the direct turn of the edges into a speedier upset that is more suitable to drive an electrical generator.

Since a tower produces turbulence behind it, the turbine is typically situated up quality of its supporting tower. Turbine edges are made solid to keep the cutting edges from being pushed into the tower by high show. Also, the sharp edges are put a significant separation before the tower and are once in a while tilted forward into the air a little sum.

Down wind machines have been worked, paying little respect to the issue of turbulence since they needn't trouble with an additional framework for keeping them as per the air, in high artificiality the front lines can be allowed to bend which diminishes their cleared zone and thusly their wind resistance. Since rehashing (that is excess) turbulence may incite exhaustion frustrations, most HAWTs are of up air plot.

Design and Analysis of Wind Turbine Gearbox Test Rig

S. Vaneela¹ C.Madan Mohan Rao² B.Konda Reddy³

¹M.Tech Student ²Professor ³Associate professor

^{1,2,3}Department of Mechanical Engineering

^{1,2,3}PBR Visvodaya Institute of Technology and sciences, Kavali, AP, INDIA.

Abstract— Energy associated with high speed wind in certain regions will be exploited to generate electrical power with the aid of wind turbines. Primary drawback of wind turbine is generation of electrical power with low speed and high torque. But this needs to be converted to high speed and low torque power. Gear system will be used in wind turbine to do so. If any functional problem arises with this gear system it needs to be rectified. As the gear system will be installed at elevated height in wind turbine its maintenance becomes tedious. Hence predictive maintenance is most preferred than general maintenance in case of gear system of wind turbine. For carrying out predictive maintenance user should have idea about useful life of gear system. So far no practical system is available which can evaluate the useful life of gear system. Hence this project is taken up to design a system which can evaluate the useful life of gear system of wind turbine. To begin with configuration having all subsystems will be identified. Then all the subsystems designed to arrive at their dimensions. All the dimensional models are transformed to solid model using CATIA V5. Structural analysis is carried out using ANSYS software in order to ascertain the design adequacy.

Key words: Wind turbine, Gear box, turbine, analysis of gear box, analysis of turbine, CATIA V5, ANSYS

I. INTRODUCTION

In the dynamic environment components of wind turbines have good profitable conditions. Components of turbines located in weather patterns are impacted by strong, deep temperatures, ice, and snow, hot and humid climates.

The load on components, combined with the tough environmental conditions, the engineering of main and subsystem most particularly the gearbox. The interaction between gearbox and wind turbine with the different combinations of rotor blades, towers, generators and resulting loads that are related to different site conditions. Multi-body recreations, FE methodologies of finite frameworks, and the approval on test rigs and on location establishments are all piece of the gearbox improvement handle. Test and sensor plans should be discussed between wind turbine manufacturer, gearbox manufacturer and component supplier.

The test rig is driven by a motor and gearbox. The gearbox with a shift stage adapts the torque and speed to the input level of the gearbox. The generator is connected to the output shaft of the gearbox via an original wind turbine. Original rubber bushings from the wind turbine isolate the gearbox torque arm from the foundational support structure. The mounting point of the drivetrain relates to the first mounting edge of the wind turbine drivetrain. The ground underpins, gearbox lodging and planet bearer of the planetary stages are considered as a versatile components. The technology for those considerations is based on a mode reduction of the finite element models.

II. PROPOSED WORK

To design and analyse the wind turbine Gearbox test Rig by modelling in CATIA V5 and analyzing in ANSYS software in order to ascertain the design adequacy.

A. Wind Turbine:

A wind turbine is a device that converts kinetic energy from the air into electrical power. Wind turbine used for charging batteries may be referred to as a wind charger. The result of over a millennium of wind mill development and modern engineering, today's wind turbines are produced in an extensive variety of vertical and level pivot sorts. The littlest turbines are utilized for applications, for example, battery charging for helper control for water crafts or processions or to power movement cautioning signs. Possibly greater turbines can be used for making duties to a family unit control supply while offering unused power back to the utility supplier by methods for the electrical cross section



Fig. 1:

B. Horizontal axis wind turbine:

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Effect of glass fiber additive on Tensile, impact and water absorption and crushing strength Properties of Bamboo Reinforced Composite

A.V.P.Manoharitha¹ Dr.CH.V.S Parameswar rao² and K.Manikantesh³

¹M.tech scholar, Department of Mechanical Engineering, PBR Visvodaya Institute of Technology and Science, Kavali

² Professor , Department of Mechanical Engineering, PBR Visvodaya Institute of Technology and Science, Kavali

³ Assistant Professor , Department of Mechanical Engineering, PBR Visvodaya Institute of Technology and Science, Kavali

Abstract- In the recent years composites are playing very crucial role in the field of engineering. To achieve the requirements of engineers, composites are developed with unusual combinations. Composites are broadly used in many applications such as in the field of aerospace, marine, Power plants and Domestic vehicles etc., particularly used these kinds of materials to improve performance requirements and reduction in cost in terms of maintenance, operation and construction. So far Hybrid composites are more advanced composites as compared to conventional FRP composites. They have more than one reinforcing phase and better flexibility as compared to other fiber reinforced composites. The main aim of this investigation is to improve the mechanical properties of composites with addition of glass fiber as additive material. The tensile properties are determined by using universal testing machine with digital output, impact properties are determined using izod testing machine ,crushing strength was determined using universal testing machine and water absorption test is done and compared the results of pure bamboo fiber reinforced composite and additive glass fiber bamboo reinforced composite.

I. LITERATURE SURVEY

- [1] SILVA F.A stated natural Fiber Reinforced Composites: The mechanical properties and physical properties of natural fibers vary considerably depending on the chemical and structural composition, fiber type and growth conditions.
- [2] Baley C stated Sisal Fiber Reinforced Composites: Alkali-treated sisal fibres were used as novel reinforcement to obtain composites with self-synthesized urea formaldehyde resin as matrix phase. The composites were prepared by means of compression molding, and then the effects of sisal loading on mechanical properties such as impact strength, flexural strength, and wear resistance were investigated.
- [3] S.Venkata Naidu and
- [4] K.John stated that by means of chemical treatment sand additive mixing the properties of fiber is improved.
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- [6] P.Mani stated that there is a developed luffa fiber reinforced composites were by change diameter of the fiber there is an improvement in the tensile and flexural
- [7] P Sivasubramanian stated the analysis of properties indicates that the chemical modification imparts a considerable improvement in the properties as well as the performance of the composite.
- [8] M. Sathiyakumara, stated the effect of di-phasic and multiphasic as an additive on the densification behaviour and microstructure evaluation of alumina has been investigated. Colloidal processing was used for the mixing of these additives in order to achieve a uniform distribution and thereafter

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Design and Analysis of Hot Runner Injection Mould for Water Bottle Caps

N.Divya¹, Dr.Ch.V.S.Parameswara Rao²,Dr. S.S.N.MalleswaraRao³

¹ P.G.Student,PBR Visvodaya Institute of Technology and Science, .
Kavali, S.P.S.R.Nellore, Andhra Pradesh, India
nallapareddy.divya@gmail.com

² Professor, PBR Visvodaya Institute of Technology and Science,
Kavali, S.P.S.R.Nellore, Andhra Pradesh, India
cprao66@yahoo.co.in

³ Professor, PBR Visvodaya Institute of Technology and Science,
Kavali, S.P.S.R.Nellore, Andhra Pradesh, India
sivanag123@gmail.com

Abstract- Injection moulds are divided into two types based on runner design (i.e.) Cold runner moulds and Runner lessmoulds (i.e.) hot runner moulds. In cold runner moulds, for multi-cavity and multi-point injection moulds, there is wastage of material in runner area. Sometimes wastage of material is more than component weight. For avoiding the above problem, the technique used is hot Runner moulds. Hot runner mould is one of the advanced manufacturing methods for multi-cavity type moulds. These types of moulds are commonly used for large production rate. While producing plastic components using normal/standard multi-cavitymould, we are facing theproblems like partial filling, cavities in components, less product quality, injection pressure and temperature drop age and warpage etc... To overcome these problems, hot Runner mould is designed and modeled in PROE 5.0 andtested. Then the thermal analysis is carried out to find out the thermal variations due to the injection pressure of a molten plastic into the cavities of the mold by using Simulation Technology.

Index Terms- Hot Runner Injection Mold, Finite Element Model, 3D numerical method, temperature analysis.

I. INTRODUCTION

Injection molding is a method of forming a plastic product from powdered thermoplastics by feeding the material through the machine component called the hopper to a heated chamber in order to make it soft and force the material into the mold by the use of the screw. In this whole process, pressure should be constant till the material is hardened and is ready to be removed from the mold. This is the most common and preferable way of producing plastic products with any complexity and size.

The runner system accommodates the molten plastic material coming from the barrel and guides it into the mould cavity. Its configuration, dimensions, and connection with the moulded part affect the mould filling process and, therefore, largely the quality of the product. In other words, the runner system dictates part quality and productivity. Runner systems in

conventional moulds have the same temperature level as the rest of the mould because they are in the same mould block. The ideal injection moulding system delivers moulded parts of uniform density, and free from all runners, flash, and gate stubs. To achieve this, a hot runner system, in contrast to a cold runner system, is employed. The material in the hot runners is maintained in a molten state and is not ejected with the moulded part. Unlike an ordinary cold runner, the hot runners are heated, so the plastic melt in the hot runners never freeze.

Hot runner systems were first developed and came into sporadic use in the early 60s with generally negative results. They gained popularity in the 80s and 90s as technological advantages allowed improved reliability and the escalation of plastic materials prices made hot runner systems more desirable and cost effective. Hot runners are fairly complicated systems, they have to maintain the plastic material within them heated uniformly, while the rest of the injection mold is being cooled in order to solidify the product quickly. For this reason, they are usually assembled from components pre-manufactured by specialized companies

Injection moulding is a manufacturing process for producing parts by injecting material into a mould. Injection moulding can be performed with a host of materials, including metals, glasses, elastomers, and most commonly thermoplastic and thermosetting polymers. Material for the part is fed into a heated barrel, mixed, and forced into a mould cavity where it cools and hardens to the configuration of the cavity. The manufacturing of thin-wall products is very important for the automotive industry because thinner components allow considerable overall weight savings, beneficial effects on the reduction of fuel consumption and improvement of environmental impact. In addition, the decrease in thickness allows significant cuts in production costs due to less material being used and shorter cycle times. All materials used for automotive applications such as metals, foams, plastics and composites are investigated in order to achieve reductions in product thickness. In particular, thin-wall fabrication of plastic products allows the realization of smaller and lighter parts which

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Design, Modelling and Analysis of Herringbone Gear Using Ansys

D.Ramakrishna [1], Ch.V.S.ParamaeswaraRao [2], S. Siva Naga MalleswarRao [3]

M.Tech Research Scholar [1], Professor [2] & [3]

Department of Mechanical Engineering

PBR VITS, Kavali-524201

India

ABSTRACT

Herringbone gears, also called as double helical gears are the gear sets designed to transmit power through either parallel or less commonly perpendicular axes. The unique tooth structure of a herringbone gear consists of two adjoining opposite helixes that appear in the shape of the letter 'V'. Herringbone gears usually mate via the use of smooth, precisely manufactured V-shaped teeth. Like helical gears multiple teeth are engaged during rotation, distributing the work load and offering a quiet operation. However, due to their tooth structure, herringbone gears nullify the axial thrust unlike helical gears. The gear set's teeth may be manufactured so that tooth-tip aligns with the opposite tooth-tip or the opposite gear's tooth trough. In this project, herringbone gears that are used in a rolling mill gear box is designed using a 3D modelling software called Solid works. Static, Modal and Fatigue Analysis has been carried out on herringbone gears using ANSYS tool. Alloy Steel, GRP and Carbon fiber materials have been analysed and studied for comparison. The selection of better material for herringbone gear is determined out of this analysis. This Paper is the result of the analysis carried out by using ANSYS 14.5 on a 3D model of Herringbone gear which was generated using Solid works tool. The results are then compared with the help of graphs.

Keywords:- Design, Modelling, Helical, Herringbone Gear, Solid works, Ansys, Static, Modal and Fatigue analysis.

I. INTRODUCTION

A gear is a rotating machine part having cut teeth, or cogs, which mesh with another toothed part in order to transmit torque. Two or more gears working in tandem are called a transmission and can produce a mechanical advantage through a gear ratio and thus may be considered as a simple machine. Geared devices can change the speed, magnitude, and direction of a power source. The most common situation is for a gear to mesh with another gear, however a gear can also mesh a non-rotating toothed part, called a rack, thereby producing translation instead of rotation. The gears in a transmission are analogous to the wheels in a pulley. The advantage of gears is that the teeth of a gear prevent slipping. When two gears of unequal number of teeth are combined a mechanical advantage is produced, with both the rotational speeds and the torques of the two gears differing in a simple relationship. In transmissions which offer multiple gear ratios, such as bicycles and cars, the term gear, as in first gear, refers to a gear ratio rather than an actual physical gear. The term is used to describe similar devices even when gear ratio is continuous rather than discrete, or

when the device does not actually contain any gears, as in a continuously variable transmission. The earliest known reference to gears was circa 50 A.D. by Hero of Alexandria, but they can be traced back to the Greek mechanics of the Alexandrian school in the 3rd century BC and were greatly developed by the Greek polymath Archimedes (287-212 BC).

The finite element method is proficient to supply this information but the amount of time required to generate proper model is large. Therefore to reduce the modelling time, a pre-processor method that builds up the geometry required for finite element analysis may be used, tools such as Solid works or Pro/Engineer. These tools can generate 3Dmodels of gears so quickly. The model geometry generated using Solid works is saved as an IGES file and then import it to ANSYS 14.5 for conducting the analysis.

Zhonghong Bu, et.al [1], produced a generalized dynamic model for herringbone planetary gear train (HPGT) is developed to investigate its modal properties. The model includes the axial vibration of two helical ring gears in addition to three planar degrees of freedom for the carrier and all gears. Four stiffness coefficients are applied to



AN EXPERIMENTAL STUDY ON MEASUREMENT OF CUTTER VIBRATION AND OPTIMIZATION OF PROCESS PARAMETERS IN MICRO MILLING OF

TI-6AL-4V

M.Mounika¹, N.Seshaiah² and K.Venkataraao³¹M.tech scholar, Dept. of Mechanical Engineering, PBR VITS, Kavali, AP, India^{2,3}Professor of Mechanical Engineering, PBR VITS, Kavali, AP, India

Abstract- In the present days, many equipments are used to measure vibrations produced in the machines, among them Laser Doppler Vibrometer (LDV) is a non-contact type equipment/sensor used to measure vibration of rotating body. In the present work, the LDV is used to measure vibration of a mill cutter in micro milling of Ti-6Al-4V alloy in terms of acoustic optic emission signals. A fast Fourier transformer is used to process the signals in to frequency domain. According Taguchi design of experiments L₂₇, experiments were conducted on the Ti-6Al-4V alloy at three levels of spindle speeds, depth of cuts and feed rates. Experimental results of amplitude of tool vibration in X and Y directions and surface roughness were measured and analyzed using Response Surface Methodology. Analysis of variance was used to identify significant parameter which effects the tool vibration and surface roughness. A multi response optimization technique was used to optimize process parameters for minimum vibration amplitude and surface roughness.

Keywords- Micro milling, response surface methodology, multi-response optimization, tool vibration.

I. INTRODUCTION

In micro milling the relative motion between work piece and cutting tool generates dynamic excitation due to deformation of metal that results in vibration of tool. The excitations of tool effects surface quality of the product. These vibrations are to be maintained minimum to reduce surface roughness and tool wear. The relative motion between the work piece and tool results in vibration of mill cutter, it is necessary to measure vibration of cutter as close as to machining. For this vibration of mill cutter measured by Laser Doppler Vibrometers (LDV).The LDV is capable of giving reliable information of tool vibration, and the surface roughness is measured by using Micro Surf. Different cutting parameters are considered and experiments were conducted according to design of experiments. The results obtained by the experimental work are analyzed by Analysis of variance (ANOVA), which is used to analyze the ratios to identify significant cutting parameters having more influence on the tool life. The ANOVA give optimum cutting parameters for higher tool life. Response surface methodology (RSM), artificial neural networks and support vector regression were used to develop the empirical models for prediction of surface roughness, tool wear and power consumption in milling process.

[1] SandvikCoromant stated that Milling is one of the widely used processes for high metal removal rate and production of complex shapes.[2] Savas V and Ozay C studied the effect of the cutting parameters on the surface roughness were investigated experimental and also by using genetic [3] Joshi SS, Ramakrishna N, Nagarwalla HE, Ramakrishna P investigated the effects of machining variables on the milling force and tool wear during milling of both Al7075 and the open-cell SiC foam. The milling experiments were performed based on the Taguchi L27L27 full-factorial orthogonal array. [4] AnNithyanandan T. et al. have investigated the effects of process parameters on surface finish and material removal rate (MRR) to obtain the optimal setting of process parameters. And the analysis of Variance (ANOVA) is also used to analyze the influence of cutting parameters during machining. [5] D. Philip Selvaraj et al. have studied the Taguchi optimization method was applied to



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Experimental Investigation of Surface Roughness and Temperature On Surface Grinding of AISI1040 Steel using MQL Technique

S. SARIKA¹, K. MANIKANTESH², D. PAVAN KUMAR³

¹PG Scholar, Dept of ME, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

²Assistant Professor, Dept of ME, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

³Associate Professor, Dept of ME, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

Abstract: In machining of metals, application of cutting fluids improves machinability and tool life due to their cooling and lubrication characteristics. The traditional methods of cutting fluid applications may create problems to the operator and not Eco-friendly. Minimum quantity lubrication (MQL) Technique can minimize these problems to the considerable extent. The use of nano material and nanotechnology can improve the performance of cutting fluids. In the present work, an attempt has been made with MQL to investigate the performance of vegetable oil along with different volume proportions Cu₂O nano particles on surface grinding of AISI1040 work piece. The influence of oil is evaluated in terms of surface finish and Temperature of the work piece. According to central composite design, sixteen experiments are conducted in dry and MQL with nano particles. Experimental results of surface roughness and temperature are evaluated using response surface methodology (RSM) and analysis of variance to identify significant parameters. A multi response optimization technique is used to optimize processes parameters for minimum surface roughness and temperature. The optimal values of % of Nano particles, cutting speed, table feed and depth of cut are found to be 0.3636%, 9.166m/s, 7.12m/min and 10μm respectively.

Keywords: MQL, Cu₂O Nano Particles, RSM, Multi Response Optimization, Surface Grinding.

I. INTRODUCTION

Grinding is one of the metal removal processes used in finishing of components that require close dimensional tolerances and smooth surfaces. Cutting fluid is commonly used to flood the grinding zone, to meet both cooling and lubrication requirements. The ingredient of conventional cutting fluids causes skin and respiratory problems to machine operators. The high cost of disposal or recycling of the grinding fluids is another major concern, especially as the environmental pollution point of view. Use of vegetable oils along with nano materials make possible the developments in new generation of cutting fluids to achieve high performance in machining combined with good environment compatibility. The traditional methods of applying the cutting fluid are not ecological, and hence the Minimal Quantity Lubrication (MQL) has been gaining as an alternative solution for flood cooling. [1-4]. Bin shen et al.[6] Performed experiments on surface grinding with the applications of water based Cu₂Oand diamond nanofluids by MQL. The experiments results were compared with dry machining and reveal that the volume of metal removed per unit volume of wheel wear has improved with the application of High concentrated nano fluids in addition to reduction of cutting forces, improvement in surface finish and minimised the work piece burning. Ramana et al. [7] prepared a green and petroleum-free cutting fluid by mixing canola oil with nano-crystalline boric acid.

They conducted experiments on turning of AISI 1040 to study the effect of nano-level boric acid particle size and its percentage of weight in lubricant on surface roughness, cutting forces and cutting zone temperature. The surface roughness, cutting forces and temperature are found to be directly proportional to percentage of weight and inversely proportional to nano particle size. Vasu and pradeep Kumar Reddy [10] investigated the effect on surface roughness, tool wear, and temperature dissipation of suspending Cu₂O nano particles in Coolube 2210^{EP} eco friendly vegetable MQL oil when machining Inconel 600 alloy at different cutting parameter combinations by coated carbide cutting tools on a precision engine lathe machine. Experimental results show that surface roughness, temperature, cutting force, and tool wear are reduced significantly by MQL with (6 vol. % of Cu₂Oparticle) nanofluids than dry. Neseli et al.[11] Conducted experiments on CNC grinding Machine to determine the process parameters for improving surface finish and reducing the wheel vibrations for AISI 8620 steels. With experiments and Taguchi method the optimal process parameters were determined. Using Response surface analysis, two optimized models were developed to predict the most significant grinding parameters for minimum surface finish and vibrations. The results are further validated.

Experimental Investigation of Surface Roughness and Temperature On Surface Grinding of AISI1040 Steel using MQL Technique

S. SARIKA¹, K. MANIKANTESH², D. PAVAN KUMAR³

¹PG Scholar, Dept of ME, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

²Assistant Professor, Dept of ME, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

³Associate Professor, Dept of ME, PBR Visvadaya Institute of Technology & Science, Kavali, AP, India.

Abstract: In machining of metals, application of cutting fluids improves machinability and tool life due to their cooling and lubrication characteristics. The traditional methods of cutting fluid applications may create problems to the operator and not Eco-friendly. Minimum quantity lubrication (MQL) Technique can minimize these problems to the considerable extent. The use of nano material and nanotechnology can improve the performance of cutting fluids. In the present work, an attempt has been made with MQL to investigate the performance of vegetable oil along with different volume proportions Cu₂O nano particles on surface grinding of AISI1040 work piece. The influence of oil is evaluated in terms of surface finish and Temperature of the work piece. According to central composite design, sixteen experiments are conducted in dry and MQL with nano particles. Experimental results of surface roughness and temperature are evaluated using response surface methodology (RSM) and analysis of variance to identify significant parameters. A multi response optimization technique is used to optimize processes parameters for minimum surface roughness and temperature. The optimal values of % of Nano particles, cutting speed, table feed and depth of cut are found to be 0.3636%, 9.166m/s, 7.12m/min and 10μm respectively.

Keywords: MQL, Cu₂O Nano Particles, RSM, Multi Response Optimization, Surface Grinding.

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RESEARCH ARTICLE

Experimental Evaluation of Optimal Parameters for Abrasive Water Jet Machining Process of Granite

A Venkata Lakshmi Mrudhula^[1], Dr. Ch V S Parameswara Rao^[2]

Dr. S N MalleswaraRao Singu^[3]

Mechanical Department^[1], PBR VITS, Kavali

Mechanical Department^[2], Director of R&D, PBR VITS, Kavali, Nellore (Dt), A.P.

Mechanical Department^[3], PBR VITS, Kavali, Nellore (Dt), A.P.

ABSTRACT

Abrasive Water Jet Machining is an effective technology for processing various materials. This paper evaluates the various parameters of Abrasive Water Jet Machining (AWJM). In AWJM process the workpiece material is removed by impact erosion of high-velocity jet of water mixed with abrasive particles. This technology is used for the applications such as cutting, drilling, and milling of hard materials. The technology has been begun to use for years in the machining and/or processing of natural stones, in particular, granite for especially decorative cutting purposes. Granite is a very hard, granular, crystalline, igneous rock consisting mainly of quartz, mica, and feldspar and often used as a building stone. Abrasive Water Jet Machining (AWJM) process is usually used to through cut materials such as granite (hard and tough) which are difficult to cut by conventional machining processes. In the present work, experiments are conducted on cutting granite stones of different thickness at different pressure rates. The output parameters were analyzed using the statistical methods for determination of the effects of each parameter on the cutting process.

This paper also deals with the current status of machining of granite by abrasive water jet and optimization of the machining parameters and different outputs. Water pressure, Surface roughness, Material removal rate and cutting time are the major controlling parameters identified.

Keywords :— Abrasive Waterjet Machining (AWJM), Material Removal Rate (MRR), Surface Roughness (SR), Granite, Water pressure, Cutting time.

I. INTRODUCTION

Waterjet cutting technology is one of the fastest growing machining processes in the world. Water jets entered the manufacturing sector in the early 1970's for cutting soft materials like cardboard, plastics, rubber. In the mid-1980's, the abrasive water jet machining was introduced to expand the capabilities of the tool to cut hard materials like metal, ceramic, stone, glass, composite materials. An abrasive water jet is a jet of water that contains some abrasive materials such as Aluminium oxide, Silicon carbide, sodium bicarbonate, and dolomite and glass beads with varying grain sizes. A schematic view of the process is depicted in the fig.1

The principle of the WJM process is shown in fig. 2. In this process, water goes through the thin orifice with very high pressure (about 4000-6400 bar) and enters mixing chamber with a very high velocity (nearly 4000kmph). In mixing chamber, abrasive particles along with water jet are drawn into the nozzle. Generally, nozzles are made of high wear resistant materials like sapphire or diamond. This mixture containing water, abrasive particles, and air leaves nozzle. Having received a lot of kinetic energy and velocity by water jet, the abrasive particles cause wearing and machining when they impact on the workpiece surface. Advantages of abrasive water jet cutting are the ability to cut almost all materials, no thickness limitation to cut materials, no thermal distortion,

high flexibility and small cutting forces. Because of these capabilities, this cutting technique is more cost-effective than traditional and some non-traditional machining processes.

It is also an environmentally friendly technique that can be adopted for processing number of engineering materials particularly difficult-to-cut materials. However, AWJM has some limitations and drawbacks. It may generate loud noise and a messy working environment. It may also create tapered edges on the kerf characteristics, especially when cutting at high traverse rates.

The Abrasive water jet machining system can be self-explanatory through the fig.3.

AWJM - Elements

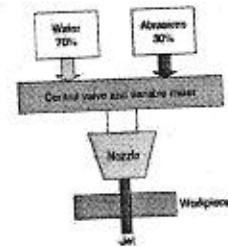


Fig. 1 Elements of A W J M



PARVATHAREDDY BABUL REDDY

VISVO DAYA INSTITUTE OF TECHNOLOGY & SCIENCE
 (Affiliated to J.N.T.U.A, Approved by AICTE and Accredited by NAAC with 'A' Grade)
KAVALLI – 524201, S.P.S.R Nellore Dist., A.P. India. Ph: 08626-243930



DEPARTMENT OF MECHANICAL ENGINEERING

S.No	Title of paper	Name of the Student	roll number	Name of the Guide	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the journal
1	Shape and material optimization of a two wheeler front suspension frame for pipe type and rectangular cross sections	T.KONDIAH	13731D1501,	D.PAVAN KUMAR	International Journal of Emerging Trends in Engineering Research	2015-16	ISSN: 2347-3933	https://www.academia.edu/26926310/Shape,_And,_Material_Optimization,_Of,_A,_Two,_Wheeler,_Front,_Suspension,_Frame,_For,_Pipe,_Type,_And,_Rectangular,_Cross,_Sections
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5	effect of fiber length and weight on tensile response of natural fibre reinforced composite	K.Manjusha	13731D1510,	B.KONDAREDDY	International Journal of engineering research and technology	2015-16	ISSN: 2278-0181	https://www.ijert.org/research/effect-of-fiber-length-and-weight-on-tensile-response-of-natural-fiber-reinforced-composite-IJERTV5IS040631.pdf
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8	OPTIMIZATION OF PROCESS PARAMETERS ON ALUMINUM ALLOY ADC12 MATERIAL USING TAGUCHI IN CNC TURNING	P.CHANDRASEKAR R.	13731D1513,	M. MAHENDRA BABU	International Journal Of Advanced Research in Engineering & Management	2015-16	ISSN: 2278-0181	http://www.ijarem.org/papers/v2-11/7_IJAREM-40B.pdf
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11	Study on Fracture Mechanics for Maraging Steel (M250)	V.GOPALA KRISHNA	13731D1518,	O.Pavan Kumar	International Journal of Modern Trends in Engineering and Research	2015-16	ISSN (Online):2349-974	https://www.ijinter.com/papers/volume-3/issue-3/study-of-fracture-mechanics-on-maraging-steel-m250.pdf

B/C
 Head of Department
MECHANICAL ENGINEERING
 PVR VISVODAYA Institute of Technology & Science
 KAVALLI - 524 201, Nellore District, A.P.



Shape And Material Optimization Of A Two Wheeler Front Suspension Frame For Pipe Type And Rectangular Cross Sections

T. Kondaiah¹, D.Pavan Kumar²

¹M.Tech Student, Department of Mechanical Engineering, PBR Vits, Kavali, India, kondaiah5019@gmail.com

²Associate Professor, Department of Mechanical Engineering, PBR Vits, Kavali, India, dpk_mech@yahoo.com

ABSTRACT

The front suspension frame of a motor vehicle supports all the drive assemblies, i.e. the engine, gearbox and axles. In addition the suspension and steering systems and the shock absorbers are attached to it. The appropriate body is fixed to the chassis. It is essential that the frame should not buckle on uneven road surfaces and that any distortions which may occur should not be transmitted to the body. The frame must therefore be torsion-resistant. The frame of a motor vehicle is the load bearing part of the chassis which supports all forces (wheel forces) and weights. It should be as rigid as possible.

The main aim of the project is to model a frame of a two wheeler using 3D modeling software Pro/Engineer. Two models of suspension frames are designed for pipe type and rectangular cross sections. Calculations are done to determine the displacement and stress by applying pressure.

To validate the strength of two models, Structural analysis is done by applying the wheels pressure. Analysis is done for frame using two materials steel and carbon epoxy to verify the best material for frame. Modal analysis is also done to determine natural frequencies of suspension frame. Comparison is done by two FEA analysis, and also we can validate the better cross section and material for suspension frame.

Key words : Analysis, ANSYS, Meshing, Modeling

1. INTRODUCTION

Whenever to build a motorcycle, the frame determines the basic look of the bike. Of course motorcycle frames affect not only the appearance of the bike but the handling and safety of the finished machine. Frames are the basic skeleton to which other components are attached. They hold the motorcycle tanks and engine and provide support to the whole bike.

Motorcycle frames are usually made from welded aluminium, steel or alloy, carbon-fibre is used in some expensive or custom frames. The purpose of a motorcycle's frame is to act as a base on which all the various components can be bolted. The engine generally sits inside the frame, the rear swingarm is attached by a pivot bolt (allowing the suspension to move) and the front forks are attached to the front of the frame. The frame can also help to protect the more sensitive parts of a motorcycle in a crash. A motorcycle frame includes the head tube that holds the front fork and allows it to pivot. Some motorcycles include the engine as a load-bearing, stressed member. The rear suspension is an integral component in the design. Traditionally frames have been steel, but titanium, aluminium, magnesium, and carbon-fibre, along with composites of these materials, have been used. Because of different motorcycles' varying needs of cost, complexity, weight distribution, stiffness, power output and speed, there is no single ideal frame design

1.1 Types of Suspension Frames

Single cradle frame – It is simple type of frame and looks like first ever motor cycle frame. It consists of smaller diameter tubes made from steel tubes that surround the engine with a main tube above and others. It becomes double cradle frame at the exhaust, it is referred to as a split single cradle frame. These are usually found in off-road motor cycles.

Double cradle frame – These are descended from single cradle frames. In this the engine can support with two cradles on either side. Double cradle frames are commonly used in simpler road bikes and custom motor cycles. They offer good strength, rigidity & lightness. Now, they have been technically similar by perimeter frames.

Backbone frame – It is most desirable frame, the engine is suspended by single, wide main beam. This frame allows great flexibility in design, because it is hidden inside the finished motor cycle. The engine simply seems to hang in mid air. It is simple & cheap to make, and usually found on naked and off-road motor cycles.

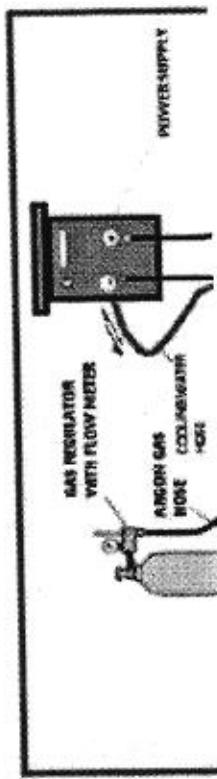
Optimization of Process Parameters Affecting gas Tungsten Arc Welding of AA6082

Y.Mahesh, K.V.N.V.N Rao

Abstract—In this competitive manufacturing technology, the versatility of aluminum and its alloys makes it the most widely used metal after steel. In any structural application of aluminum alloys consideration of its weldability is of utmost importance as welding is largely used for joining of structural components. Gas tungsten arc welding (GTAW) is most commonly used welding process for joining aluminum alloys that has produced low cost and high quality joints. The welding of aluminum and its alloys has always represented a great challenge for researchers and technologists. In this paper some important GTAW process parameters and their effects on weld quality are discussed. Taguchi method was employed to optimize the GTAW process parameters.

1.1 Gas Tungsten Arc welding (GTAW):

Gas tungsten arc welding (GTAW), also known as tungsten inert gas (TIG) welding, is an arc welding process that uses a non-consumable tungsten electrode to produce the weld. The weld area is protected from atmospheric contamination by an inert shielding gas (argon or helium), and a filler metal is normally used, though some welds, known as autogenously welds, do not require it.



Keywords— GTAW System, AA6082 plate,orthogonal array Taguchi method, Tensile test, Hardness test

Effect of Stacking Sequence and Orientation on Tensile Response of Natural Fiber Reinforced Hybrid Composites: Fibrous - Glass/Hemp/Jute/Epoxy Composite Plates

Ch. Naresh¹

¹M.tech scholar, Dept. of Mechanical Engineering, PBR Visvadaya Institute of Technology and Science, Kavali, AP, India.

Y. Rajesh Kumar²

²Asst.professor, Dept. of Mechanical Engineering, PBR Visvadaya Institute of Technology and Science, Kavali, AP, India.

K. Manikantesh³

³Asst.professor, Dept. of Mechanical Engineering, PBR Visvadaya Institute of Technology and Science, Kavali, AP, India.

Abstract –This paper is concerned with evaluation of failure mechanisms under tensile loading with different stacking sequence and orientations of fiber-reinforced laminate composites under tensile loads. The fibrous-Glass/Hemp/Jute/Epoxy laminates are fabricated with different stacking sequence and orientations by hand layup technique, and all the parameters of laminated composite materials were measured experimentally. The tensile strength and failure mechanisms were investigated for hybrid composites. Static uni-axial tensile tests were performed on specimens made with single layer of glass, hemp, and jute fibers and epoxy resin combined to give different stacking and orientation hybrid composite materials. The results are analyzed by using Taguchi technique.

Keywords-Glass fiber, Hemp fiber, Jute fiber, Stacking sequence, Orientation, Tensile response, Taguchi technique.

I. INTRODUCTION

Progressions in the use of laminated composite materials for structure of aircraft and automobile industries were increased significantly over the past decade. This was motivated by the need for improved performance requirements in stipulations of payload, range, stability and simultaneously, a reduction in costs in terms of maintenance, operation and construction. Much experience in the use of hybrid composites in the aerospace industries were achieved from the design of composite airplanes, which were designed using high stiffness requirements and not for all the parts of the current body of airplanes being planned. The stiffness of composites can be determined equitably accurately using the particular tests and material properties from standard material characterization tests. However, with more demanding requirements, this was changed and the minimization of damage is something that is now required in order to satisfy higher-performance demands. This is not as simple as optimizing the elastic stiffness of the structure due to the complex damage modes that can occur in hybrid composites.

Tensile strength is an important topic as it is one of the design drivers for composite structures. [1-2] have studied properties of different type's composites like unidirectional

(UD) layered glass/carbon hybrid composites. [3] Also observed consistently higher strains to carbon failure in their UD glass–carbon–glass sandwich laminates than in all carbon specimens. The conventional material such as glass, carbon and boron fibers are quite expensive and the use of fiber like carbon or boron is justified only in aerospace application. Therefore it is meaningful to explore the possibility of using cheaper materials such as natural fiber as reinforcement [4]. The mechanical behavior of unidirectional hemp fiber reinforced epoxy composites is studied [5].The effect of fiber content on the properties of natural fiber reinforced composites is particularly significance. It is often observed that the increase in fiber loading leads to an increase in tensile properties. The layering sequence has larger effect on the flexural and inter-laminar shear properties than tensile properties [6-7].

The tensile strength and Young's modulus of composites reinforced with bleached hemp fibers increased incredibly with increasing fiber loading[8]. The hybridized composite shows greater tensile strength compared to the composites with individual type of natural fibers as reinforcement [9-10]. The effect of stacking sequence on compressive response and energy absorption of glass, carbon and Kevlar fiber reinforced epoxy hybrid composites were studied [11-12].The fiber properties, conventional fibers such as short and long glass fibers and carbon fibers are exhibit significantly higher strength values and the natural fibers also attain the nearest value of conventional fibers[13].

II. EXPERIMENTAL PROCEDURE

A) Material Selection

Traditionally, aerospace composites were composed of high-stiffness carbon fibers to maintain dimensional stability under high-performance application. The stiffness property is often associated with a particular susceptibility to impact damage and a corresponding reduction of mechanical properties. However, such structures were expected to only encounter few unintentional impacts. Composite structures for military ground vehicles were

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Ch. Naresh¹

¹M.tech scholar, Dept. of Mechanical Engineering, PBR Visvadaya Institute of Technology and Science, Kavali, AP, India.

Y. Rajesh Kumar²

²Asst.professor, Dept. of Mechanical Engineering, PBR Visvadaya Institute of Technology and Science, Kavali, AP, India.

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Effect of Fiber Length and Weight on Tensile Response of Natural Fiber Reinforced Composite

K. Manjusha¹

¹M. Tech Scholar,

Dept. of Mechanical Engineering,

PBR Visvadaya Institute of Technology and Science,

Kavali, Ap, India.

B. Kondareddy²

²Asso.Professor,

Dept. of Mechanical Engineering,

PBR Visvadaya Institute of Technology and Science,

Kavali, Ap, India.

D. Pavan Kumar³

³ Asso.Professor,

Dept. of Mechanical Engineering,

PBR Visvadaya Institute of Technology and Science,

Kavali, Ap, India.

Abstract - Fiber reinforced polymer composites have been used in a variety of applications because of their many advantages such as relatively low cost of production, easy fabrication etc.,. Reinforcement in polymer is either synthetic or natural. Synthetic fiber such as glass, carbon etc. have high specific strength but their fields of application are limited due to higher cost of production, and due to their non biodegradability. Recently there has been an increased interest in natural fiber based composites due to their many advantages, like biodegradability. Coir & banana fibre are used in the present work for making natural fiber reinforced composite. The objective of the present research work is to study the mechanical behavior of coir & banana fiber reinforced polyester based hybrid composites and comparison of properties like young's modulus. The optimum percentage of banana fiber and coir are found by conducting response surface Methodology.

Keywords- Coir Fiber ,Banana Fiber,Response Surface Methodology

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Tensile strength is an important topic as it is one of the design drivers for composite structures.

According to Verma D., Gope P.C [1] at all. A composite material made from two or more constituent materials like reinforcement (fibres, particles, flakes, and/ or fillers) and matrix (polymers, metals, or ceramics). One or more discontinuous phases are, therefore, embedded in a continuous phase to form a composite. The discontinuous phase is usually harder and stronger than the continuous phase and is called the reinforcement, whereas, the continuous phase is termed as the matrix.

Kelly [2] defined that the composites should not be regarded simply as a combination of two materials. It clearly states that; the combination has its own unique properties. In terms of strength or resistance to heat or some other desirable quality, it is better to attain properties that the individual components by themselves cannot attain. The composite materials have advantages over other conventional materials due to their higher specific properties such as tensile, flexural and impact strengths, stiffness and fatigue properties, which enable the structural design to be more versatile. Due to their many advantages they are widely used in aerospace industry, mechanical engineering applications (internal combustion engines, thermal engineering, controls and machine components), electronic packaging, automobile, and aircraft structures and mechanical components (brakes, drive shafts, tanks, flywheels, and pressure vessels), process industries equipment requiring resistance to high-temperature corrosion, dimensionally stable components, resistance to oxidation and wear, offshore and onshore oil exploration and production, marine structures, sports, leisure equipment and biomedical devices [3, 4]. Malik P. K. [5] stated that According to the type of matrix materials, composite materials are classified into three categories, such as metal matrix composites (MMCs), ceramic matrix composites (CMCs) and polymer matrix composites (PMCs). Each type of composites is suitable for different applications. Among various types of composites, PMC are the most commonly used composites, due to its advantages such as simple manufacturing principle, low cost

Effect of Fiber Length and Weight on Tensile Response of Natural Fiber Reinforced Composite

K. Manjusha¹

¹ M. Tech Scholar,

Dept. of Mechanical Engineering,
PBR Visvadaya Institute of Technology and Science,
Kavali, Ap, India.

B. Kondareddy²

² Asso. Professor,

Dept. of Mechanical Engineering,
PBR Visvadaya Institute of Technology and Science,
Kavali, Ap, India.

D. Pavan Kumar³

³ Asso. Professor,

Dept. of Mechanical Engineering,
PBR Visvadaya Institute of Technology and Science,
Kavali, Ap, India.

Abstract - Fiber reinforced polymer composites have been used in a variety of applications because of their many advantages such as relatively low cost of production, easy fabrication etc.,. Reinforcement in polymer is either synthetic or natural. Synthetic fiber such as glass, carbon etc. have high specific strength but their fields of application are limited due to higher cost of production, and due to their non biodegradability. Recently there has been an increased interest in natural fiber based composites due to their many advantages, like biodegradability. Coir & banana fibre are used in the present work for making natural fiber reinforced composite. The objective of the present research work is to study the mechanical behavior of coir & banana fiber reinforced polyester based hybrid composites and comparison of properties like young's modulus. The optimum percentage of banana fiber and coir are found by conducting response surface Methodology.

Keywords- Coir Fiber ,Banana Fiber,Response Surface Methodology

I) INTRODUCTION

Progressions in the use of laminated composite materials for structure of aircraft and automobile industries were increased significantly over the past decade. This was motivated by the need for improved performance requirements in stipulations of payload, range, stability and simultaneously, a reduction in costs in terms of maintenance, operation and construction. Much experience in the use of hybrid composites in the aerospace industries were achieved from the design of composite airplanes, which were designed using high stiffness requirements and not for all the parts of the current body of airplanes being planned. The stiffness of composites can be determined equitably accurately using the particular tests and material properties from standard material characterization tests. However, with more demanding requirements, this was changed and the minimization of damage is something that is now required in order to satisfy higher-performance demands. This is not as simple as optimizing the elastic stiffness of the structure due to the complex damage modes that can occur in hybrid composites.

Tensile strength is an important topic as it is one of the design drivers for composite structures.

According to Verma D., Gope P.C [1] at all. A composite material made from two or more constituent materials like reinforcement (fibres, particles, flakes, and/or fillers) and matrix (polymers, metals, or ceramics). One or more discontinuous phases are, therefore, embedded in a continuous phase to form a composite. The discontinuous phase is usually harder and stronger than the continuous phase and is called the reinforcement, whereas, the continuous phase is termed as the matrix.

Kelly [2] defined that the composites should not be regarded simply as a combination of two materials. It clearly states that; the combination has its own unique properties. In terms of strength or resistance to heat or some other desirable quality, it is better to attain properties that the individual components by themselves cannot attain. The composite materials have advantages over other conventional materials due to their higher specific properties such as tensile, flexural and impact strengths, stiffness and fatigue properties, which enable the structural design to be more versatile. Due to their many advantages they are widely used in aerospace industry, mechanical engineering applications (internal combustion engines, thermal engineering, controls and machine components), electronic packaging, automobile, and aircraft structures and mechanical components (brakes, drive shafts, tanks, flywheels, and pressure vessels), process industries equipment requiring resistance to high-temperature corrosion, dimensionally stable components, resistance to oxidation and wear, offshore and onshore oil exploration and production, marine structures, sports, leisure equipment and biomedical devices [3, 4]. Malik P. K. [5] stated that According to the type of matrix materials, composite materials are classified into three categories, such as metal matrix composites (MMCs), ceramic matrix composites (CMCs) and polymer matrix composites (PMCs). Each type of composites is suitable for different applications. Among various types of composites, PMC are the most commonly used composites, due to its advantages such as simple manufacturing principle, low cost

OPTIMIZATION OF PROCESS PARAMETERS FOR GAS METAL ARC WELDING OF ALUMINIUM ALLOY A6063 BY ANN METHOD

T.BRAHMANANDAM, K.V.N.V.N.RAO, K.A.PRABHU

Abstract— Aluminum alloy 6063 is widely used in boat truck, tower building, ships, electric car, furniture, machine parts, automobile frames and aero plane industrial application due to its high strength, excellent machining performance, good welding characteristics and excellent oxidation resistance .Gas metal arc welding (GMAW) process is used for welding of aluminum alloy 6063. The present work is carried out to analyze the effect of welding parameters on mechanical properties of MIG welded aluminum alloy 6063. GMAW process is used to weld the specimens by using a consumable electrode & argon inert gas. The filler metal is used for joining the plate is aluminum alloy 4043 grade. Current, voltage, gas flow, root gap are the parameters which play a significant role in the assessment of mechanical properties (Hardness & Tensile Strength). Experiments has been carried out and nine joints have been made with 6063 Al Alloy and tested for its tensile and hardness properties. The results were analyzed using ANOVA technique and artificial neural network (ANN). Based on the results, optimum parameters determined.

Key Terms: GMAW, MIG, ANN, ANOVA, Taguchi

I. INTRODUCTION

Welding is a process of permanent joining two metals through localized coalescence resulting from a suitable combination of temperature and pressure. Depending upon the combination of temperature and pressure from a high temperature with low pressure to a high pressure with low temperature, a wide range of welding processes has been developed using different energy sources, from a Gas Flame or Electric Arc to a Laser or Ultrasound. Aluminium is the most difficult alloy to weld. Aluminium oxide should be cleaned from the surface prior to welding. Aluminium comes in heat treatable and non heat treatable Alloys. Heat treatable Aluminium Alloys get their strength from a process called Ageing. Significant decrease in Tensile Strength can occurs when Welding Aluminium due to over aging. Aluminium possesses a number of properties that make welding it difficult than the welding of steels. These are: Aluminium Oxide Surface Coating; High Thermal Conductivity; High Thermal Expansion Coefficient; Low Melting Temperature; and the absence of colour change as temperature approaches the melting point.

I.I Gas Metal Arc Welding (GMAW)

The GMAW process is quite often a viable option for Welding Aluminium. It was developed in 1944, and is still extensively used to successfully weld Aluminium Alloys today. The principle of MIG welding shows Figure I. The arc is struck between the work piece and a wire that is continually fed forward to replace the metal that is melted away. The wire is supplied on a reel or drum, and is fed

to the welding gun by drive rollers, which push the wire through a flexible conduit in the hose Package to the gun. Electrical energy for the arc is supplied by a welding power source. The welding current is passed to the electrode through a contact tip in the welding gun. This contact tip is normally connected to the positive pole of the power source, and the work piece to the negative pole. Striking the arc completes the circuit.

The small diameter wire, typically around 1 mm, is fed by the wire feeder with a speed of several meters per minute. Arc length is then self-adjusted depending on the voltage setting of the constant potential power source.

A shielding gas that protects the electrode, the arc and the weld pool from the effects of the surrounding air, flows through the shielding gas nozzle that surrounds the contact tip. This shielding gas may be either inert, which means that it is inactive and does not participate in the processes occurring in the weld pool, or active.

As the filler wire is fed through repeatedly while the welding gun is moved over the work piece manually, MIG welding is usually referred to as being a semi-automatic method. However, the method lends itself easily to automation by mechanizing the movements of the welding gun or arranging for the work piece to move.



Fig: I The principle of MIG welding

II. LITERATURE SURVEY

Zhang Y.M. and S.B. Zhang S.B. [1] carried out welding of Aluminium Alloy AA6061 using Opposing Dual torch GTAW process. They disconnected the work piece from the power supply and placing a second torch on the opposite side of the work piece. Such a modification changed the direction of current flow, improved the weld penetration and reduced the heat input. This reduced the crack sensitivity of AA6061 and the alloy could be welded without filler metal.

Balasubramanian M. [2] developed mathematical models to predict the tensile properties of pulsed current GTA welded Ti-6Al-4V alloy weldments. Four factors peak current, background current, pulse frequency and pulse on time were selected along with five levels and rotatable design matrix to optimize the number of experiments. Mathematical models were developed by response surface method and their adequacy was checked by ANOVA technique.

Juang S.C., Tarng Y.S. (3) in this paper Taguchi technique is applied to select the process parameters in order to obtain optimum weld pool geometry in TIG welding of stainless steel. Arc gap, flow rate welding current and welding speed are the parameters selected. Modified Taguchi method is applied to analyses the effect of each welding process parameter on the weld pool geometry and to determine the process parameters with the optimal weld pool geometry.

OPTIMIZATION OF PROCESS PARAMETERS ON ALUMINIUM ALLOY ADC12 MATERIAL USING TAGUCHI IN CNC TURNING

P. CHANDRA SEKHAR, (M.Tech)

*Mechanical Engineering
PBR VITS
KAVALI*

M. MAHENDRA BABU, ME.

*Associate professor
Mechanical Engineering
PBR VITS
KAVALI*

Abstract: The life time of any work piece depends up on its surface properties. Because it is in direct contact with atmosphere. In today's manufacturing industries quality is one of the significant factors, the only component to influence the customer to a level of satisfaction. In every industrial sector surface quality is detected by the surface roughness of the component. The demand for high quality aluminium alloys with good surface finish increasing day by day because of newer applications in various fields like aerospace, automobile, die and mould manufacturing and thus manufacturers are required to increase productivity by improving surface quality by avoiding stress concentrators on the surfaces. Some of the parameters which effect the work piece at the time of machining are namely cutting speed, depth of cut, feed and nose radius, cutting environment(dry or wet), etc.

The experiment will be carried on three machining parameters, viz., speed, feed and depth of cut as independent variables and the surface roughness parameter as response variable. The experimentation plan is designed by using design of experiment (DOE). This experiment is machined on CNC Turning Machine and the process will be carried on the AL-ALLOY ADC12 Material the measurement of surface roughness will be carried out by using stylus-profilometer.

The optimum cutting condition was determined by using the TAGUCHI is one of the optimization techniques for optimizing the cutting parameters. By using TAGUCHI optimizing the cutting parameters for the considered DOE.

Key words: Aluminium alloy ADC 12 material, Taguchi Method, Surface Roughness, CNC turning machine.

1. INTRODUCTION

Increasing the productivity and the quality of the machined parts are the main challenges of metal-based industry; there has been increased interest in monitoring all aspects of the machining process. Turning is the most widely used among all the cutting processes. The increasing importance of turning operations is gaining new dimensions in the present industrial age, in which the growing competition calls for all the efforts to be directed towards the economical manufacture of machined parts and surface finish is one of the most critical quality measures in mechanical products.

Machining operations have been the core of the manufacturing industry since the industrial revolution [1]. The existing optimization researches for computer numerical controlled (CNC) turning were either simulated within particular manufacturing circumstances [2–5] or achieved through numerous frequent equipment operations [6]. Nevertheless, these are regarded as computing simulations, and the applicability to real-world industry is still uncertain. Therefore, a general deduction optimization scheme without equipment operations is deemed to be necessarily developed. The machining process on a CNC lathe is programmed by speed, feed rate, and cutting depth, which are frequently determined based on the job shop experiences. However, the machine performance and the product characteristics are not guaranteed to be acceptable. Therefore, the optimum turning conditions have to be accomplished. It is mentioned that the tool nose runoff will affect the performance of the machining process. Therefore, the tool nose runoff is also selected as one of the control factors in this study. Manufacturing enterprises presently have to deal with growing demands for improved product quality, greater

FINITE ELEMENT ANALYSIS ON LEAF SPRING

MADE OF COMPOSITE MATERIAL

Z. Triveni¹, B. Amara Babu²

¹M.Tech., Student, ²Associate Professor, Dept of Mechanical Engineering, PBR VITS, Kavali

ABSTRACT

A leaf spring is a simple form of spring commonly used for the suspension in wheeled vehicles. Weight reduction can be achieved by designing new materials and sophisticated manufacturing processes. Due to increasing competition and innovation in recent decades, automobile industries show interest in replacing conventional steel leaf spring with fiber-reinforced composite leaf spring which has advantages such as higher strength to weight ratio, higher stiffness, high impact energy absorption, and lesser stresses. Objective of this project is to present a general study on the performance comparison of composite (Carbon fiber-reinforced polymer) leaf spring and conventional leaf spring by both Analytical and Finite Element Analysis. Leaf spring is modeled in ANSYS software. The conventional steel leaf spring and the composite leaf spring were analyzed under constant and variable load conditions using ANSYS software and analytical method and the results are compared. The conclusion of work is to minimize stress and deformation in carbon/epoxy composite leaf spring compared to steel leaf spring for automobile suspension system.

Keywords: Composite, harmonic response analysis, Leaf Spring, modal analysis, static analysis.

I. INTRODUCTION

A spring is defined as an elastic body, whose function is to distort when loaded and to recover its original shape when the load is removed.[1]

Semi- elliptic leaf springs are almost universally used for suspension in light and heavy commercial vehicles. For cars also, these are widely used in rear suspension. The spring consists of a number of leaves called blades. The blades are varying in different lengths. The blades are usually given an initial curvature or cambered so that they will tend to straighten under the load. The leaf spring is based upon the theory of a beam of uniform strength. The lengthiest blade has eyes on its ends. This blade is called main or master leaf, the remaining blades are called graduated leaves. All the blades are bound together by means of steel straps.[2]

In order to conserve natural resources and economize energy, weight reduction has become the main focus of automobile manufacturer in the present scenario. The suspension of leaf spring is one of the potential items for weight reduction in automobile as it accounts for 10–20% of the un-sprung weight. The introduction of composite materials has made it possible to reduce the weight of the leaf spring without any reduction in the load-carrying capacity and stiffness. [3]



Modelling and Analysis of Boron Carbide (B_4C) Reinforcement in Aluminium Alloy (A356/LM25) Matrix Composite Using CATIA & ANSYS

Mr. N.Venkat Kishore¹ and Dr.K.Venkata Rao²

¹M.Tech Scholar, Department of Mechanical Engineering

²Professor & Head, Department of Mechanical Engineering

PBR Visvadaya Institute of Technology & Science, Kavali, S.P.S.R.Nellore (D.t), A.P, India.

Abstract- The objective of the present work is the modelling, Static and fatigue analysis of a model made of Aluminium Alloy (A356/LM25) reinforced with 0, 5, 7.5 and 10 weight percentage of Boron Carbide (B_4C). The model is designed in CATIA and imported to ANSYS work bench for Static and fatigue analysis. The overall work is divided into three phases. First, modelling the object, second static and fatigue analysis and the third is analyzing the maximum von mises stress values, elastic strain and total deformation in an aluminium alloy composites. From the Ansys results, it was found that the Von mises stresses and elastic strains were increased with non linearity as the percentage increase of Boron Carbide reinforcement in the Aluminium Alloy composite. And the deformation was increased with non linearity at 0%, 5%, 7.5% of B_4C . Again a little decrease in the deformation at 10% of B_4C . With these results it is concluded that 7.5% B_4C is the best composition with Aluminium matrix.

Keywords- CATIA V5, ANSYS 14 Workbench, Aluminium alloy (A356/LM25), Boron Carbide (B_4C), Von misses stress, elastic Strain and Deformation.

I. INTRODUCTION

1.1 Introduction to CATIA

CATIA (Computer Aided Three-Dimensional Interactive Application) started as an in-house development in 1977 by French aircraft manufacturer Avions Marcel Dassault, at that time customer of the CAD/CAM CAD software to develop Dassault's Mirage fighter jet. It was later adopted in the aerospace, automotive, shipbuilding, and other industries.

CATIA is the leading product development solution for all manufacturing organizations, from OEMs (original equipment manufacturer), through their supply chains, to small independent producers. The range of CATIA capabilities allows it to be applied in a wide variety of industries, such as aerospace, automotive, industrial machinery, electrical, electronics, shipbuilding, plant design, and consumer goods, including design for such diverse products as jewellery and clothes.

CATIA is the only solution capable of addressing the complete product development process, from product concept specification through product-in-service, in a fully integrated and associative manner. Based on an open, scalable architecture, it facilitates true collaborative engineering across the multidisciplinary extended enterprise, including style and form design, mechanical design and equipment and systems engineering, managing digital mock-ups, machining, analysis, and simulation. By enabling enterprises to reuse product design knowledge and accelerate development cycles, CATIA helps companies to speed-up their responses to market needs thing. Much beyond pure CAD software packages, which provide geometry modelling features for design-centric companies, CATIA delivers the keys to PLM (Product lifecycle management) for process-centric companies:

1.2 Introduction to ANSYS:

ANSYS is a general purpose software, used to simulate interactions of all disciplines of physics, structural, vibration, fluid dynamics, heat transfer and electromagnetic for engineers. So ANSYS, which enables to simulate tests or working conditions, enables to test in virtual environment before manufacturing prototypes of products. Furthermore, determining and improving weak points,



Study on Fracture Mechanics for Maraging Steel (M250)

V.Gopalakrishna¹ and D.Pavan Kumar²

¹M.Tech scholar, PBRVITS and ²Associate Professor, BPBRVITS

Abstract— Fracture mechanics deals with the investigation of the load carrying capability of a body with or without a thought of the initial cracks in addition as a study of assorted laws governing of the expansion of cracks.

Fracture mechanics is that the field of mechanics involved with the study of the propagation of cracks in materials it uses strategies of analytical solid mechanics to calculate the propagation on a crack.

The process involved in the fracture of solids is so complicated and varied to an extent that no single formula or criterion may be expected to realistically describe all of the discovered fracture phenomena.

The field of fracture mechanics matured within the last 20 years of the twentieth century. Current analysis tends to lead to progressive advances instead of major gains. This project demonstrates on how the crack initiates, its development , analysing the crack development and how to prevent it from initiating

Keywords— Fracture, stress intensity factor, CTOD, crack growth and cohesive zone

I. INTRODUCTION

Fracture mechanics deals with the investigation of the load carrying capability of a body with or without a thought of the initial cracks furthermore as a study of a numerous laws governing the expansion of cracks.

The crack could also be unreal like a hole, a notch, a slot, a re-entrant corner, etc. The crack might exist inside a part because of producing defects like scoria inclusion, cracks in an exceedingly assembly or heat affected zones because of uneven cooling and presence of foreign particles. About 50-60 years ago, when accurate analysis for predicting the crack growth was not available, a reasonably high factor of safety was chosen to account for unforeseen factors. A large part of this ambiguity has been cleared with the development of fracture mechanics and understanding the causes and effects of fatigue failure. This currently permits a designer to use a way lower issue of safety, therefore reducing price of such structural parts. at the same time, the burden of those parts is reduced and their responsibility is increased. The development of failure by harmful crack propagation in structural materials poses issues of style and analysis in several fields of engineering like part trade wherever safety is of preponderating importance. The mere presence of cracks doesn't condemn a part or structure to be unsafe and thus unreliable. whether or not beneath cyclic or sustained loading, it's necessary to grasp however long associate degree initial crack of a precise size would want grow to a vital size at that the part or structure would become unsafe and fails. additionally by knowing however a crack evolves and its rate of propagation, we should always be ready to estimate the residual service lifetime of a part beneath traditional service loading conditions. Standardized fracture specimens are being used for fracture analysis of actual engineering components due to complexity of shape and size, and the results obtained are correlated to the actual geometry through fracture models. The process involved in the fracture of solids are so complicated and varied to an extent that no single formula or criterion can be expected to realistically describe all of the observed fracture phenomena.



PARVATHAREDDY BABUL REDDY

VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE

(Affiliated to J.N.T.U.A. Approved by AICTE and Accredited by NAAC with 'A' Grade)

KAVALI – 524201, S.P.S.R Nellore Dist., A.P. India. Ph: 08626-243930



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Number of collaborative activities for Research during the academic year 2019-20

Sl.No	Nature of the activity	Title of Collaborative activity	Name of the participants	Link to relevant document
1	Faculty exchange	Elliptic Curve Digital Signature Algorithm for the Third Party Auditing	1.Srinivasulu Pathakamuri, Associate professor ,PBRVITS 2.B.V. Ramana Reddy ,professor,KSRM Kadapa	https://www.ijeat.org/wp-content/uploads/papers/v9i2/B3109129219.pdf
2	Faculty exchange	Cognitive Computing For Sustainable Agriculture	1.T. Manjula,Associate professor ,PBRVITS 2.T. Sudha, Professor, Sri Padmavati Mahila Visva Vidyalayam.	https://www.trp.org.in/wp-content/uploads/2019/06/NCICT-AJCST-Vol.-8-No.-S3-2019-pp.-159-161.pdf
3	Faculty -student collaborative research	Concept-Drift Based Identification of Suspicious Activity at Specific IP Addresses using Machine Learning	1.P V N Rajeswari , Associate Professor, PBRVITS 2.M. Shashi, M.Tech student	https://www.ijrte.org/wp-content/uploads/papers/v8i3/C5699098319.pdf
4	Faculty -student collaborative research	Detection of Financial Fraud using Codetect Framework	1.P.Eswaraiah,Associate Professor 2.Priyanka, M.Tech student	https://www.ijrte.org/wp-content/uploads/papers/v8i3/C5699098319.pdf
5	Faculty -student collaborative research	secure and lightweight access control for personal health information in cloud based iot devices	1.B.Murali Krishna, Assistant Professor, PBRVITS 2.K.Swarna latha, M.Tech student, PBRVITS	https://jespublication.com/upload/2019-V10-111-03.pdf
6	Faculty -student collaborative research	Secure and Fast Biometric Verification Scheme for Cloud Storage Systems	1.D.Srinivasula Reddy, Assistant Professor, PBRVITS 2.M. Anuradha, M.Tech student, PBRVITS	https://www.ijitee.org/wp-content/uploads/papers/v9i2/B6312129219.pdf
7	Faculty -student collaborative research	An Efficient Fine Grained Keyword Based Search Scheme in Fog Computing	1.PVN Rajeswari, Associate Professor, PBRVITS 2.Chadalawada Lakshmi Janaki, M.Tech student, PBRVITS	https://www.ijrte.org/wp-content/uploads/papers/v8i5/E5095018520.pdf
8	Faculty -student collaborative research	A Hybrid Secure Storage Scheme to Avoid EDOS Attacks in Cloud Computing	1.PVN Rajeswari, Associate Professor, PBRVITS 2.Golla Vihalya, M.Tech student, PBRVITS	https://www.ijrte.org/wp-content/uploads/papers/v8i5/E5861018520.pdf



PARVATHAREDDY BABUL REDDY
VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE

(Affiliated to J.N.T.U.A, Approved by AICTE and Accredited by NAAC with 'A' Grade)
KAVALI – 524201, S.P.S.R Nellore Dist., A.P. India. Ph: 08626-243930



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

9	Faculty -student collaborative research	Ran method that performs nested Scalable no SQL transaction and data Analytics	1.Dr.D.Srujan Chandra Reddy Professor & HOD, Dept. of CSE,PBRVITS 2.Kanamathareddy Reshma Reddy M.Tech, Dept. of CSE, PBRVITS.	https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3526831
10	Faculty exchange	Cognitive IoT: An Eco friendly Technology	1. Padma, Assistant Professor, CSE Dept.,G Pulla Reddy Engineering College, Kurnool. 2. T.Manjula, Associate Professor,PBR VITS, Kavali.	https://www.trp.org.in/issues/cognitive-computing-for-sustainable-agriculture

Faculty Incharge

HOD
Head of Department
COMPUTER SCIENCE ENGINEERING
Visvodaya Institute of Technology & Science
KAVALI - 524 201,SPSR, Nellore Dt.

Elliptic Curve Digital Signature Algorithm for the Third Party Auditing

Srinivasulu Pathakamuri, B.V. Ramana Reddy, A.P. Siva Kumar

Abstract: Cloud computing usage has been highly increased in past decades, and this has many features to effectively store, organize and process the data. The major concern in the cloud is that security is low and user requires verification process for the data integrity. Third Party Auditing (TPA) technique is applied to verify the integrity of data and various methods have been proposed in TPA for effective performance. The existing methods in TPA has the lower performance in communication overhead and execution time. In this research, Elliptic Curve Digital Signature (ECDS) is proposed to increase the efficiency of the TPA. Bilinear mapping technique is used for verification process without retrieving the data and this helps to reduce the communication overhead. The performance of ECDS is measured and compared with the existing method to analyze the performance.

Index Terms: Bilinear mapping, Cloud computing, Communication overhead, Elliptic Curve Digital Signature and Third Party Auditing.

I. INTRODUCTION

Cloud computing has provided a way to store large data and due to its advantages like flexibility, scalability and reliability, cloud computing attracts many users. Cloud computing incur some security issues such as data integrity, data encryption etc. Cloud auditing is the technique to verify the integrity of data [1]. Cryptographic keys are generated for cloud data, which are required to be stored and protected. The key storage facility compromise may also lead to data loss. The cryptographic key is required to be stored with security and single point of failure should affect the data availability [2]. Despite the powerful machine and strong security mechanism provided by the Cloud Service Providers (CSP), remote data still faces security issues due to hardware and administration errors [3]. Cloud auditing is used to verify data integrity in the cloud. To reduce the burden for the client and make more convenient, Third-Party Auditing (TPA) was introduced [4]. The owner can modify, delete the existing block by using dynamic support and also owner can insert a new block. This is important step in the cloud storage and many applications were not limited to store the data in cloud [5].

Generally, cloud denotes a public cloud, users were not

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Corresponding Author*

Srinivasulu Pathakamuri*, Department of CSE, JNT University, Anantapur, India.

Dr. B.V. Ramana Reddy, Department of CSE, KSRM College of Engineering, Kadapa, India.

Dr. A.P. Siva Kumar, Department of CSE, JNT University, Anantapur, India.

limited on access of the data in the cloud. Several users and devices can access the cloud and this should have access control mechanism [6]. Authenticators security is protected by using the Binary tree structure before the key exposure [7]. Traditional integrity verification method is very limited in the computation and communication abilities and doesn't satisfy the required applications [8]. To effectively process cloud auditing for the large amount of data with limited computation time, an efficient method is needed [9 - 10]. In this research, ECDSA method is used to increase the performance of the TPA for cloud auditing. The proposed ECDSA method has advantages of a lower key size and suitable for a constrained environment like TPA. The lower key size helps to minimize the computation overhead and computation time of the integrity check. Bilinear mapping technique is used to verify the data without need of the original data from the cloud.

The organization of the paper is given as, the literature works of existing TPA method is detailed in section 2, proposed ECDSA method is detailed in section 3, experimental result is discussed in section 4 and conclusion is provided in section 5.

II. LITERATURE WORKS

Cloud computing is highly used to run the application and store data due to its flexibility, scalability and reliability. One major concern in the cloud computing is that security and user require the proof for the integrity of data. Many research studies have been conducted in the TPA to check the data integrity. Recent research involved in the TPA in cloud storage is studied in this section.

Suguna and Shalinie, [11] proposed a technique for the generation of verification proof is called as a small signature that minimizes the client side auditing overhead. Bilinear mapping is applied to verify without retrieving the original data, is called as a blockless process. Merkle Hash Tree (MHT) is applied in the authentication process to increase security. The developed method has a higher performance for the verification process in the manner of storage and communication overhead. The de-duplication technique is used to increase the efficiency of the developed method.

Guo, et al. [12] proposed key generation authentication cryptosystem that creates a constant size key for the shared encrypted data in cloud computing. The authentication process is used to solve the key leakage problem. The cloud server uses the public key to identify the data owner to provide access.

Cognitive Computing For Sustainable Agriculture

T. Manjula¹ and T. Sudha²

¹Research Scholar, ²Professor, ^{1&2}Department of Computer Science and Engineering,
Sri Padmavati Mahila Visva Vidyalayam, Andhra Pradesh, India
E-Mail: t_manjula_k@yahoo.co.in, thatimakula_sudha@yahoo.com

Abstract - Cognitive computing in agriculture is going to be a big revolution like the green revolution. Agriculture is a big step that accompanied the humanity to evolve from the ancient times to the modern days and has fulfilled the basic need for food supply. Today still remains it's at most importance. Cognitive computing uses cognitive technologies in agriculture that help to understand, learn from experiences and environment, reason, interact and thus increase the efficiency. Civilization has led to more urbanization. There are more people than available food. There is a great necessity to increase the per meter yield. So many techniques have been seen in agriculture in terms of usage of pesticides and fertilizers, use of hybridization and green revolution to increase the production in agriculture. Now the use of modern technologies such as artificial intelligence and cognitive computation is going to bring a new big revolution for sustainable agriculture. The present paper focuses on the problems faced by the modern society in agriculture and how the cognitive computation provides an ultimate solution to the problems. We also discuss some illustrations for the usage of cognitive technologies and machine learning in the field of agriculture.

Keywords: Cognitive Computing, Cognitive Technology, Sustainable Agriculture

I. INTRODUCTION

Agriculture is the industry that followed the evolution of human beings from ancient times to modern times and fulfilled its basic need for food supply [1]. Even today this still remains its primary importance, but it is integrated with more complex mechanisms driven by multiple environmental, economic and sociological forces. This \$5 trillion industry representing 10 percent of global consumer spending, 40 percent of employment and 30 percent of greenhouse gas emissions continues to keep pace with world's evolution, changing tremendously over the past years. Digital and technological advancements are taking over the industry, enhancing food production while adding value to the entire farm-to-fork supply chain and helping it make use of natural resources more efficiently.

Data generated by sensors or agricultural drones collected at farms, on the field or during transportation offer a wealth of information about soil, seeds, livestock, crops, costs, farm equipment or the use of water and fertilizer. Internet of Things technologies and advanced analytics help farmers analyze real time data like weather, temperature, moisture, prices or GPS signals and provide insights on how to optimize and increase yield, improve farm planning, make

smarter decisions about the level of resources needed, when and where to distribute them in order to prevent waste. Efficiency and productivity will increase in the next years as precision agriculture grows bigger and farms become smarter and more connected. It is estimated that by 2020, over 75 million agricultural IoT devices will be in use, while the average farm is expected to generate an average of 4.1 million data points every day in 2050.

II. SUSTAINABLE AGRICULTURE

Always people would prefer the natural food that is free of chemicals and artificial enhancements. Unfortunately, the majority of food we consume is produced using industrialized agriculture, which is a type of agriculture where large quantities of crops and livestock are produced through industrial techniques for the purpose of sale. This type of agriculture relies heavily on a variety of chemicals and artificial enhancements, such as pesticides, fertilizers, and genetically modified organisms. This type of agriculture also uses a large amount of fossil fuels and large machines to manage the farm land. Although industrialized agriculture has made it possible to produce large quantities of food, due to the negative aspects of this technique, there has been a shift towards sustainable agriculture.

Sustainable agriculture is a type of agriculture that focuses on producing long-term crops and livestock while having minimal effects on the environment [2]. This type of agriculture tries to find a good balance between the need for food production and the preservation of the ecological system within the environment. In addition to producing food, there are several overall goals associated with sustainable agriculture, including conserving water, reducing the use of fertilizers and pesticides, and promoting biodiversity in crops grown and the ecosystem. Sustainable agriculture also focuses on maintaining economic stability of farms and helping farmers improve their techniques and quality of life.

There are many farming strategies that are used that help make agriculture more sustainable. Some of the most common techniques include growing plants that can create their own nutrients to reduce the use of fertilizers and rotating crops in fields, which minimizes pesticide use because the crops are changing frequently. Another common technique is mixing crops, which reduces the risk of a disease destroying a whole crop and decreases the need

Concept-Drift Based Identification of Suspicious Activity at Specific IP Addresses using Machine Learning

P V N Rajeswari, M. Shashi

Abstract – Network Intrusion detection systems(IDS), especially those that monitor Denial of Service(DoS) attack, aim at monitoring the network traffic continuously in order to identify suspicious activity possibly initiated at one or more nodes at specific IP addresses. Traditional anomaly detection based IDS methods rely on preset bounds on the magnitude of network traffic based on statistical measures and hence are not programmable based on the changes in the network traffic dynamics. The authors proposed a methodology for monitoring the changes in the network traffic received from individual source nodes based on concept drift in order to identify suspicious activity at specific nodes. The framework applies machine learning techniques to capture the normal traffic patterns of various source nodes and accordingly defines lower and upper bounds dynamically for each node. Based on the temporal analysis in successive time windows, it is able to discriminate an abrupt change from a gradual change in the magnitude of traffic received in a time window from a node to identify suspicious activity at the corresponding IP address. The effectiveness of the methodology is tested on real world data.

Keywords: Network anomaly detection, Concept drift measure, Parametric learning and Packet sniffer.

I. INTRODUCTION

Machine learning enables computers to improve their performance of doing a task through experience represented in the form of data records. Often statistical measures and models are used to extract the general patterns from the large collection of accumulated data records to capture the patterns of normality. Identification of suspicious activity in real time calls for anomaly detection methods that compare every activity with the patterns representing normality to check for the compliance. Any deviation from the normality implies either an anomaly or a changing trend. However, in domains with dynamically changing trends, in order to capture the changing trends, machine learning algorithms need to process data streams of records rather than accumulated collection of data records. Stream of records are processed in the order of their arrival to check for deviations from the extracted patterns which may possibly change with time representing time-variant trend that leads to identification of new patterns or otherwise anomalies. In this paper, the changing trends are identified based on concept drift with time, while differentiating them from anomalies specifically for anomaly based network intrusion detection systems.

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PVN Rajeswari, Assoc. Professor, Dept. of Computer Science and Engineering, Visvadaya Engineering College, Kavali, AP, India.

Email: rajivprphd@gmail.com

Dr. M. Shashi, Professor, Dept. of Computer Science and System Engineering, Andhra University, Visakhapatnam, AP, India.

Email: smogalla2000@yahoo.com

Detection of Financial Fraud using Codetect Framework

P.Eswaraiah, Priyanka

Abstract – Financial Fraud, for example, tax evasion, is known to be a genuine procedure of wrongdoing that makes misguidedly got assets go to psychological warfare or other crime. This sort of criminal operations include complex systems of exchange and money related exchanges, which make it hard to recognize the extortion elements and find the highlights of fraud. Luckily, exchanging/exchange system and highlights of elements in the system can be developed from the mind boggling systems of exchange and money related exchanges. Exchanging/exchange system uncovers the association among substances and consequently irregularity discovery on exchanging systems can uncover the elements engaged with the misrepresentation movement; while highlights of elements are the depiction of elements and abnormality identification on highlights can reflect subtleties of the extortion exercises. In this manner, system and highlights give integral data to extortion discovery, which can possibly improve fraud recognition execution. Nonetheless, most of existing strategies center on systems or highlights data independently, which doesn't use both data. In this paper, we propose a novel fraud identification framework, CoDetect, which can use both system data and highlight data for money related extortion discovery. What's more, CoDetect can all the while identifying money related fraud exercises and the component examples related with the extortion exercises. General examinations on both real world information and certifiable information exhibit the productivity and the adequacy of the proposed structure in battling monetary extortion, particularly for tax evasion.

Keywords – Financial Fraud, Anomaly Detection, Credit card fraud.

I. INTRODUCTION

Recently, financial fraud exercises, for example, Credit-card fraud, illegal tax avoidance, heightens continuously. These exercises cause the loss of individual as well as undertakings' properties. Even worse, they imperil the security of country since that the benefit from fraud may go to terrorism [1]. Along these lines, precisely detecting financial fraud and tracing fraud are essential. Be that as it may, financial fraud detection isn't a simple errand because of the mind boggling trading systems and exchanges included. Taking money-laundering for instance, tax evasion is characterized as the way toward utilizing exchanges to move cash/merchandise with the purpose of clouding the source of assets. More often, the costs, amount or nature of merchandise on a receipt of money-laundering are phony. The deception of costs, amount or nature of products on a receipt simply unveils slight contrast from normal premise on the off chance that we utilize these numbers as highlights to create detection approach. In specific situations, this sort of locator may function admirably with moderately stable exchanging substances.

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P.Eswaraiah, Associate Professor, Dept. of CSE, PBR VITS, Kavali, AP, India.

Priyanka, M.Tech, Dept. of CSE, PBR VITS, Kavali, AP, India

Sadly, this circumstance is increasingly entangled, particularly inside Free Trade Zones (FTZs) where global exchange includes complex systems and trade of data between exchanging substances. The fraud exercises, particular illegal tax avoidance, are more profound stealth. Illegal tax avoidance exercises may take various structures [1], for example, the disguising transportation of money utilizing exchanging tasks; the procurement and clearance of intangibles; and related gathering exchanges. Not just the exchanging of merchandise appears on considerably more diversified, yet in addition several kinds of organizations, shell and front organizations include in to encourage illegal tax avoidance. Conversely with other fraud exercises, illegal tax avoidance exhibits extraordinary trademark which introduces high hazard to monetary framework with conceals the cash trail, collectivization conduct and wild exchanging areas FTZs.

Numerous fraud detection models perform with quality worth information-points that are produced from transactions-information. Some collection techniques are likewise exploited to advance the data. Subsequently, producing highlight from exchanges, managed and unaided techniques can be utilized to accomplish detection. More often, these information points are thought to be free and indistinguishably disseminated (i.i.d.). Be that as it may, the normal for tax evasion is unique in relation to attribute-values. The collectivization conduct implies the information is characteristically connected or mostly connected. Clearly, exchanging action includes in any event two business substances. Connected information is obviously not free and indistinguishably distributed, which negates the suppositions of conventional regulated and unaided strategies. On the opposite side, some connected information is auto corresponded. Graph based mining strategies are one of the most significant speculations that endeavour to recognize relations between information focuses [3][7][13], as Fig. 1(a) disclose. Financial exercises can be demonstrated as a directed-graph, at that point a sparse adjacent matrix can accompanies this chart. With graph-mining technique, the sparse-matrix can be approximated as summation of low-rank lattice and outlier -matrix. The outlier lattice is an indication of suspicious fraud exercises. Misusing the chart based mining gives another point of view to fraud-detection and empowers us to do enhanced research on fraud identification. With the fraud exercises detected by graph based recognition method we can reach the inference that a few business elements associated with fraud, in any case, despite everything we don't have the idea how these fraud-activities are worked and why these exercises marked as fraud, i.e., the certain highlights of the fraud exercises.

SECURE AND LIGHTWEIGHT ACCESS CONTROL FOR PERSONAL HEALTH INFORMATION IN CLOUD BASED IOT DEVICES

B. MURALI KRISHNA¹, K. SWARNA LATHA²

¹Asst. Professor, Dept. of CSE, PBR VITS, Kavali, A.P, India

²M.Tech, Dept. of CSE, PBR VITS, Kavali, A.P, India

Abstract – The eHealth trend has spread globally. Internet of Thing s (IoT) devices for medical service and pervasive Personal Health Information (PHI) system s play important roles in the eHealth environment. A cloud based PHI system appears promising but raises privacy and information security concerns. We propose a cloud based fine grained health information access control framework for lightweight IoT devices with data dynamics auditing and attribute revocation functions. Only symmetric cryptography is required for IoT devices, such as wireless body sensors. A variant of ciphertext policy attribute based encryption, dual encryption and Merkle hash tree s are used to support fine grained access control, efficient dynamic data auditing, batch auditing and attribute revocation. Moreover, the proposed scheme also defines and handles the cloud reciprocity problem wherein cloud service provider s can help each other avoid fine s resulting from data loss. Security analysis and performance comparisons show that the proposed scheme is an excellent candidate for a cloud based PHI system.

Keywords – Personal Health Information, Cloud computing, Access control scheme.

I. INTRODUCTION

Internets of Thing s (IoT) devices for medical services are an emerging technology for caring for disabled or chronic patients. Combined with wearable medical sensor s and wireless communication, IoT devices can gather patient's health related parameters remotely and continuously. As a result, the electronic Health (eHealth) care business is emerging. The eHealth vision is to utilize state of the art medical technologies to prolong life expectancy significantly. Imagine physicians being able to access a tourist's Personal Health Information (PHI) regarding food allergy history from a medical record for a rapid diagnosis. A patient with chronic heart disease uses body sensors to detect irregular blood pressure and rushes to the hospital in time to survive. In these scenario s, the patient's medical record plays a key role in diagnosis therefore pervasive PHI service is essential for doctors and nurses to offer real time treatment.

One solution for an effective PHI system is to adopt cloud based storage to mitigate the burden of building and maintenance cost. However, outsourced PHI faces the challenge of security and privacy issues, for instance, how to ensure that only the authorized requester can access the sensitive PHI or to prevent a

semi trusted Cloud Service Provider (CSP) from leaking stored information. In addition, the Health Insurance Portability and Accountability Act (HIPAA) comprise a list of privacy requirements for protecting confidentiality from the data storage server. Data integrity at a semi trusted CSP is another important concern. CSP s facing occasional catastrophic failures might decide to hide data errors from a patient for their own benefit. Although the data owner back s up his or her extremely important data in multiple CSPs, some CSPs might exercise mutual aid to avoid the huge cost of data loss. We call this the cloud reciprocity problem. The fact that a stored PHI would not only be accessed by medical workers but also updated by the patient requires support for data integrity verification for dynamic data operations.

One promising approach to solving such problems is to encrypt data in advance, prior to uploading to the cloud server. However, most existing PHI systems are not suitable for lightweight IoT devices because of the heavy cost of cryptographic computation. Furthermore, no scheme has dealt with the cloud reciprocity issue.

We propose a fine grained health information access control framework in the cloud for lightweight IoT devices with data dynamics auditing and attribute revocation functions. Regarding security and privacy, we use Ciphertext Policy Attribute Based Encryption (CP ABE) to perform fine grained access control on the part of a decryption key that is used to decrypt sensitive patient PHI. Basically, each Data Access Requester (has his/her own private keys associated with a set of attributes, and an essential decryption parameter TSK specifies an access policy over a defined universe of attributes. DAR can extract TSK to decrypt the encrypted PHI if and only if his/her attributes satisfy the access policy.

The main contribution s of this paper is as follows. (1) To the best of our knowledge, this is the first work suitable for lightweight IoT devices in PHI system s to achieve fine grained access control, dynamic data auditing, and user revocation simultaneously. (2) We first define and handle the problem of cloud reciprocity. (3) We propose a novel variant of proxy encryption to eliminate the involvement of HSP while DAR is accessing encrypted PHIs from a CSP and adapt the notion of CP ABE, MHT s, and dual encryption to offer the dynamic data operations, auditing, and user revocation functions. (4) Our

Secure and Fast Biometric Verification Scheme for Cloud Storage Systems

D.Srinivasula Reddy, M. Anuradha

Abstract – Biometric verification has turned out to be progressively well known as of late. With the improvement of cloud computing, database owners are enthused to outsource the enormous size of biometric information and verification activity to the cloud to dispose of the costly capacity and calculation costs, which anyway carries potential dangers to clients' security. This article presents an proficient and protection saving biometric verification outsourcing plan. In particular, the biometric information is encoded and redistributed to the cloud server. To execute a biometric verification, the database owner encodes the query information and submits it to the cloud. The cloud performs verification tasks over the encoded database and returns the outcome to the database owner. A careful security examination shows the proposed plan is secure regardless of whether aggressors can produce verification demands and intrigue with the cloud. Contrasted and past conventions, trial results demonstrate the proposed plan accomplishes a better presentation in both preparation and verification systems.

Keywords – biometric identification, privacy preserving, cloud computing.

I. INTRODUCTION

Biometric verification has raised progressively consideration since it gives a promising method to recognize clients. Contrasted and customary verification strategies dependent on passwords and recognizable proof cards, biometric verification is viewed as progressively solid and helpful [1]. Moreover, fingerprint verification has been generally applied in numerous fields by utilizing biometric characteristics, for example, unique finger impression [2], iris [3], and facial examples [4], which can be gathered from different sensors [5]–[9].

In a biometric verification framework, the database proprietor, for example, the FBI who is dependable to deal with the national fingerprints database may want to redistribute the huge biometric information to the cloud server (e.g., Amazon) to dispose of the costly capacity and calculation costs. Be that as it may, to save the security of biometric information, the biometric information must be scrambled before redistributing. At whatever point a FBI's accomplice (e.g., the police headquarters) needs to validate a person's character, he goes to the FBI and creates a verification question by utilizing the person's biometric characteristics. At that point, the FBI encodes the question and submits it to the cloud to locate the nearby coordinate. In this way, the difficult issue is the manner by which to structure a convention which empowers productive and protection saving biometric verification in the distributed computing.

Various securities based biometric verification arrangements [10] have been proposed. Be that as it may, the vast majority of them essentially focus on protection conservation yet overlook the proficiency, for example, the plans dependent on similar encoding plus neglectful exchange prospering [10] since unique mark plus image recognizable proof individually. Experiencing execution issues of neighborhood devices, these plans are not productive once the size of the database is bigger than 10 MB. Afterward, Evans et al. introduced a biometric verification plan by using circuit structure and ciphertext packing procedures to accomplish productive verification for a bigger database of up to 1GB. Also, Yuan and Yu proposed a proficient protection preserving biometric verification plan. In particular, they built three modules and structured solid rules to accomplish the security of unique finger impression quality. To improve the effectiveness, in their plan, the database proprietor reappropriates verification task into the cloud. Nonetheless, zhu et al. referred to that other authors convention might be unsmooth by an agreement assault propelled by a pernicious client, cloud. wang et al. proposed the plan CloudBI-II which utilized irregular inclining networks to acknowledge biometric ID.

In this article, we suggest a good and privacy-preserving fingerprint verification agenda which is able to oppose conspiracy violation driven by clients along with the cloud, in particular, our fundamental commitments are often condensed as pursues:

- Our own selves examine the fingerprint verification plan plus demonstrate its inadequacies plus safety shortcoming under the suggested level-3 violation. in particular, our own selves show that intruder will recoup their mystery formulas via plotting with cloud, in addition to that decode the fingerprint all things considered.
- We tend to propose a unique productive plus protection saving fingerprint verification plan. The whole safety examination demonstrates so the suggested plan can accomplish a necessary degree of protective cover assurance. In particular, in our own plan is safe under the fingerprint verification re-appropriating type plus can likewise oppose intrusion planned.
- Resemble the present fingerprint verification plans, exhibition investigation demonstrates so the proposed plan gives a less significant computational expense in both planning and recognizable proof strategies.

II. BACKGROUND WORK

Related works away at protection preserving biometric verification are given in this area. As of late, some productive biometric recognizable proof plans have been recommended. wang

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* Correspondence Author

D.Srinivasula Reddy, Associate Professor, Dept. of CSE, PBR VITS, Kavali, AP, India.

M. Anuradha, M.Tech, Dept. of CSE, PBR VITS, Kavali, AP, India

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An Efficient Fine Grained Keyword Based Search Scheme in Fog Computing

PVN Rajeswari, Chadalawada Lakshmi Janaki

Abstract—In fog computing outsources the encoded information to many mist hubs on the border of the internet of things (IOT) to reduce delay and network congestion. However, the existing cipher text recovery plan infrequently focus on the fog computing area and most of them still enforce high computational and capacity burden on asset constrained clients. In this writing paper, we tend to better recommended a lightweight small-grained cipher texts search (LFGS) framework in fog calculation by extending cipher text-policy attribute-based encryption (CP-ABE) and searchable encryption (SE) technologies, which can accomplish small-grained fingerprint plus key-word search concurrently. The LFGS can transfer semi calculation and storage burden from clients to picked fog nodes. Furthermore, the fundamental LFGS framework is enhanced to cope with conjunctive keyword search and attribute revise to keep away from returning unrelated search outcomes and unauthorized accesses.

keyword –internet of things, fog Calculating, cloud computing.

I. INTRODUCTION

The promising distributed computation [1] worldview can furnish on-request benefits with flexible assets and empower cloud customers to mitigate the high stockpiling and calculation costs [2] locally. Be that as it may, the commonness of Internet of Things (IOT) applications [3] represents an enormous test to the incorporated distributed computing worldview which brings about insufferable transmission inactivity and corrupted administrations between client demands and cloud responses. Plus, a lot of information created from the IoT applications is frequently put away in the cloud. To reduce delay and system congest, a mist registering worldview [4] which is associate augmentation of distributed computing administrations to network edge has been a generally late inquire about theme. In mist figuring, the haze hubs embedded into the center of cloud and end clients can give different administrations for asset restricted end clients, note that fog nodes are a lot nearer up to end clients compared to thundercloud, and that is appeared in Fig. 1. At the point when delicate information [5], [6], [7] are re-appropriated to fair however inquisitive haze hubs which are like open cloud stage, the information security and protection concerns [8] still block the reception of mist registering as information proprietors put the overall material command over their information in face combinationsorthundercloud.

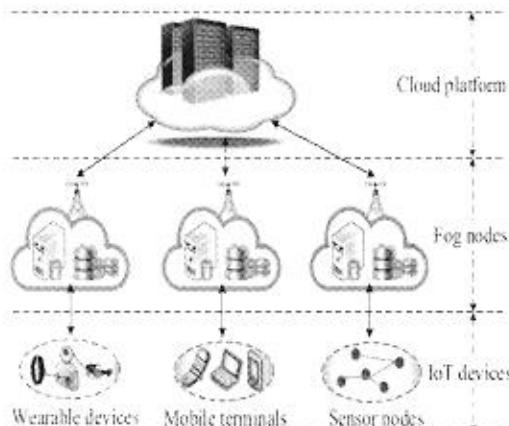


Fig. 1: The infrastructure of fog computing.

To alleviate the information security spillage dangers, information encryption is an effective instrument to ensure information secrecy, yet it makes the data recovery over encoded information incredibly difficult. Also, the encoded information ought to be manageable to access control, case in point, identity-based encryption (IBE) and attribute-based encryption (ABE) can ensure information department via big grainy and fine-grained fingerprint devices, individually. notwithstanding information section concerns, accomplishing compelling positive identification hunt more than scrambled data 1 also, small-grained fingerprint are likewise the overall indispensable illuminates in real situations. Searchable encryption (SE) innovation which empowers information clients to safely look and specifically recover documents of enthusiasm over encoded information as indicated by client determined key terms may have been broadly investigated. with outfit small-grained fingerprint in very sometime se arrangements, the talented cipher text-policy attribute-based keyword search may have increased much advisement almost all mechanical plus scholarly fields. in plans, a particular end client closet unpicks figure writings going from intrigue if and just if his characteristic set up joins sensational entrance arrangement implanted toward cipher texts plus his analysed side door fits the lists all the while.

Despite the fact that CP-ABKS is a most valuable cryptologic instrument to accomplish each small-grained get entry to control and watchword look interfaces, the overall machine and capacity charges of existing CP-ABKS plans are roughly corresponding to the multifaceted nature going from entryway approach, which very much impede the professional jobs of asset constrained IOT devices. Henceforth, it is basic so keep actions both end clients cipher practical.

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PVN Rajeswari, Associate Professor, Dept. of CSE, PBR VITS,
Kavali, AP, India.

Chadalawada Lakshmi Janaki, M. Tech, Dept. of CSE, PBR VITS,
Kavali, AP, India.

A Hybrid Secure Storage Scheme to Avoid EDOS Attacks in Cloud Computing

PVN Rajeswari, Golla Vihalya

Abstract: In advent of cloud environment, cloud operator is not a completely trusted to put on private information, because of lack of consumer to cloud control. To assure privacy, documents sharer deploy their encipher documents. Encipher documents dispense to among consumers using CP-ABE scheme. But it is not completely safe in opposition to different assaults. The prior knowledge cannot offer any verification ability to cloud operator whether the user can decipher or not. Various invaders may obtain lot of document by initiate EDOS assaults. The consumer of cloud abides cost. To handle above issues, this article suggests a problem solving plan to safe encipher cloud repository from EDOS assaults and maintain supply utilization. It utilizes CP-ABE tactics in a black-box method furthermore accomplish impulsive entryway contract epithetical CP-ABE. We tend to present 2 mechanisms for various styles, observed via achievement and shield research.

Keyword: Access control, Privacy safe, Cloud computing.

I. INTRODUCTION

Cloud repository has various points of interest, for instance, constantly on the web, a system of meeting cost, and inexpensive [1]. During such senility, more data are re-appropriated as far as unseal cloud as enterprising stockpiling, in addition to someone plus occupation reports. Something that leaves a safety issue so document sharer [2]–[4]: unseal cloud isn't creditworthy, plus decentralized tidings shouldn't be lost so cloud provider externally approval relishes intelligence sharer. Numerous capacity systems employ server-governed grante command, take pleasure in undercover phrase founded [5] plus certificate-based-confirmation [6]. They unreasonably believe cloud-provider to substantiate their encrypted. Providers as well as their laborers can examine any record independent of information owners' entrance approach. likewise, the thundercloud provider will distort quality use of report stockpiling plus indictment tax dodgers exhausted bighearted correct archives [2], [7], since we don't have a system for evident calculation assets use. The common server overwhelmed get to control isn't verified. information sharers that one depot records toward cloud-systems yet have to command approval exclusively as well as stay the info made sure toward thundercloud provider and pernicious customers. Encoding isn't decent. up to incorporate the protection affirmation, data proprietors can encode the records plus fix an entrance strategy in order that moderated customers will translate chronicle. In

addition to ciphertext-policy attribute-based cryptography, we tend to will submit to each small-grained grante command and powerful story. Consequently, this entrance control is accessible for information vendors, which is being insufficient. On the fluke that the cloud-provider will not approve customers before booting, from quite a lot of winning CP-ABE distributed storage structures, cloud has got to empower everyone to obtain to ensure openness. That empowers capacity structure powerless across the advantage fatigue blasts. If we settle this issue by having information owners approve the overall sharers in advance inspiring authority so transfer, we tend to misplace the flexibility of fingerprint relishes CP-ABE. Hither record the 2 issues ought to be tended in our own work:

Problem I: asset depletion ambush. Whether cloud doesn't perform cloud-side fingerprint, it allows somebody, including pernicious assailants, to transparently download, however just hardly any customers are capable disentangle. The server tends against asset fatigue ambushes. Exactly when noxious customers dispatch the DoS/DDoS ambushes to suffused repositing, the advantage usage will augment. Evaders need in order to pay money for the extended usage amounted instead by attacks, which explains a great plus irrational cash related load. The ambush outmoded introduced given that economic denial of sustainability (EDoS), that alludes to evaders are financially abused over long haul. Moreover, archives are encoded; pirated files will abate scrip via conveying convenience in order to disengaged instigating plus spilled information get pleasure from report wingspread or revise-recurrence.

Problem II: asset utilization responsibility. in compensation as-you-go plan, customers underpay bread to with the thundercloud supplier for capacity administrations. the cost is chosen through resource use. Along these lines, a CP-ABE based design for distributed storage get to control doesn't bring online insistences to the information slaveholder previous records. it really is asked any cloud specializer organization to exhibit the avoiders just about the certifiable utilization. Else, the overall thundercloud supplier can ready to charge enormous without being found. The following article, we assemble the general cloud-side fingerprint and the present information proprietor slope cp-abe supported exercise control, to determine the recently referenced binaries in protection saving distributed warehousing. In our own procedure will turn away the EDOS ambushes via empowering the thundercloud system to check whether customer is affirmed in CP-ABE based arrangement, without discharging different news.

As in our own cloud-side fingerprint, without help use CP-ABE encryption/decoding video game for challenge-response.

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PVN Rajeswari, ¹Assoc. Professor, Dept. of CSE, PBR VITS, Kavali A.P. India
Golla Vihalya, M.Tech, Dept. of CSE, PBR VITS, Kavali, A.P. India

Cognitive IoT: An Eco friendly Technology

M. Padma, Assistant Professor, CSE Dept., G Pulla Reddy Engineering College, Kurnool, Andhra Pradesh, India.
padma.gprec@gmail.com

Dr. N. Kasiviswanath, Professor & HOD, CSE Dept., G Pulla Reddy Engineering College, Kurnool, Andhra Pradesh,
India.hodese@gprec.ac.in

T. Manjula, Associate Professor,PBR VITS, Kavali,AndhraPradesh,India t_manjula_k@yahoo.co.in)

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Abstract:

Cognitive Technology is a new technology that resulted as an evolution of Internet of things. Internet of things has been already influenced the everyday life of human beings in terms of smart phones, smart watches, smart TVs, Security alert devices. Different sensors used in these devices, use the wireless communication media, some of which are harmful to human life. Artificial Intelligence has brought dramatic changes in the field of Internet of things in terms of automation. Cognitive computation now induces the cognitive capabilities in the field of Internet of Things for better decision making in complex environments. This paper focuses on how the cognitive capabilities are helpful for Internet of things, The resulting technology so called as Cognitive IOT has lead to an eco friendly technology. Thus the major goal of sustainability achieved by the cognitive IOT.

Keywords: Cognitive IOT, Internet of Things, Cognitive Computation

I. INTRODUCTION

The field of computer science has seen so many technological changes over the past decades. Among that the major ones are artificial Intelligence and machine learning is the one that brought automation. Automation lead to the concept of smart devices, which resulted in Internet of things. Cognitive computation has boosted these technologies by helping in taking decisions in dynamic situations.

The use of various automation tools and smart devices has an adverse impact on the environment in terms of radiations. This also has destroyed many living things. Thus the focus is to use technologies that are not only useful but also help in preserving the ecosystem.

The use of cognitive technologies in Internet of thing has lead to a new branch of study known as Cognitive IoT. The focus of Cognitive IoT is to help the smart devices to behave in an eco friendly manner and thus support the concept of sustainability.

II. WHAT IS IoT

IoT is the shorthand notation for Internet of Things. IoT is inter related collection of digital devices and various sensors that are capable of collecting and exchanging data. The IoT definition has evolved over decades by the invention of new technologies[1]. The major aim of IoT is to use smart devices. IoT has been used in variety of applications ranging from home appliances to large industrial environments[2]. Because of its abilities to get the data concerning the physical world, the Internet of Things (IoT) phenomenon is quick picking up force in various handy spaces. Its benefits are not restricted to interfacing things, however incline toward how the gathered data are changed into experiences and interact with Domain Experts for better decision making.[3].

III. COGNITIVE IOT

In 2002, DARPA characterized as a cognitive system one that can "reason, utilize represent knowledge, gain as a matter of fact, accumulate knowledge, account for itself, acknowledge direction, know about its very own behavior and

RAN METHOD THAT PERFORMS NESTED SCALABLE NO SQL TRANSACTION AND DATA ANALYTICS

D.S.C. Reddy

Professor & HOD, Dept. of CSE,
PBR Visvodaya Institute of Technology and Science, AP, India.

Kanamathareddy Reshma Reddy

M.Tech, Dept. of CSE,
PBR Visvodaya Institute of Technology and Science, AP, India.

ABSTRACT

Last decade records a large quantity of data transition occurring web. Today's world is connected by Social Networking sites that have immense size of databases. Currently, there's no utility existing for remodeling SQL databases into NoSQL databases. NoSQL could be a new trend; there's no software system or utilities that are designed for the specified conversion. Most of the utilities developed, were developed for changing one variety of SQL database to a different SQL database. To market Hybrid database design together with an electronic information service and NoSQL database, an information Adapter system is planned. It will affect database transformations employing a database synchronization mechanism. It focuses on sanctioning effective database Analytics on Scaled-out Object Storage Systems. There's implementation of a database. Analytics Layer on associate degree Object-based Storage Cluster to perform in-place Map-Reduce computation on existing data. It keeps the strengths of RDBMS as ACID properties and at an equivalent time by providing the advantages of NoSQL through a middle layer that keeps track of all running transactions and manages with alternative layers with co-occurring transactions. the info Adapter uses a SQL layer acceptive queries from application services, in order that original application remains intact. The info Adapter conjointly controls question flow throughout information transformations. Associate degree approach that performs computation on existing large-scale information in associate degree Object Storage system while not moving information anyplace and outcomes of this approach are analyzed. This define will deliver strict consistency while not poignant measurability and handiness of NoSQL Databases.

Keywords: SQL; NoSQL; data adapter; migration; dataanalytics; SVM

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