Siddhartha Chaturvedi

Mechanical Engineer

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Work authorization / Sponsorship Required: Yes

PROFILE

Mechanical Engineer specializing in Product Engineering and DFMA-driven manufacturing solutions. Proven record in enhancing product performance, thermal efficiency, and cost reduction through design validation, FEA, and CFD. Skilled in full-cycle development from 3D CAD to 2D production documentation for automotive and battery systems.

CORE COMPETENCIES

- **Mechanical & Product Design:** Component Design, Driveline/Transmission Systems, **Product Design**, **DFM**, **DFMA**, **GD&T**, **Six Sigma (Green Belt)**, Product Performance, **Value Engineering**, **Validation and Testing**
- **Product Development & Lifecycle: New Product Introduction (NPI)**, Design Concept to Product Launch, Design Release Process, **APQP**, **PLM (Teamcenter, Windchill)**, **BOMs**, Technical Documentation
- **Simulation & Validation: ANSYS FEA** (Stress/Fatigue/Durability), **CFD/Thermal Analysis**, **Design Validation**, **DFMEA**, **Test Planning**, **Root-Cause Analysis**, **ISO & Safety Compliance**, Warranty Support
- **CAD, Data & Process Tools: SolidWorks & PDM**, **Siemens NX**, **Catia 3DX**, **Creo**, Microsoft Excel, Statistical Analysis, **Data Analysis**, **Engineering Change (CR/CN) Management**
- **Manufacturing:** Manufacturing Process, Quality Assurance, Cost Reduction, **Continuous Improvement**

PROFESSIONAL EXPERIENCE

Switch Mobility Ltd. | Sherburn In Elmet, UK | Jun 2024 - Jul 2025

Mechanical Engineer (R&D - Battery & Driveline Subsystems)

- Engineered and validated lightweight composite battery enclosures using SolidWorks and FEA, enhancing thermal performance and durability by 9% for high-vibration operational environments
- Executed the full product development cycle, delivering detailed component designs, Bills of Materials, and production documentation in SolidWorks PDM to ensure stringent project handovers
- Streamlined manufacturing assembly processes by applying DFMA principles, which reduced build errors by 7% while meeting all critical security specifications
- Established a validated thermal management system through CFD analysis and physical testing, achieving a 52L/min flow, which was a 14% increase in battery thermal efficiency (based on flow) under peak load conditions
- Generated comprehensive FMEA and DFMEA reports to proactively mitigate design risks and ensure manufacturability, supporting continuous improvement initiatives

BJ Stainless Fabrications | Leeds, UK | Jan 2024 - May 2024

Mechanical Design Engineer (Contract)

- Designed and simulated high-load structural frames in SolidWorks and ANSYS using FEA, optimizing for weight and durability to achieve a 6% improvement in product performance
- Produced complete GD&T manufacturing drawings and Bills of Materials, ensuring cost-efficient designs that met precise manufacturability and client requirements
- Applied Value Engineering and DFMA principles to standardize sheet metal designs, streamlining production and reducing associated material costs by 8%
- Validated designs against manufacturing constraints through iterative FEA, eliminating critical stress concentrations and improving product durability by 9%
- Created clear production documentation and assembly guides, facilitating accurate project handovers and maintaining consistent build quality across fabrication teams

The University of Leeds | Leeds, UK | Jan 2023 - Dec 2023

Automotive Safety / Component Test Engineer (Contract)

- Led ABS/ADAS prototype validation using Virtuocity Simulators, performing ISO 26262 FEA-backed failure analysis and documenting corrective actions that improved system reliability by 10%
- Constructed hydraulic/pneumatic test rigs via computational modelling, delivering 12% efficiency gains that aligned with stringent performance targets
- Supported active suspension proof-of-concept development by correlating CAD models with endurance testing data to improve system response under extreme loads

Gajra Gears Private Limited | India | Jul 2019 - Jun 2021

Project Engineer (Work Placement / Internship)

- Conducted product engineering for high-torque transmission systems using PTC Creo, focusing on component design to enhance performance and manufacturability
- Managed Bills of Materials and production documentation within Windchill PLM, directly supporting New Product Introduction (NPI) programs and process streamlining
- Performed DFMEA during the design phase to identify potential failures, implementing corrective actions that improved product reliability by 8% for demanding applications
- Optimized gearbox housing designs with integrated thermal management features, increasing thermal performance by 9% while adhering to strict weight targets
- Supported seamless project handovers by creating detailed technical documentation for casting and machining, addressing key manufacturing constraints to ensure quality

EDUCATION

M.Sc. Automotive Engineering - The University of Leeds, Leeds, UK | (2021 - 2022)

B.Tech. Mechanical Engineering - SVVV University, Indore, India | (2017 - 2021)

ACADEMIC PROJECTS

Thermal Analysis of Disc Brakes (Jan 2022 - Aug 2022)

- Developed a numerical model in ABAQUS and conducted FEA to analyze thermal performance, comparing gray cast iron and stainless steel materials for brake discs
- Achieved a 15°C lower peak temperature in stainless steel versus cast iron through FEA validation under heavy cyclic braking conditions
- Optimized cooling vane geometry, improving heat dissipation by 8% while maintaining structural integrity

Powertrain Engineer - Team Design Project (Sep 2021 - Jan 2022)

- Architected the full electric powertrain and system integration, achieving 244.59 Wh/km energy efficiency
- Structured a 31.65 kWh battery pack weighing 133.23 kg, optimizing energy density and meeting a 3.31 m^2 packaging target
- Executed chassis FEA for torsional stiffness and a detailed cost analysis, proving a 3x cost reduction per passenger versus campus transport

LANGUAGES

English: Fluent | German: Beginner

TECHNICAL TOOLS

CAD/PLM: SolidWorks & PDM, Siemens NX, CATIA V6, Inventor, AutoCAD, Creo, Windchill, Teamcenter

Simulation/Analysis: HyperWorks, Abaqus, Ansys (Fluent/Workbench), MATLAB/Simulink, CANalyzer