VENKATA SAI SATISH SOMESULA

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SUMMARY

Results-driven **Mechanical Design & Reliability Engineer** with **5+ years of experience** in automotive, rail, and energy sectors. Expertise in **CAD/CAE (NX, Pro-E, Ansys, AutoCAD)**, product definition, and **reliability validation**. Proven record in DFMEA, failure analysis, and cost-saving design optimization, delivering multi-million-dollar savings while ensuring compliance to **ASME GD&T and OCP guidelines**. Adept at cross-functional collaboration, accelerating design cycles, and enhancing product robustness.

WORK EXPERIENCE

Harbinger Motors Inc | USA **Aug 2024 – May 2025**

Reliability Engineer (Hardware)

- Orchestrated DFMEA for battery cooling tube coatings, producing a validation plan that projected $28M in lifecycle savings.
- Devised accelerated life-stress models, precisely calculating test duration & sample size to validate reliability.
- Investigated busbar insulation failure modes; executed material validation studies (DSC, DMA, TMA, TGA, EDS), ensuring durability in Mini-trucks.
- Validated conformal coating materials via HTHE, thermal shock & coolant dunk tests, securing $5M annual savings.
- Directed field failure analysis programs, isolating root causes, mitigating risk factors, and extending product uptime.
- Partnered with semiconductor teams to evaluate power modules under liquid-cooled conditions, improving module resilience.
- Formulated reliability protocols for immersion cooling systems, introducing in-situ corrosion & HTOL validation.
- Conducted thermomechanical characterization of substrate and die attach per OCP standards, enhancing design robustness.
- Developed predictive reliability dashboards integrating test data with statistical models, enabling proactive failure prevention.

Quest Global Engineering Services (for Wabtec Corporation) | India **Aug 2021 – Mar 20234**

Senior Design Engineer

- Delivered Product Definition Engineering (PDE) support for locomotive systems, accelerating new product launches.
- Modelled and optimized sheet metal, piping, tubing, and wire harness systems in NX & Pro-E, reducing rework cycles by 15%.
- Created and revised 3D models and 2D drawings to support new and legacy locomotive product development.
- Administered Engineering Change Requests (ECRs) and Engineering Change Notices (ECNs) in Teamcenter PLM, cutting change turnaround time by 20%.
- Drafted manufacturable designs aligned with ASME Y14.5 GD&T and welding codes, ensuring compliance and reducing shop floor issues.
- Coordinated with cross-functional engineering and manufacturing teams, driving smooth design-to-production handoffs.
- Conducted design reviews to validate feasibility, manufacturability, and cost before release.
- Expanded locomotive domain expertise, supporting continuous design enhancements across multiple platforms.
- Synthesized supplier and vendor feedback into revised component specifications, reducing recurring design deviations.
- Supported root-cause analysis and corrective actions for field issues to enhance product reliability.

ICROZ Solutions Pvt Ltd | India **Aug 2019 – Jul 2021**

Junior Product Designer

- Designed optimized routings for fuel feed pumps, radiator fans, tail lamps, and starter motors, minimizing clash risks with vehicle body.
- Reduced wiring harness cost by 10% by eliminating excess lengths and standardizing routing paths.
- Converted STEP files into client-specific CAD models, accelerating design delivery and reducing revision cycles.
- Inspected fitment of floor panels, clutch housing, and fender assemblies, ensuring seamless integration of sub-assemblies.
- Compiled QC inspection reports, FEA analyses, and client presentations, expediting design approval processes.
- Introduced lightweight design iterations for plastic components, improving manufacturability and cutting material cost by 8%.

PROJECTS

- **Retaining Ring Analysis, Abaqus, FEA, GD&T**
  Conducted finite element analysis of retaining rings under displacement boundary conditions. Identified yielding risks and recommended material/design changes to enhance durability.
- **Overhead Crane Redesign, DFM/DFA, Cost Optimization, CAD Modeling**
  Re-engineered hanging end truck of an overhead crane, applying DFM/DFA principles. Achieved 10% manufacturing cost reduction while maintaining load-bearing performance.
- **Heat Pipe Simulation, ANSYS Icepak, Thermal Modeling**
  Modeled heat pipe thermal behavior using orthotropic cylindrical block simulation. Generated temperature contours and airflow velocity vectors around fan-heat sink assembly, validating thermal efficiency.
- **Automotive Sub-System Design, CAD (NX, Pro-E), FEA Validation**
  Designed and optimized routing for fuel feed pump, radiator fan, tail lamp, and starter motor assemblies. Reduced wiring harness cost by 10% through clash detection and optimized layouts.
- **Locomotive Component Definition, Teamcenter PLM, ASME Y14.5 GD&T**
  Supported PDE activities for locomotive systems. Developed manufacturable sheet metal, piping, and wire harness designs, ensuring compliance with ASME standards and reducing rework by 15%.

TECHNICAL SKILLS

Design & CAD Software

- AutoCAD (Computer-Aided Design)
- SolidWorks (3D CAD Modeling Software)
- Pro/ENGINEER (Pro-E, now Creo Parametric)
- Siemens NX (UG NX – Unigraphics NX)
- Windchill (Product Lifecycle Management Software)
- Teamcenter PLM (Product Lifecycle Management)

Reliability & Quality Engineering

- DFMEA (Design Failure Mode and Effects Analysis)
- DFM/DFA (Design for Manufacturability / Design for Assembly)
- GD&T (Geometric Dimensioning and Tolerancing – ASME Y14.5 Standard)
- HTHE (High Temperature High Humidity Endurance Testing)
- HTOL (High Temperature Operating Life Testing – Semiconductor Reliability)
- Field Failure Analysis (FFA – Real-World Failure Investigation)

Collaboration & Process Tools

- Confluence (Team Collaboration & Knowledge Management Tool)
- Polarion (Application Lifecycle Management Platform)
- QC (Quality Control Documentation & Client Presentations)
- ECR (Engineering Change Request) & ECN (Engineering Change Notice)
- Stage-Gate PDP (Product Development Process – Structured New Product Introduction Framework)

Certification

- Six Sigma Green Belt – *Institute of Industrial and Systems Engineers (IISE)*

EDUCATION

University of the Cumberlands, USA **May 2025**

Master of Engineering in Information Technology

RGM College of Engineering & Technology, India **May 2019**

Bachelor of Technology in Mechanical Engineering