

**Y. V. Srinivasa**

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Aiming for a challenging job in the field of **new product development, manufacturing, research and development** that will help to utilize my skills and knowledge for the betterment of the organization along with the growth of my career.

#### **SUMMARY**

- Presently working as **Design Team Lead (Structures & Transmissions)** at Rolls-Royce India Pvt. Ltd., Bengaluru.
- Total 10+ years of professional experience in the field of Mechanical Engineering with exposure to Industry, Research and Academics.
- About close to 10 years of experience in Engineering Design and Analysis of Aircraft Engine (Gas turbine components like non rotating hot frames/structures (TCF, TRF, HP/IP Structure, RTBS), stationary seals, flow path hardware, fairings, configuration hardware like oil supply and scavenge tubes) and Wind Turbine components (load carrying system components like Main bearing housing, Main foundation, Bolted connections, Yaw system components, Skeleton, Brackets, Hub, Lifting tools etc.) using Systems Engineering and Robust design Principles, in-house design tools and ANSYS Classic / Workbench software.
- About 4.5 year of experience in Research and Development in machine tool design and development, fabrication, metrology and testing at IIT Madras, Chennai.
- About 3.5 years of experience in engineering teaching field.
- Proven abilities in conducting finite element analysis using ANSYS for strength verification and optimizing mechanical systems for weight reduction and cost out.
- Component design life through stress analysis (Extreme and Fatigue – LCF & HCF Life). Proficiency in Bucking analysis, Modal and Harmonic analysis.
- Proficient in Ansys Parametric Design Language (**APDL**).

#### **CARRIER SUMMARY**

SI No.	Company	Designation	From	To	Experience
1a	Rolls-Royce India Pvt. Ltd., Bengaluru	Design Team Lead	July 2017	Till Date	2 Years
1b	Rolls-Royce India Pvt. Ltd., Bengaluru	Advanced Installations Engineer	April 2016	June 2017	1.2 Year
2	GE Aviation, GEITC, Bengaluru	Lead Engineer	July 2012	April 2016	3 years 9 months
3	VESTAS Technology R & D, Chennai	Senior Development Engineer	Sept 2009	June 2012	2 years 10 months
4a	IITMadras, Chennai	Project Associate	Jan 2009	Aug 2009	8 months
4b	IITMadras, Chennai	Research Scholar - PhD	Jan 2005	Dec 2008	4 years

5	BIET, Davangere	Lecturer	Jul 2001	Dec 2004	3 years 6 months
6	ISRO Satellite Centre, Bangalore	Project trainee	Nov 2000	Mar 2001	5 months

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### **1a. Rolls-Royce India Pvt. Ltd., Bengaluru: Design Team Lead**

#### **RESPONSIBILITIES: as Design Functional Lead**

- Plan and lead the component design-make plan (tasks, resource, cost and schedules) for the component design team.
- Commit the plan on behalf of the design team to the IPT Leader (IPTL)
- Ensure any dependencies are identified and included in the design plan. Gain commitment for these dependencies, including areas external to the design team.
- Coordinate the design team to deliver the design deliverables in-line with the plan
- Communicate all Integrated Product Production Readiness (IPPR) component design escalations
- Support component design and IPT in milestone sign-off reviews (DTA/IPT gates)
- Support IPT leads in Design Engineering and Manufacturing Engineering planning and activity (supplier Design Failure Modes & Effects Analysis (DFMEA) / Production Product Approval Process (PPAP) / Process Failure Modes & Effects Analysis (PFMEA) / concession clearances)
- Ensure there is effective communication between the component design team and stakeholders (Stress Analysis / Sub-System / Thermals / Air-Systems / Performance / WEM / Manufacturing / Materials / Suppliers / Fleet Services / Development / Configuration)
- Own the component design functional risk and issues, and update risk register periodically through the project life cycle
- Lead the initial attempt to resolve component design issues. Escalate issues and risks to the IPTL
- Ensure component design tasks within the IPT are completed in line with functional standards and specifications (FRT=1 and OTD=100 %)
- Coach the team in the design tasks on system engineering and robust design principles / tools
- Do internal review of design deliverables like CRD, DDR, IDD, Tolerance stacks, Comm. Sheets, Scheme drawing, DDIS, DTA Packs etc and Sign DDR, SIR and PIL Sheet to release drawings
- Facilitate DFMEA, QN eConcessions SAP support

#### **Major Projects: NPI / Fleet**

1. TrentXWB-97 HP/IP Structure MK2: Strut Profile redesign for NGV KiZ, Service Pipe Insulation Clip redesign and Producibility Issues: Completed till DTA3
2. TrentXWB-84EP HP/IP Instro Structure for FETT and FTB in EDP: Completed DAT1 to DAT5 and Tech release
3. TrentXWB-84EP HP/IP Prod. and Instro Static Seals: Completed DAT1 to DAT5 and Tech release
4. TrentXWB-84EP HP/IP Rotor Offset: Completed till DTA3
5. TrentXWB-84: Manuals Maturity for Module 02, 03 and 04

## 6. Features Standardisation for Structures Commodities (FBH and ICC)

### **RESPONSIBILITIES: as Design Team Lead**

- Identify training needs of the team, carryout performance development reviews, discuss individual career development needs, carryout periodic performance and behavioural check-ins, address people issues in-time by seeking help from HR
- Lead and monitor Safety, Quality, Cost, Delivery and People matrices for the team and seek help needed from leadership
- Plan the resources based on demand and commit to project, monitor the utilization and time bookings
- Estimate the project work load for the team members, write the TDS and get PO
- Offload CDG work to suppliers by writing SoW, review the supplier quote/proposal, raise MPR and get approvals to release PO
- Manage data access requests, RRB internship management

### **AWARDS:**

- Engineering Excellence Gold Award from the management for the contributions made in the design of Adv1 RTBS and Aft module sump components and leading the project team.
- Silver Awards - more than 5 times in a span a 3 years

### **TRAININGS:**

- Rolls-Royce Leadership Academy - Trusted to Lead Certification
- DFMEA Facilitator
- QN eConcessions in SAP
- Zero Defects – Manufacturing and Product Safety: Train the Trainer

### **1b. Rolls-Royce India Pvt. Ltd., Bengaluru: Advanced Installations Engineer**

#### **EXPERTISE: as Design Engineer**

- Started the Rolls-Royce career in S&T team by leading the design ownership of RTBS and Aft module sump components in the Adv1 project. Noticeable changes were incorporated into RTBS design like
  - Reduced the RTBS cast model weight close to 30 lbs. by making the solid struts to hollow
  - Designed the pads around the strut openings to help in mounting the oil service tubes and instrumentation harnesses
  - Changed the single piece RTBS design into two piece RTBS (Outer case and Hub) with a bolted joint configuration to ease the castability of RTBS
  - Major design change to reduce strut count from 12 to 6 to meet the interface dynamic requirements
  - Designed the bolted joints at the two piece RTBS, aft flange and tail cone interfaces
  - Designed the free-flow oil scavenge cavity in the RTBS hub
- Castings envelop definition is freezed considering the manufacturing process capability and machining GD&T tolerances

- Tolerance stack-ups for casting to machining stock, bolt lengths, wrench clearances, min wall conditions and collisions have been completed
- ICD/IDDs for level A, B & C, Tolerance stacks, P, M & F issue drawings have been completed
- RTBS and Sump components DFMEA have been completed. Risks are identified and mitigation plans are recorded
- Component Design Requirements for the RTBS and Aft module components have been updated to include in the design verification and validations plans
- Adv1 RTBS DTA 3 & 4 / SLARP 1, 2 & 3 reviews have been completed per project schedule without affecting the program milestones
- Adv1 RTBS project milestones have been delivered right first time without any major rework
- DRAs, MMMs, EDSS, RRDS, RRES, JDS, SAI, SAP, SAG and other technical documents have been read, understood and incorporated the learning's in the design and analysis work of Adv1 RTBS and Aft sump components. Planning for knowledge sharing sessions from the lessons learnt

#### **RESPONSIBILITIES: as Design Lead**

- Lead the Adv1 RTBS design and analysis project team by overlooking in to the project scheduling, deliverables, milestones, Teamcentre data management and cost
- Overlooking into the MBD work for Adv1 RTBS project with Quest
- Point of contact for queries related with Design, UG modeling and Tolerance stack calculations in S&T
- Point of contact for thermo-mechanical FE analysis using Ansys Classic and Workbench, meshing practices for critical features, temperature and pressure mapping methodology and other FE analysis
- Mentoring the newly recruited team members on S&T commodity overview and RR generic design practice
- Helped the management in the recruitment process of S&T team by taking interviews on the weekends. This lead to building a strong S&T team with relevant skill sets in design and stress with good mix of experience in various commodities related to gas turbines.
- Group owner for the S&T email distribution list.
- Adherence to Rolls-Royce HPC culture, Quality, Compliance, Product Safety and other relevant policies.

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## **2. GE Aviation, GEITC, Bengaluru: Lead Engineer**

#### **RESPONSIBILITIES & EXPERTISE:**

- Perform FE modeling and structural (stress) analysis of aircraft engine (Low pressure turbine module) components (Castings and Forged) per standard design requirements (FAA).
- Determine analysis requirements, identify appropriate analysis methods and work out detailed analysis procedures to perform required analysis and evaluate the results.
- Supporting the commercial aircraft engine programs for field/service issues and dispositioning the manufacturing related nonconformance's (MRB) through engineering

substantiation (supported by finite element substantiation if required) and recommending the repair work procedure.

- Technical expertise on hardware functionality, deeper understanding of the manufacturing processes, expertise on the engineering tools, collaborative working with regional and global teams and ability to adapt to ever changing project schedules helped to deliver on the various program deliverables on time.
- **Training in repair and MRO shops** on various repair technologies on aero foils and combustor casing, Engine overhauling & CSA contracts with the airlines.
- Root cause investigations for the field failures of hardware, Engineering assessment for the quality escapes from the manufacturing.
- Work closely with product support engineering to introduce the engine shop manual limit changes.
- Assess low cycle fatigue life, stiffness, fan blade out and buckling capability.
- Deliver the projects in full and on time and preparation of design record studies.
- Mentoring the new team members of the team about the work culture and analysis methodology.

#### **CERTIFICATION:**

- **Material Requirement Board (MRB) Certification:** Enrolled for MRB certification. I have completed all the training requirements for MRB certification and substantiated close to 20 different MRBs from different manufacturing shops.
- **Corner Stone Certification:** Mechanical design fundamentals (MDF)

#### **TRAININGS:**

- **Engine Teardown Certification**
- Project Management and Presentation Skills.

#### **KEY PROJECTS:**

**Title : CSA Projects in GE90 TCF module with indirect total estimated savings of \$ 13.964 M, COGS, MRB & DR Support**

- Mission stress, LCF and crack propagation analysis to support shop to introduce new limits in ESM for various hardware's like - FWD Inner Seal Weld Repair Extension, Bulkhead Seal Metal Spray Recoat Avoidance, LPT Shroud Stage 3 Repairable Limits Extension, Aft Hangers Repair Transition, Rear Inner Seal Cracking & Redesign, Bulkhead Seal Distortion Limit Extension through introduction of new repair method
- Lead the team in idea generation brain storming sessions to generate cost reduction ideas through simplifying the design of the product, manufacturing process, alternate vendor, material changes etc. for the commercial fleet and also helped NPI teams to leverage few of the design simplifications
- Worked with manufacturing shops for MRBs on various manufacturing issues (machining defects – tool gouge, over machining, incomplete heat treatment cycles, hole true position mismatch, etc.) by providing engineering substantiation

**Title : Stress and Low Cycle Fatigue analysis of TCF Aft flange joint, EGT Boss, GH Boss, Cooling Port, Case Strut components in GENx, LEAP1A/1B and Passport 20 Engines**

- FE modeling (meshing, contacts, BCs), Temperature and Pressure mapping
- Time point screening for the mission analysis from the heat transfer data and global model LCF results
- Solution, stress and LCF post processing from the stress results for the entire mission
- Design review, closing the action items and record book preparation

**Title : Elastic-Plastic and Harmonic (Forced response) analysis of scavenge tube to select leakage pressure test level in GE90-94 Engine**

- Pressure level selection based on working pressure in the tube
- Evaluation of permanent deformation of tube for different pressure levels
- Evaluation of stresses under forced vibration conditions

**Title : Redesign of bearing cone flange joint to reduce manufacturing cost in GE90-115B Engine**

- Design optimization of the joint to maintain the original stiffness
- Evaluation of the new design for LCf life, stiffness and FBO
- Evaluation of the design for assembly through stake-up analysis

**Title : Substantiation of manufacturing nonconformance's (MRBs) and fielded engine wear defects (DRs) in structural components**

- Understand the component function, effect of nonconformance
- Recommend the repair procedure and engineering substantiation
- Follow up after the repair for the acceptability of the component

Tools: ANSYS Classic and Workbench, UG, Siesta\_Lite and in-house tools

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### **3. VESTAS Technology R&D, Chennai: Senior Development Engineer**

#### **RESPONSIBILITIES:**

- Perform FE modeling and structural (stress) analysis of wind turbine nacelle load carrying components (Castings and Fabrication) as per the standard design requirements.
- Determine analysis requirements, identify appropriate analysis methods and work out detailed analysis procedures to perform required analysis and evaluate the results.
- Suggesting suitable Design (CAD) modifications to the design engineers based on engineering judgment of analysis results.
- Design optimization to reduce weight and cost out
- Stiffness matrix generation of assembly to help in design of test rigs

- Preparation of strength verification documents for certification from the DNV and GL.
- Deliver the projects in full and on time.
- Mentoring the new team members of the team about the work culture and analysis methodology.

#### **CERTIFICATION:**

**Six Sigma Green Belt Certification (IDOV)** for successfully executing the new product development project 'Design of the Main Bearing Housing' following the six sigma IDOV methodology in Vestas Technology R&D.

#### **KEY PROJECTS:**

**Title : Strength verification of M64 and M52 bolted connection between MBH and MF and various other bolted connections**

- Hex mesh preparation
- Pretension definition based on the design calculation
- Evaluation of the friction capacity in the bolted connection
- Evaluation of the bolt safety reserve factors for extreme and fatigue loads

**Title : Strength verification of main bearing housing and load distribution study in main bearings**

- Global model preparation
- Bearing load distribution study
- Evaluation of design life of the structure for extreme and fatigue loads

**Title : Strength verification of main foundation**

- Evaluation of design life of the structure for extreme and fatigue loads
- Identification of NDT zones based on extreme and fatigue hot spots

**Title : Strength verification of skeleton structure**

- Evaluation of design life of the structure for extreme, fatigue, snow, transportation loads
- Evaluation of the welded joints in the hot spots regions

**Title : Strength verification of the miscellaneous load carrying components like service crane in the nacelle, Transport and handling equipments**

- Evaluation of design in respect to the loading and boundary conditions

**Title : Strength verification of the HUB and its bolted connections, Hub Plate, Pitch Components**

- Evaluation of design life of the structure for extreme and fatigue loads

Tools: ANSYS Classic and Workbench, ProE and in- house tools

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#### **4a & 4b. IITMadras, Chennai: Research Scholar - PhD**

#### **RESPONSIBILITIES:**

- Setting up micro machining laboratory consisting of the various measuring equipments and machine tools
- Performing fundamental investigations into size effect of material strengthening in micro cutting
- Mechanistic modeling of cutting forces in micro end milling operation

#### **KEY PROJECTS:**

**Title : Development of miniaturized machine tool for mechanical micro machining**

**Tools : ANSYS Classic and Workbench, Solidworks**

#### **Ph.D PUBLICATIONS:**

##### **REFEREED INTERNATIONAL JOURNAL**

1. Y. V. Srinivasa and M. S. Shunmugam, Development and performance evaluation of miniaturised machine tool (MMT) system, International Journal of Nanomanufacturing, 2009, Vol. 3, Nos. 1/2, pp. 133-158.
2. Y. V. Srinivasa and M. S. Shunmugam, Mechanistic model for prediction of cutting forces in micro end-milling and experimental comparison, International Journal of Machine Tools and Manufacture, 2013, Vol. 67, pp. 18-27.
3. Y. V. Srinivasa and M. S. Shunmugam, Analysis of structural integrity of special purpose miniaturized machine tool and performance evaluation for micro machining applications, International Journal of Computer Aided Engineering and Technology, 2014, Vol. 6, No. 4, pp. 366-382.
4. Y. V. Srinivasa and M. S. Shunmugam, Investigations into micro-orthogonal cutting and material strengthening, International Journal of Manufacturing Research, 2013, Vol.8, No.4, pp. 394-421.

##### **INTERNATIONAL CONFERENCE**

1. U. N. Preetha, Y. V. Sinivasa and G. L. Samuel, 2007, Investigation into the influence of chatter and vibration on micro channel milling, COPEN 2007 - International Conference on Precision, Meso, Micro and Nano Engineering, Trivandrum, India.
2. Y. V. Srinivasa and M. S. Shunmugam, 2013, Identification of Feasible Operating Regime based on Analysis of Cutting Forces in Micro End-Milling, COPEN 2013 - International Conference on Precision, Meso, Micro and Nano Engineering, Calicut, India.

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#### **5. BIET, Davangere: Senior Lecturer**

##### **RESPONSIBILITIES:**

- To teach UG students mechanical engineering subjects and take lab classes
- Evaluation of the students for annual performance and grading
- Guide the final year students in the project work
- Coordinator for student magazine, Take IGNOU classes



**RECOGNITION:**

- Best Teacher silver medal award in 2002, 2003 & 2004 for being responsible to get the 100% result in taught subjects like CAD/CAM & Automation and Material Science & Metallurgy.

**PROFESSIONAL MEMBERSHIP:**

- Indian Society of Technical Education (MISTE)

**FACULTY DEVELOPMENT PROGRAM (FDP) / SHORT TERM TRAINING PROGRAMS (STTP)**

- Concepts and Practice of Computer Aided Design and Manufacture.
- Computer Integrated Manufacturing.
- Robotics and Automation.
- Micro Machining and Micro Electro Mechanical Systems.
- Advances in Materials, Analysis, Design and Manufacturing.
- Recent Advances in Materials and Manufacture of Thermal Systems.
- Advanced Manufacturing and Metrology.

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**RELEVANT SKILL SETS - Computer Skills / Technical Skills**

**Design Applications:** Systems Engineering and Robust Design Tools, ANSYS Classic and Workbench, SolidWorks, ProE, UG, MINITAB, Deform 2D

**Programming Languages / Mathematical Tools:** Matlab

**Platforms:** Windows, UNIX

**Equipments:** Proficient in the use of mechanical measuring devices - Optical profiler, Contact profiler, CMM and 5 axis machining centre (KERN Evo)

**ACADEMIC QUALIFICATION**

Qualification	University / Board	Year of Passing	Percentage / CGPA
<b>PhD</b> (Mechanical)	Indian Institute of Technology Madras, Chennai	2013	7.5
<b>M. Tech</b> (Prod. Engg. Systems Technology)	Kuvempu University / U B D T C E, Davangere	2001	72.80 %
<b>B.E</b> (Industrial Production)	Kuvempu University / B I E T, Davangere	1998	71.36 %
<b>XII</b>	Pre University Educ., Education Department, Bangalore	1994	73.33 %
<b>X</b>	Karnataka Secondary Educ. Examination Board, Bangalore	1992	80.33 %

**AWARDS, PRIZES WON**

- 4<sup>th</sup> Rank for University in B.E.
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## **ANALYSIS EXPERTISE**

- Structural static analysis - Elastic and Elasto-plastic
- Non linear analysis – Contact Analysis
- Buckling analysis
- Dynamic Analysis – Modal, Pre-stressed Modal, Harmonic
- Fatigue analysis
- Bearing load distribution analysis
- Sub modeling in classic and workbench

## **DOMAIN KNOWLEDGE**

- Aircraft engine (Gas turbine) – Low pressure turbine module and non-rotating structural components like hot frames, seals etc., MRB / Concessions, ESM Limits, COGS, CSA
- Wind turbine – Structural load carrying system
- Fatigue testing and S-N Curve development of new materials
- Research and Development – Machine tool design and development

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## **PERSONAL**

Date of Birth : 07<sup>th</sup> October 1976  
Nationality : Indian  
Religion : Hindu  
Languages known : English, Hindi and Kannada

## **REFERENCE**

<b>Dr. M. S. Shunmugam</b> Professor Emeritus and Former Head Department of Mechanical Engineering Indian Institute of Technology, Madras Chennai - 600 036 INDIA Phone: +91 044 22574677 (O) Email : shun@iitm.ac.in	<b>Dr. L. Vijayaraghavan</b> Professor Department of Mechanical Engineering Indian Institute of Technology, Madras Chennai - 600 036 INDIA Phone: +91 044 22574687 (O) Email : lvijay@iitm.ac.in
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## **PRESENT ADDRESS**

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