

Dr. Satish Kumar

Associate Professor,

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Area of Research Interest

- Rheology of slurry flow
- Computational fluid dynamics
- Erosion wear
- Flow phenomena of solid-liquid flow in pump and pipeline etc.

Subject taught

- Fluid Machinery
- Thermodynamics
- Fluid Mechanics
- Heat and Mass Transfer
- Turbo machinery
- Computational Fluid Dynamics
- Power plant Engineering

Membership

Life member ISTE, Life member NSFMP, IAENG, Institution of Engineers, NITTSD, ASME

Administrative Work

- Chairman, Publication cell (From February 2020- ----)
- Chairman, Newsletter Committee (From June 2020- ----)
- Faculty in charge, Examination and Admission (From May,2020- ----)
- Chairman, Institute Admission Committee (From May,2020- ----)
- Lab in charge, Fluid Machinery
- Member, NIRF 2020-21
- Member, NIRF 2019-20

Ph.D. Thesis Title-Study on performance characteristics of centrifugal slurry pump handling water and slurries.

Teaching Experience

- Associate Professor – NIT Jamshedpur- Since 13-11-2018- till date
- Associate Professor – TIET, Patiala – From 13-03-2018 to 12-11-2018
- Assistant Professor - TIET, Patiala – From 03-07-2006 to 12-03-2018

Sponsored Project-06

- **DST-SERB Project-** "Experimental investigation and CFD modeling of centrifugal slurry pump for handling non –Newtonian solid liquid flow, **35.50 Lac**, 2021-2024 (**Ongoing**).
- **DST-SEED Project-** Hydraulic design of ash disposal system of thermal plant to minimize the Heavy metal contamination of groundwater, **Rs.22.21 Lac**, 2019-2021(**Ongoing**).
- **DST-SERB Project-** Experimental investigation and CFD modeling of slurry pipeline for flow of multiparticulate slurry at higher concentrations, **37.10 Lac**, 2016-2019(**Completed**).
- Study of performance of centrifugal slurry pump handling slurry, UGC, 7.268 Lac, 2010-2013, (**Completed**).
- Studies of erosion wear for the flow of ash-water slurry, UGC, 8.1 Lac, 2012-2015, (**Completed**).
- Evaluation of resistance properties of coal-water slurry flowing through local piping fittings, UGC, 6.440, 2014-2017, (**Completed**)

Ph.D Thesis Supervision

Supervised-07

- **Manikanwar Singh (2017)**, Analysis of flow characteristics of slurry transportation system (Co-supervisor: Dr. DwarikanathRath)
- **Kaushal Kumar(2017)**, Investigation on ash disposal pipeline of thermal power plant for transporting ash slurry at high concentration(Co-supervisor: Dr. Munish Gupta)
- **Gurprit Singh(2018)**, Investigation of Rheological and Leaching Characteristics of Ash at Higher Concentrations(Co-supervisor: Dr. S.K.Mohapatra)
- **Jashanpreet Singh(2019)**,Investigation on slurry erosion of different pumping materials (Co-supervisor: Dr. S.K.Mohapatra)
- **Gurmeet Singh(2019)**, Investigation of coal ash slurry erosion behaviour of HVOF coated pump impeller (Co-supervisor : Dr. S.S. Sehgal)
- **Jatinder Pal Singh(2019)**, Investigation of high concentration slurry disposal through pipe bend(Co-supervisor: Dr. S.K.Mohapatra)

- **Harmanpreet Singh**, Investigation of slurry transport characteristics for the Flow of multi-particulate coal slurry at high concentrations (Co-supervisor: Dr. S.K.Mohapatra)

Ongoing-08

- **Varinder Singh**, Study on Flow Characteristics of Sand Slurry (Co-supervisor: Dr. DwarikanathRath,TIET Patiala)
- **Amanpreet Singh**, Hydraulic design of slurry pipeline for conveying of fly ash (Co-supervisor: Dr.Hemant Kumar,Punjabi University,Patiala)
- **Rajesh Kumar**,Tribological Performance analysis of coated hydro turbine blade Materials(Co-supervisor: Dr.DeepaMudgal,TIET Patiala)
- **Chandra BhushanTripathi**- Study on Erosion Wear Behavior of Pump Impeller Materials for the flow of Multiparticulate slurry at high concentration(Co-supervisor: Prof. Sanjay, NIT Jamshedpur)
- **Harish Kumar Sharma**- Investigation on Performance of Integrated Solar Collector with Nano Particle Enhanced PCM Based Thermal Storage System
- **Chnadan Gupta**- Investigation of transportation characteristic of mineral slurry
- **Ashish Pradhan**
- **Prasant Sharma**

M.E Thesis Supersion

Supervised: 52 (Annexure-1) Ongoing: 03

Publication

SCI Indexed Journal

1. Singh H, **Kumar S** and Mohapatra S. K. (2020), Design and modeling of a self-dispersing twisted pipe to mitigate settling in coal water suspension, **Advanced Powder Technology**, 32, 317–336., <https://doi.org/10.1016/j.appt.2020.12.012>.
2. Singh V, Kumar S and Rath D. (2020), Optimization of Al₂O₃ and TiO₂ Blends to be used as Erosion Resistant Coating for Mild Steel, **Journal of Tribology**. **142(10): 101401**.
3. Singh J, **Kumar S** and Mohapatra S. K (2020),Erosion Tribo-Performance of HVOF deposited Stellite-6 and Colmonoy-88 micron layers on SS-316L,**Tribology International**. <https://doi.org/10.1016/j.triboint.2018.06.004>.
4. Singh G, **Kumar S** and Sahgal S (2020), Investigation on the impact of physical properties of the coal-ash slurries on the erosion wear performance of WC coated steel by using Image processing technique, **International Journal of Coal Preparation and Utilization**. <https://doi.org/10.1080/19392699.2020.1851208>.

5. Singh H, **Kumar S** and Mohapatra S. K. (2020), Modeling of solid-liquid flow inside conical diverging sections using computational fluid dynamics approach, **International Journal of Mechanical Sciences**, 186, 1-15.
6. Singh H, Kumar S and Mohapatra S. K. (2020), Improved surface morphology by reforming of oxygen functional groups of Indian coal upon irradiating with microwave radiations, **International Journal of Coal Preparation and Utilization**. <https://doi.org/10.1080/19392699.2020.1760854>.
7. Singh J, **Kumar S** and Mohapatra S. K (2019), Tribological performance of Yttrium (III) and Zirconium (IV) ceramics reinforced WC-10Co4Cr cermet powder HVOF thermally sprayed on X2CrNiMo-17-12-2 steel, **Ceramics International**, 45, 23126–23142.
8. Singh G, **Kumar S** and Sahgal S (2019), Tribo-erosion performance of few HVOF coated micron layers subjected to equi-sized slurry particles, **Materials Research Express**, 6 (2019), 096445.
9. **Kumar S**, Singh M, and Rath D. (2019), Improvement in head loss characteristics of fine particulate coal-water suspension with addition of coarser particulate, **International Journal of Coal Preparation and Utilization**, (Accepted), <https://doi.org/10.1080/19392699.2019.1600512>.
10. Singh G, **Kumar S** and Sahgal S (2019), Erosion Wear Analysis of HVOF coated Colmonoy-88 & Stellite-6 micron layers on pump impeller steel by using the Taguchi's Approach, **Industrial Lubrication and Tribology**. <https://doi.org/10.1108/ILT-01-2018-0028>.
11. Singh J, **Kumar S** and Mohapatra S. K (2019), An erosion and corrosion study on thermally sprayed WC-Co-Cr powders synergized with Mo2C/Y2O3/ZrO2 feedstock powders, **Wear**, 438-439 (2019) 102751.
12. Kumar S, Singh M, Singh J, Singh J.P and **Kumar S** (2019), Rheological Characteristics of Uni/Bi-Variant Particulate Iron Ore Slurry: Artificial Neural Network Approach, **Journal of Mining Science**, 2019, Vol. 55, No. 2, pp. 201–212.
13. Kannojiya, V and **Kumar S** (2019), Assessment of Optimum Slurry Pipe Design for Minimum Erosion, **Scientia Iranica**, (Accepted).
14. Singh J, **Kumar S** and Mohapatra S. K. (2019), An experimental study on head loss characteristics of pipe bends for flow of coal–water slurry at high solid concentration, **Proc IMechE Part E: Journal of Process Mechanical Engineering**, (Accepted) DOI: 10.1177/0954408919844928.
15. **Kumar S**, Kishore C, Sharma S and Kumar A (2019), Effective Utilization of F type Bottom Ash by Enhancement of Pozzolanic Properties, **Journal of Energy Sources, Part A: Recovery, Utilization, and Environmental Effects**. <https://doi.org/10.1080/15567036.2019.1587072>.
16. Singh V, **Kumar S** and Rath D. (2019), Synergistic effect of the addition of TiO2 feedstock on solid particle erosion of Ni/Al2O3 and Ni/Cr2O3 coatings, **Wear**, 426–427, 250–257.
17. Kumar K, **Kumar S** and Kumar A (2019) Effect of additives on static settled concentration, pH and viscosity of bottom ash-water suspension, **Journal of Mechanical Engineering, Strojnícky časopis**, 68(3), 49-58.

18. Singh H, **Kumar S** and Mohapatra S. K. (2018), Improved slurry ability and rheological characteristics of high ash Indian coal by hydrothermal treatment, **International Journal of Coal Preparation and Utilization**. <https://doi.org/10.1080/19392699.2018.1461624>.
19. Singh V, **Kumar S** and Mohapatra S. K. (2018), Modeling of erosion wear of sand water slurry flow through pipe bend using CFD, **Journal of Applied Fluid Mechanics**, 12, 3, 679-687.
20. Singh H, **Kumar S** and Mohapatra S. K. (2018), Microwave-assisted rapid upgrading of Indian high ash coal and its blending with untreated coal to improve the slurry ability and rheological characteristics of blended slurry , **International Journal of Coal Preparation and Utilization** .<https://doi.org/10.1080/19392699.2018.1515738>
21. **Kumar S**, Singh A and Kumar H (2018), Assessment of tracing element characteristics of F type fly and bottom ash mixture , **Journal of Energy Sources, Part A: Recovery, Utilization, and Environmental Effects**, 40, 24, 2967–2973.
22. Singh J, **Kumar S** and Mohapatra S. K. (2018), Study on role of particle shape in erosion wear of austenitic steel using image processing analysis technique, **Journal of Engineering Tribology**, (Accepted).
23. Singh G, **Kumar S** and Sahgal S (2018), Erosion tribo performance of HVOF deposited WC-10Co-4Cr and WC-10Co-4Cr + 2% Y₂O₃ micron layers on pump impeller steel, **Particulate Science and Technology** (Accepted).
24. Singh J, **Kumar S** and Mohapatra S. K. (2018), Chemical treatment of low-grade coal using Taguchi approach, **Particulate Science and Technology** (Accepted).
25. Singh G, **Kumar S** and Mohapatra S. K (2018), Potential risk by disposal of bottom ash from thermal power plants, **Bulletin of Environmental Contamination & Toxicology**, 101, 6, 773–778 .
26. Singh J, **Kumar S** and Mohapatra, S. K. (2018), Role of particle size in assessment of physico-chemical properties of bottom ash, **Waste Management & Research**, 2018, 36(11) 1016–1022.
27. **Kumar S** (2018), Determination of pressure drop characteristics of fly ash suspension with addition, **Journal of Applied Fluid Mechanics**, 11, 5, 1387-1393.
28. Gupta M, Singh V, **Kumar S**, Kumar S, Dilbaghi N and Said Z (2018), Up-to-date review on the synthesis and thermo physical properties of hybrid nanofluids, **Journal of cleaner production**, 190, 169-192.
29. Nath G and Kumar S (2018), Studies on Slurry Erosion Behavior of HVOF Applied Y₂O₃-Added WC–10Co–4Cr Cermet on 13-4 Martensitic Stainless Steel, **Metallography, Microstructure, and Analysis**, 7:133–142.
30. Singh G, **Kumar S** and Sahgal S (2018), Taguchi approach to erosion wear optimization of WC-10Co-4Cr sprayed austenitic steel subjected to equisized slurry, **Industrial Lubrication and Tribology**, 70, 9, 1774-1782.
31. Kumar K, **Kumar S**, Gupta M and Garg H.C. (2018), Tribological behaviour of WC-10Co4Cr coated slurry pipe materials, **Industrial Lubrication and Tribology**, 70, 9, 1721-1728.

32. **Kumar S**, Singh. J, Singh G, S, Manikanwar and Mohapatra, S. K. (2018), Alkali leaching of Indian coal for ash reduction, **Iranian Journal of Chemistry and Chemical Engineering**, 37, 6, 1-9.
33. Singh J, **Kumar S** and Mohapatra S. K. (2018), Simulation and optimization of coal-water slurry suspension flow through 90° pipe bend using CFD, **International Journal of Coal Preparation and Utilization**. <https://doi.org/10.1080/19392699.2018.1488693>.
34. Singh J, **Kumar S** and Mohapatra S. K. (2018), Head loss investigations inside 90° pipe bend for conveying of fine coal–water slurry suspension, **International Journal of Coal Preparation and Utilization**. <https://doi.org/10.1080/19392699.2017.1415892>.
35. Singh J, **Kumar S**, Singh J, Kumar P and Mohapatra S. K. (2019), CFD modeling of erosion wear in pipe bend for the flow of bottom ash suspension, **Particulate Science and Technology**, 37, 3, 275-285.
36. Singh J, **Kumar S** and Mohapatra S. K. (2017), Modeling of two phase solid-liquid flow in horizontal pipe using computational fluid dynamics Technique, **International journal of hydrogen energy**, 42, 20133 - 20137.
37. **Kumar S**, Singh M, and Rath D. (2017), Computational analysis on disposal of coal slurry at high concentrations through slurry pipeline, **International Journal of Coal Preparation and Utilization**. <http://dx.doi.org/10.1080/19392699.2017.1346632>
38. **Kumar S**, Singh M, Rath D and Kaur H (2017), Design of slurry transportation pipeline for the flow of multi-particulate coal ash suspension, **International journal of hydrogen energy**, 42, 19135 - 19138.
39. Singh G, **Kumar S**, Mohapatra S. K and Kumar K. (2017), Comprehensive characterization of grounded bottom ash from Indian thermal power plant, **Journal of Residuals Science & Technology**, 14, 1, 1-10.
40. Singh J, **Kumar S**. and Mohapatra S. K (2017), Tribological analysis of WC–10Co–4Cr and Ni–20Cr2O3 coating on stainless steel 304, **Wear**, 376-377, 1105–1111.
41. Kumar K, **Kumar S**, Gupta M, Singh G, Singh J.P and Singh J, (2017), Erosion wear investigation of HVOF spray WC₁₀Co₄Cr coating on slurry pipeline materials, **Coating**, 7, 4, 54, 1-11.
42. **Kumar S**, Singh G, and Mohapatra S. K (2017), Leaching characteristics of heavy metal in bottom ash from Indian thermal power plant, **Journal of Scientific & Industrial Research**, 74(3), 255-258.
43. Kumar K, **Kumar S**, Gupta M, Garg H.C and Singh G (2017), Measurement of flow characteristics for multiparticulate bottom ash-water suspension with additives, **Journal of Residuals Science & Technology**, 14, 1, 11-17.
44. Juneja P, **Kumar S**, Mohapatra S. K (2017), Influence of chemical leaching on rheology and ash reduction of Indian coal, **International Journal of Coal Preparation and Utilization**, DOI: 10.1080/19392699.2016.1247053.
45. Singh J, Kumar M, **Kumar S**, Mohapatra, S. K (2017), Properties of glass fiber hybrid composites: A Review, **Polymer-Plastics Technology and Engineering**, 56, 5, 455–469.

46. **Kumar S**, Gandhi B.K, and MohapatraS. K.(2016), Leaching characteristics of bottom ash from Thermal power plant, **Journal of Energy Sources, Part A: Recovery, Utilization, and Environmental Effects**, 38, 5, 686–694.
47. **Kumar S**, Singh M, and Rath, D. (2016), Physio-chemical and leaching characteristics of fly and bottom ash, **Journal of Energy Sources, Part A: Recovery, Utilization and Environmental Effects**, 38,16, 2377-2382.
48. Singh G, **Kumar S**, Singh M. and Mohapatra, S. K(2016), Environmental impact assessment of ash disposal system of a thermal power plant, **International journal of hydrogen energy**, 41, 15887-15891.
49. **Kumar S**, Kumar K. and Gupta M.(2016), Characterization of heavy metal trace elements in the fly ash from a thermal power plant, **Journal of Energy Sources, Part A: Recovery, Utilization and Environmental Effects**,38,16, 2370-2376.
50. **Kumar S**, Mohapatra S. K, Singh M. (2016), Comprehensive characterization of Indian bottom ash: Assessment of its potential utilization. **Journal of Energy Sources, Part A: Recovery, Utilization, and Environmental Effects**, 38, 18, 2704–2710.
51. **Kumar S**, Singh G and Mohapatra S. K (2016), An assessment of physical, mineral and rheological properties of fly ash for stowing in coal mine. **Journal of Energy Sources, Part A: Recovery, Utilization, and Environmental Effects**, 38, 20, 2955–2962.
52. **Kumar S**, Singh, M, and Rath, D. (2015), Influence of particle size distribution and temperature on rheological behavior of coal slurry, **International Journal of Coal Preparation and Utilization**, 36, 44-49.
53. **Kumar S**, Gandhi B.K, and MohapatraS. K. (2014), Performance characteristics of centrifugal slurry pump with multi-sized particulate bottom and fly Ash mixtures, **Particulate Science and Technology**, 32,466-476.

Scopus Index Journal

1. Sharma H, Singh K, Tripathi C B, **Kumar S**, Prasad S, Kumar K , Singh P(2020), Enhancement of latent heat energy storage system using nanomaterial's for different applications: A review, **Materials Today: Proceedings**, 26, 883–886.
2. Kumar K, Kumar S, Tripathi C B , Sharma H, Prasad S B,(2020), Parametric optimization of slurry erosion behaviour of brass, **Materials Today: Proceedings** 26 (2020) 1604–1609.
1. Singh J, **Kumar S**, Mohapatra, S. K and Verma P (2019), Experimental Design-Based Analysis on Process Parameters for Head Loss in Pipe Bend. [Advances in Fluid and Thermal Engineering](#) pp 379-388.
2. Singh J,**Kumar S**. and Mohapatra S. K (2018), Taguchi's approach for optimization of Tribo-resistance parameters for SS304, **Materials Today: Proceedings**,5, 5031–5038.

3. Sharma R, Gupta A, Nandan G, Dwivedi G, Kumar S,(2018), Life span and overall performance enhancement of Solar Photovoltaic cell using water as coolant: A recent review, **Materials Today: Proceedings**, 5, 18202–18210.
4. Singh J, **Kumar S**, Mohapatra, S. K and Kumar S (2018), Shape simulation of solid particles by digital interpretations of scanning electron micrographs using IPA technique, **Materials Today: Proceedings**, 5, 17786–17791.
5. Ashij K , Khurana S, Nandan G, Dwivedi G, **Kumar S**(2018), Role on nanofluids in cooling solar photovoltaic cell to enhance overall efficiency, **Materials Today: Proceedings**,5,20614–20620.
6. Singh H, **Kumar S** and Mohapatra, S. K. (2018),Influence of solid concentration on rheological characteristics of fly ash-water suspension, **IOP Materials Science and Engineering**, 377, 3-9.
7. Singh M, **Kumar S**, Kumar S, Nandan G and Gupta M (2018), Characterization of Iron-ore suspension at In-situ conditions, **Materials Today: Proceedings**, 5, 17845–17851.
8. Singh S, GargJ,Singh P, Singh G and **Kumar S**.(2018),Effect of hard faced Cr-alloy on abrasive wear of low carbon rotavator blades using design of experiments, **Material Today: Proceeding**, 5, 3390–3395.
9. Verma P, Kumar S, Lal K, Singh J and Prasad S.B.(2018), Prediction of pressure drop for the flow of zinc ore-water suspension in horizontal pipeline, **IOP Materials Science and Engineering**, 455,1-8.
10. Nath G and Kumar S (2018), Slurry erosion behaviour of pack boronized 13-4 martensitic stainless steel for hydro turbine blades, **Materials Today: Proceedings**,5 (2018) 17380–17388.
11. Sharma R, Singh G and **Kumar S**(2018), Optimization and erosion wear response of slurry pipeline material with and without Coating, **Indian Journal of Science and Technology**,11(28),1-7.
12. Singh G, **Kumar S**, and Mohapatra, S. K (2018), An Investigation leaching characteristics for Indian Bottom ash, **Materials Today: Proceedings**,5, 23720–23725.
13. Kumar P, Singh J and **Kumar S**. (2018),Effect of natural surfactant on the rheological characteristics of heavy crude oil, **Materials Today: Proceedings**, 5, 23881–23887
14. Singh J, **Kumar S**., and Mohapatra, S. K (2017), Optimization of erosion wear influencing parameters of HVOF sprayed pumping material for coal-water slurry, **Materials Today: Proceedings**, 5,23789–23795.
15. Kumar P, Singh J and **Kumar S**. (2017), Rheological and computational analysis of crude oil transportation, **International Journal of Mechanical, Aerospace, Industrial, Mechatronic and Manufacturing Engineering** , 11(2), 1-4.
16. Singh G, **Kumar S**., and Mohapatra, S. K (2017), Erosion wear in a slurry Pipe with multisized coal and bottom ash Slurries,**Materials Today: Proceedings** 4, 3565–3571
17. Pondey B, Ragit S and Kumar S.(2017),Transesterification Process of bitter almond oil and its fuel characterization for diesel engine performance, **International Journal of Engineering Trends and Technology** , 42, 8, 1-4.
18. **Kumar S**, Kumar K, and Gupta M (2017),Characteristics of fly ash in relation of soil amendment,**Materials Today: Proceedings**, 4, 527–532.

19. **Kumar S**, Kumar K, Gupta M and Garg H.C. (2016), Effect of addition of bottom ash on the rheological properties of fly ash slurry at varying temperature, **IOP Materials Science and Engineering**, 149, 1-5.
20. Kannojiya.V, **Kumar S**, Mohapatra, S. K, S, Manikanwar(2016),Simulation of erosion wear in slurry pipe line using CFD, **Applied Mechanics and Materials**, 852, pp 459-465.
21. **Kumar S**, Singh M, and Rath D. (2015), Mineral characterization of Indian coal,**International Journal of Applied Engineering Research**, 10(78), 5-8.
22. Singh G, **Kumar S**, and Mohapatra, S. K(2015), Erosion wear analysis of slurry piping material using taguchi technique, **International Journal of Applied Engineering Research**, 10(78), 1-4.
23. Chakravarty A, **Kumar S**, and Mohapatra S. K. (2014), Transportation performance of highly concentrated coal-water slurries prepared from Indian coals, **Applied Mechanics and Materials**, 592, 869-873.
24. **Kumar S**, Mohapatra S. K, and Gandhi B.K. (2013), Effect of addition of fly ash and drag reducing on the rheological properties of bottom ash, **International Journal of Mechanical and Materials Engineering**, 8(1), 1-8.
25. **Kumar S**, Mohapatra S. K, and Gandhi B.K. (2013), Investigation on centrifugal slurry pump performance with variation of operating speed, **International Journal of Mechanical and Materials Engineering**, 8(2), 40-47.

Reputed Journal

1. Pondey B, Ragit S and Kumar S(2017),Optimization of biodiesel production from Sesamumindicum oil by Taguchi's Technique,**International Journal of Applied Agricultural Research**,12(2), 255-265.
2. Kumar S., Singh, M., Kumar, S., and Mohapatra, S.K. (2017), Optimum values of design variables for high specific speed centrifugal pumps, **International Journal of Advance Research in Science and Engineering**, 6(12), 1-7.
3. Singh A,Juneja P, Kumar, U, **Kumar, S** and Mohapatra, S. K(2015), Influence of particle size and temperature on rheological characteristics of coal oil suspension, **International journal of Engineering Technology, Management and Applied sciences**, 3,1,44-49.
4. Sharma R, ChakravartyA.and**Kumar S**.(2014), Physical chemical and Leaching properties of Rolling mill fly ash, **International Journal of Science Technology**, 1-4.
5. Kumar S, Madan K and MohapatraS.K (2013), Evaluation of flow behaviour of multi-sized fly ash slurry, **International Journal of Materials Science**, 8(2), 83-89.
6. Joshi R, **Kumar, S**, and Mohapatra S.K. (2011), Simulation of centrifugal slurry pump using k- ϵ turbulent modelling scheme, **International Journal of Computational Science and Engineering**, 2(1), 54-62.
7. Singh, J. P, **Kumar, S**, Mohapatra S.K (2011), Computational investigation of centrifugal slurry pump handling bottom ash, **International Journal of Fluids Engineering**, 3,(2), 241-249.
8. **Kumar S**, Dhull V, and Mohapatra S.K (2011), Experimental Study and Numerical simulation on thermal and structural analysis of tool, **International Journal of Materials Sciences**, 6,169-184.
9. **Kumar S** and Gupta M. (2011), Flow structure and heat transfer analysis in a laminar channel flow with a built-in triangular prism, **Journal of Fluids Engineering**, 2, 51-63.

10. Gupta M, **Kumar S** and Kumar A (2011), Numerical study of pressure and velocity distribution analysis of centrifugal pump, **International Journal of Thermal Technologies**, 1(1), 117-121.
11. Dhindsa D, Kumar S and Srivastva P (2011), Numerical evaluation of the flow in centrifugal pump using ANSYS-CFX, **International Journal of Advanced Mechanical Engineering**, 1, 1-8.
12. Upadhyay L and Kumar S (2011), Modeling and evaluation of erosion wear suspension system, **International Journal of Materials Physics**, 2(1), 21-32.
13. Upadhyay L, Singh J and Kumar S (2011), Computational study of solid-liquid suspension in stirred tanks: A review of recent progress, **International Review of Applied Engineering Research**, 1, 27-33.
14. **Kumar S** and Grewal R (2011), Design of centrifugal pump using optimization technique, **International Journal of Applied Engineering Research**, 6(5), 627-634.
15. **Kumar S** and Singh M (2011), Evaluation of erosion wear of centrifugal pump using CFD, **International Journal of Computational Physical Sciences**, 2(1), 1-8.
16. Singh G, **Kumar S** and Mohapatra S.K (2010), Modelling and stress simulation of centrifugal compressor, **International Journal of Advances in Thermal Sciences and Engineering**, 1, 99-106.

Conferences

1. Singh V, Kumar S and Rath D. (2021), Slurry flow characteristics numerically analyzed using sand water mixture, AIP Conference Proceedings 2341, 030038 (2021); <https://doi.org/10.1063/5.0050309>.
2. Kumar R, Kumar S and Mudgal D. (2021), Performance analysis of bare SS-304 using silt of size 350-450 μm at varying speed and at silt concentration, AIP Conference Proceedings, 2341, 030037 (2021); <https://doi.org/10.1063/5.0050223>
3. Kumar S, Tripathi C B, Sanjay, Singh G, Prasad S.B, Kumar K (2021), Comparative study of erosion wear resistance on SS 430 and SS SD 2507, AIP Conference Proceedings 2341, 040007 (2021); <https://doi.org/10.1063/5.0050122>.
4. Kumar S, Kumar S, Singh P, Singh V and Singh H (2021), pH dependence leaching characteristics of bottom ash, AIP Conference Proceedings **2341**, 040038 (2021); <https://doi.org/10.1063/5.0050639>.
5. Verma P, Lal K, Singh J and **Kumar S** (2018), CFD simulation of 90° pipe bend for multiphase flow of zinc tailing-water slurry, TFEC-2019, April 14–17, 2019, Las Vegas, NV, USA (Accepted).
6. Singh M, Verma P, Kumar S and Sandhu H (2018), Numerical and experimental investigation of pressure drop in horizontal pipeline for the flow of multisized coal-water suspension, TFEC-2019, April 14–17, 2019, Las Vegas, NV, USA (Accepted).
7. Sharma R, Singh G and **Kumar S** (2018), Optimization and erosion wear response HOVF coated pipeline material and different impingement angles, Proceeding of NCRDET -2018, 79-83.
8. Rajat Sharma, Ayush Gupta, Gopal Nandan, Gaurav Dwivedi, Satish Kumar, Life span and overall performance enhancement of Solar Photovoltaic cell using water as coolant: A recent review, 8th Int. conf. on Materials Processing and Characterization (ICMPC 2018), GRIET, Hyderabad, India, 16-18 March 2018, DOI: <https://doi.org/10.1016/j.matpr.2018.06.156>

9. S Krishn, M Goyal, GopalNandan, Satish Kumar, P Kumar, A K Shukla(2018), Pool Boiling using Nanofluids: A Review, First International Conference on Future Learning Aspects of Mechanical Engineering (**FLAME - 2018**), 3-5 October 2018, Mechanical Engineering Department, ASET, Amity University Uttar Pradesh, Noida,
10. Singh H, **Kumar S** and Mohapatra, S. K. (2018),Improvements in the Rheological Characteristics of the Complex Coal-Water Suspension Using Gasification Derived Waste Water, **International Conference on Recent Advances in Fluid and Thermal Sciences (ICRAFT 2018)**, BITS Dubai.
11. Singh J, **Kumar S**, Mohapatra, S. K and Nandan G (2018), Experimental design based analysis on process parameters for head loss in pipe bend, **FLAME -2018**.
12. Singh H, **Kumar S** and Mohapatra, S. K. (2018),Determination of head loss in a slurry on conveying and handling of particulate solids,CHOPOS-2018,London.
13. **Kumar S**, Kumar K, Gupta M and Garg H.C (2017), Effect of rotational speed and solid concentration on erosion wear in pipeline for solid-liquid flow,ICETS'17,CHENNAI, 30-31, March, 2017.
14. Kannojiya.V and **Kumar S**. (2017), Computational Modeling of Erosion Wear due to Slurry Flow through a Standard Pipe Bend: Effect of Bend Angle, Orientation, Diameter and Slurry Velocity, ICCI-SEM-2017, GIFT, Bhubaneswar, Odisha, India from 18th - 19th February 2017.
15. Singh G, **Kumar S**, and Mohapatra S.K(2017), Influence of pH and liquid to solid (L/S) ratio on leaching characteristics of fly ash, ICETS'17,CHENNAI, 30-31, March, 2017.
16. Singh J, **Kumar S**, Singh C. K(2017), Implementation of Fuzzy logic on free convection heat transfer around vertical tube via FORTRAN code, Advances in Intelligent Systems and Computing, Proceedings of Sixth International Conference on Soft Computing for Problem Solving, SOCPROS2016, December 23-24, 2016, 331-341.
17. Singh J, **Kumar S** and Mohapatra, S. K (2017), Rheological behaviour of concentrated coal-water slurries prepared from Indian coals, International conference on innovations & sustainable development in sciences, management & technology (ICISDSMT-2017) March-2017.
18. Nath G and **Kumar S** (2017), Development of erosion resistant cermet coatings for hydro turbine blades, ICMAT 2017. Singapore,18 to 23 June 2017.
19. Pondey B, Ragit S and **Kumar S** (2017), Preparation of biodiesel from Bitter almond oil and characterization for use as a fuel in VCR Diesel Engines, NCRAME 2017.
20. Singh J, **Kumar S** and Mohapatra, S. K (2016),Characterization of fly ash for utilization as a stowing material in coal mines, GETS 2016.
21. **Kumar S**, Singh M and Rath D. (2016),Study of Pressure Distribution Inside Slurry Pipeline Using CFD, NCRTDME-2016, DIT Dehradun.
22. **Kumar S**,Mohapatra, S. K (2013), Effect of additive on rheological properties of coal-slurry, 10-13 MARCH, 2013 Widener University, Chester, Philadelphia, U.S.A.
23. **Kumar S**, Mohapatra, S. K, and Gandhi, B.K (2013), Modeling and simulation of flow distribution of centrifugal slurry pump, 10-13 MARCH, 2013 Widener University, Chester, Philadelphia, U.S.A.

24. Upadhayay L, **Kumar S** and Mohapatra SK (2012), Experimental and CFD analysis of solid suspension in a slurry pot tester, ETME – 2012, 357-372.
25. **Kumar S** and Mohapatra SK (2012), Design of centrifugal pump using computational fluid dynamics, ETEE-2012), 23-24 March 2012.
26. Mishra A, Kumar R and **Kumar S** (2011), Dimensionless characteristics of radial flow centrifugal pump using variable frequency drive, ICETME-201, 24-26, Feb., 2011, TIET Patiala.
27. **Kumar S** (2011), Design of ash transportation system, ICETME-201, 24-26, Feb., 2011, TIET Patiala.
28. Chugh T and **Kumar S** (2011), Design analysis of salisbury and banjo type axle Housings, ICETME-201, 24-26, Feb., 2011, TIET Patiala.
29. Joshi R, Kumar S and Doshi A.V.(2010), Performance and Loss Analysis of Centrifugal Pump, ICAME-2010.
30. Doshi A.V and Kumar S (2010), Evaluation of the centrifugal pump performance with adjustable speed drive, ICAECT-2010.
31. Kumar S, Gabhne S and Singh J(2006), An optimum loss model for centrifugal pump, DPLC-2006, BITS Pilani.
32. Kumar S and Kumar D (2005), Modeling and Simulation of Solar Flat Plate Collector, EMCBS – 2005, BITS Pilani.

Invited Talk Delivered

1. Delivered expert talk on fluid machinery system at Chandigarh University, Chandigarh in February, 2020.
2. Member of academic review committee, Chandigarh University, Chandigarh
3. Hydro conversion system, October, 21, 2018, Chandigarh University, Mohali.
4. Performance of slurry pump with CFD, TEQIP sponsored faculty development programme at GJU Hisar, 30-08-2016.
5. Basics of thermodynamics, September, 19, 2016 at CGC Jhanjeri, Mohali.
6. Computational Fluid Dynamics, Faculty development programme at Thermal Engineering on February, 10, 2016 at CDC Landran.
7. Basics of Computational Fluid Dynamics, March, 18, 2015, Chandigarh University, Mohali.
8. Fluid Machinery, February, 9, 2015, Chandigarh University, Mohali.
9. Ash disposal system, International conference (ICETME-2011), 24-26, Feb., 2011, TIET Patiala
10. Basics of governing equation of fluid flow, Short term course on (BCFD-2009), 10-23, July 2009, TIET Patiala
11. Simulation of Turbo machines using CFD, Short term course on (BCFD-2009), 10-23, July 2009, TIET Patiala
12. Energy assessment of pump, One day seminar on Energy Management on 8th March, 2008, TIET Patiala.

13. Hydro Power Conversion, Short term course on Energy conversion system(ECS-2007) during10-21 December,2007
14. Optimum sets of loss models for turbo machine, Short term course on Energy conversion system(ECS-2007) during10-21 December,2007
15. Optimum speed ratio for turbo machine, Short term course on Energy conversion system(ECS-2007) during10-21 December,2007

Organized Seminar / Conferences/Workshop

- ATAL FDP on **Engineering Modeling and Simulation using CFD**, during June 21-25, 2021.
- ATAL FDP on **Optimization Technique in Engineering Application**, January 18-22, 2021
- TEQIP-3 sponsored **1stNational Conference on “Materials, Mechanics & Modelling (NCMMM-2020)” during 29-30 August, 2020.**
- TEQIP-3 sponsored Short term course on **“Basics of Computational Fluid Dynamics” (BCFD-2020)” June 29-July 3, 2020.**
- One-week Faculty Development Programme on **“ICT Tools for Teaching, Learning Process & Institutes” organized from January 13 – 17, 2020**
- TEQIP-3 sponsored Short term course on **MACHINES AND MECHANISM, 29June -03 July, 2020.**
- TEQIP sponsored hands on training of Computational Fluid Dynamics CFD-2013, 14-20, October, 2013.
- International conference on emerging trends in mechanical Engineering (Organizing Secretary), ICETME-2011, 24-26, Feb., 2011
- DST sponsored two days national workshop on Recent Development in Energy conversion Technology, NWRDEC-2010.(Organizing Secretary), 22-23,March ,2010

Conference Participation

1. International conference on ICETS-2017, 30-31 march, 2017 MuthayammalEngg. Institute, Tamilnadu.
2. International conference on ICRDESHM-2017, 24 December, 2017.
3. International conference on ICEEEE-2016, Hongkong, China, 15-16, April 2016.
4. International conference on innovative research in Engineering science and management, 2015, J.N.U, New Delhi
5. The 28th international conference on solid waste technology and management, 2013, Widener University, Chester, Philadelphia, U.S.A
6. International conference on Powder, Granule and Bulk Solids: Innovations and applications,PBGSA - 2013, Thapar University, Patiala, India,
7. National conference on Recent Development in Mechanical Engineering, 2010, BRCMCET Bahal, Bhiwani, Haryana
8. National conference on Global trends in Mechanical Engineering (GTME-2010), RBIET, Mohali.
9. International conference on ACHEME-2009, February,27-28, 2009.

10. National Conference on recent development and future trends in mechanical Engineering (RDFTME-2006), NIT Hamirpur, 03-04, November 2006.
11. National conference on DPLC-2006, BITS Pilani
12. National Conference on Energy Management in changing Business Scenario EMCBS-05), BITS Pilani, 08-09, October-2005

Faculty Development Programmes Participation

1. New direction programme in teaching and learning- Organized by Trinity college Dublin, Ireland and TIET Patiala, 2017
2. Workshop on rheology of Inks and coating, 16 February, 2016
3. ANSYS Structural training, 16-20, December, 2013, Thapar University, Patiala
4. International workshop on recent development in flow visualization technique, 29-31, December, 2009, IIT Roorkee
5. Training programme on Computational fluid dynamics, 25-31 May 2009, IIT BHU Varanasi
6. Two week Short term course on Computational fluid dynamics, 16-27-June 2008, IIT Roorkee
7. Two week Short term course on Energy conversion systems, 10-21- December, 2007, Thapar University, Patiala

Book/Proceedings Edited

1. Proceeding of International Conference on Emerging Trends in Mechanical Engineering, ICETME-2011, Thapar University, Patiala
2. Power Plant Engineering, 2009, Distance Education Course material, Thapar University, Patiala,

Lab Development

- Development of slurry transportation pilot plant test loop 65 meter facility -2016-2018-(37.09 Lakhs)
- Developed the Steam Engineering Lab - 2015-2016 - (17.5 Lakhs)
- Developed the CFD Lab- 2014-2015 -(8.65 Lakhs)
- Development of the Slurry Erosion testing Lab- 2012-2013- (3.55 Lakhs)
- Development of the Rheological Measurement Lab- 2011-2012- (9.5 Lakhs)

Awards and Honors

- Faculty performance award (2008, 2009, 2011, 2013 and 2016) at TIET Patiala
- GATE (AICTE) Scholarship-2002-2004
- NTPC Award -1998-2002

List of ME Thesis supervised -48

Sr. No.	Title of Dissertation	Name of student	Co-Supervisor	Year
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1.	Rheological characteristics of fly ash slurries with and without additive	Parmeshwar Kumar Deo	Dr. D. Hansda	2021
2.	Rheological characteristics of coal water slurry with additive	Sharfaraj Ahmed	--	2021
3.	Computational analysis of flow characteristics of fly ash slurry in pipe	Abhishek Kumar	-----	2020
4.	Investigation of Erosion Wear Characteristics on Ash Disposal Pump Material	Joga Singh	Dr. Charanjeet Singh, SUSCET Tangori, (mohali)	2019
5.	Hydraulic transportation of zinc Suspension through pipelines	ParasVerma	Dr. KundanLal, TIET Patiala	2018-19
6.	Hydraulic transportation of Grounded bottom ash for Backfilling operation	ChandanKishor	Mr. Sumeet Sharma, TIET Patiala	2018-19
7.	Investigation of flow characteristics for Coal charcoal water slurry fuel	Anil Kumar Singh	Dr.S.K.Mohapatra TIET Patiala	2018-19
8.	Computational analysis of flow characteristics of Iron ore slurry in pipeline and bend	Mandeep Singh	-----	2017-18
9.	Performance and emissions study on variable compression ratio engine fuelled with babassu and sal oil methyl ester and its blends with diesel fuel	Rishi Bector	Dr. Satish Chandra Ragit TIET Patiala	2017-18
10.	Investigation of flow characteristics of iron-ore water slurry	Sager Kumar	-----	2017-18
11.	Transportation of heavy crude oil through pipeline	Praveen Kumar	-----	2016-17
12.	Studies on slurry erosion of hard protective coatings on 13-4 martensitic stainless steel for hydro turbine blades	GauravNath	----	2016-17
13.	Production, characterization and performance of biodiesel blends of Sesame oil and Bitter almond oil as an alternative fuel in CI engine	BhpendraPondey	Dr. SatishRagit TIET Patiala	2016-17
14.	Leaching characteristics of coal and coal ash	Jatinder Pal Singh	-----	2015-16
15.	Multiphase modelling of erosion wear in slurry pipe	VikasKannojiya	-----	2015-16
16.	Investigation of flow characteristics of coal and oil slurry	PuneetJuneja	Dr.S.K.Mohapatra TIET Patiala	2015-16
17.	Investigation of pressure drop characteristics of coal slurry pipeline	MohitBhayana	Dr. DwarikaNathRatha TIET Patiala	2014-15
18.	Rheological characterization of minerals	NitinKumawat	-----	2014-15
19.	Parametric optimization of slurry erosion in pipeline materials using fuzzy logic and Artificial neural networks	Zubin Mishra	Dr.S.K.Mohapatra TIET Patiala	2014-15

20.	Investigation of erosion wear in slurry pipe bend using CFD	Prince Kumar	-----	2014-15
21.	Modeling of pipeline for disposal of highly concentrated fly-bottom ash slurry for backfill using CFD	Kamal Singh	Dr.S.K.Mohapatra TIET Patiala	2014-15
22.	Investigation of flow characteristics of coal water slurry	Deepak Kumar	Dr. DwarikaNathRatha TIET Patiala	2013-14
23.	Evaluation of erosion wear of slurry pump materials	Jaspreet Singh	-----	2013-14
24.	Investigation of slurry erosion in pipeline materials	Prabhjot Singh	-----	2013-14
25.	Evaluation of erosion wear of turbine materials in hydropower plants	ParasKhullar	-----	2013-14
26.	Investigation of leaching characteristics of rolling mill ash	Rajan Sharma	-----	2013-14
27.	Investigation on slurry transportation performance of coal-water mixture at high concentrations	ArunanshuChakravarty	Dr.S.K.Mohapatra TIET Patiala	2012-13
28.	Study of slurry flow behaviour of multi-sized particulate ash slurry	KomalMadan	-----	2012-13
29.	Improvement in design of centrifugal slurry pump using CFD	Mitesh Kumar	-----	2012-13
30.	Numerical evaluation of flow through a centrifugal slurry pump handling fly ash using CFD	Sukhdeep Singh	-----	2011-12
31.	Investigation of pressure distribution in pipeline for transportation of coal ash slurry	RanjanChaudhary	Dr. DwarikaNathRatha TIET Patiala	2011-12
32.	Investigation of flow of centrifugal slurry pump handling bottom and fly ash mixture	Nitin Kumar	-----	2011-12
33.	Rheological investigation of coal water slurries with and without additive	Ayush Kumar Singh	-----	2011-12
34.	Evaluation of flow behaviour around an air foil body	Aman Sharma	Dr. DwarikaNathRatha TIET Patiala	2011-12
35.	Investigation of erosion wear of ductile materials with and without coating	Rakesh Kumar	-----	2010-11
36.	Study of slurry erosion in pipelines	Mani Kanwar Singh	Dr. DwarikaNathRatha TIET Patiala	2010-11
37.	Investigation of flow of centrifugal slurry pump handling bottom ash	Harsimran Singh	-----	2010-11
38.	Study of rheological behaviour of bottom ash with additives	Sandeep Sharma	-----	2010-11
39.	Study of erosion wear of pump material for handling water ash slurry	Aseem Mishra	-----	2010-11

40.	Modelling and simulation of centrifugal pump	AnuBala	-----	2010-11
41.	Study of performance of ash disposal system using CFD	Robin Jain	Dr.S.K.Mohapatra TIET Patiala	2009-10
42.	Modeling and evaluation of erosion wear suspension system	Mr.LalitUpadhaya	Dr.S.K.Mohapatra TIET Patiala	2009-10
43.	Study of performance characteristics of centrifugal slurry pump handling bottom ash	Mr. JainderPreet Singh	Dr.S.K.Mohapatra TIET Patiala	2009-10
44.	Computational investigation of flow field in a centrifugal slurry pump	Mr.Rakesh Joshi	Dr.S.K.Mohapatra TIET Patiala	2009-10
45.	Numerical study of performance characteristics of centrifugal slurry pump	Phullgurlovleen	Dr.S.K.Mohapatra TIET Patiala	2008-09
46.	Numerical investigation of flow field on a centrifugal slurry pump	Mr.Chander Kant	-----	2007-08
47.	Numerical study of erosion wears on a centrifugal slurry pump	Mr.Abhineet Kumar	-----	2007-08
48.	Simulation of sets of loss models for centrifugal pump	Mr.Shusheel Mittal	-----	2007-08
49.	Pressure and velocity distribution analysis of centrifugal pump	Mr. Karan Rajdev	-----	2007-08
50.	Numerical study of performance of centrifugal pump handling ash slurry	Mr.Ashutosh Kumar	-----	2007-08
51.	Modeling and FEM analysis of turbine blade	Mr.Manvinder Singh	-----	2006-07
52.	Modelling and stress simulation of centrifugal compressor	Mr. Sandeep Kumar	-----	2006-07