

SANJEEV MHATRE

Mechanical Engineer | Automotive & Manufacturing | CFD & CAD Specialist
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PROFESSIONAL SUMMARY

Motivated Mechanical Engineering graduate with hands-on experience in quality assurance, production processes, and automotive testing at Bajaj Auto Ltd. Skilled in CFD analysis using ANSYS Fluent, AutoCAD, CATIA V5, SolidWorks, and Python. Proven ability to apply lean manufacturing, 5S methodology, and defect analysis in high-paced automotive environments. Passionate about aerodynamic design, fluid mechanics, and EV technology. Seeking a full-time role in design engineering, manufacturing, or automotive R&D to drive innovation and quality.

TECHNICAL SKILLS

CAD & Design: AutoCAD (2D & 3D), CATIA V5, SolidWorks, 3D Part Modeling, Assembly Design

Simulation & CFD: ANSYS Fluent, ANSYS Workbench, Computational Fluid Dynamics (CFD), FEA Basics, Aerodynamic Analysis

Manufacturing: Lean Manufacturing, 5S Methodology, GD&T, Process Improvement, Quality Control, FMEA

Testing & QA: Mechanical Inspection, Durability Testing, Defect Analysis, Root Cause Analysis, ISO Standards

Programming: Python (Certified), Logic Building, Scripting, Data Analysis

Tools: MS Office Suite, Technical Report Writing, Rapid Tooling (RTIIc)

Soft Skills: Cross-functional Collaboration, Problem-Solving, Team Coordination, Communication

WORK EXPERIENCE

Engineer Trainee • Bajaj Auto Ltd. • Pune, Maharashtra • June 2023 – December 2023

- Inspected 100+ mechanical components and sub-assemblies daily against ISO quality standards, maintaining a zero-missed-critical-defect record throughout the 6-month tenure.
- Identified and flagged 30+ manufacturing defects across 2-wheeler production lines, contributing to a measurable reduction in rework rates and scrap, aligned with lean manufacturing principles.
- Monitored end-to-end production processes and applied 5S methodology to improve workplace organization, reducing line downtime by supporting process efficiency initiatives.
- Assisted in performance evaluation and durability testing of 3 vehicle sub-systems including suspension, braking, and powertrain components, ensuring conformance to design and safety benchmarks.
- Collaborated daily with 15+ engineers, supervisors, and technicians across Quality Assurance, Production, and Testing departments to diagnose and resolve technical issues in real time.
- Prepared inspection reports and test documentation, enabling data-driven decisions for continuous process improvement initiatives across departments.

Workshop Trainee • ST Workshop • Pen, Raigad, Maharashtra • 1 Month (2022)

- Gained hands-on exposure to workshop operations including fitting, turning, welding, and basic machining processes on industrial equipment.
- Observed and assisted in the maintenance and repair of mechanical components, developing practical understanding of workshop tools, safety protocols, and standard operating procedures.
- Applied theoretical knowledge of engineering drawing and manufacturing processes to real workshop tasks, strengthening foundational mechanical skills.

EDUCATION

Bachelor of Engineering – Mechanical Engineering (B.E.)

Vishwaniketan College of Engineering • Khopoli, Maharashtra • 2024

- Relevant coursework: Machine Design, Fluid Mechanics, Thermodynamics, Manufacturing Processes, Kinematics of Machinery, Automobile Engineering, Heat Transfer.

Diploma in Mechanical Engineering

Government Polytechnic Pen • Pen, Raigad, Maharashtra • 2020 – 2023

- Strong foundation in mechanical principles, engineering drawing, workshop practice, and applied mechanics.

CERTIFICATIONS & TRAINING

- ANSYS Fluent / CFD Analysis – Training in computational fluid dynamics, mesh generation, boundary condition setup, and post-processing of flow simulations.
- AutoCAD (2D & 3D Design) – Certified training in 2D drafting, 3D solid modeling, and technical drawing standards.
- SolidWorks – Certified training in 3D part modeling, assembly creation, motion simulation, and design validation.
- Python Programming – Certified course covering fundamentals, logic building, and real-world scripting applications.

PROJECTS

CFD Analysis of Aerodynamic Performance on Automotive Body

Tools: ANSYS Fluent, ANSYS Workbench, SolidWorks, CAD Modeling

- Designed a 3D car body model in SolidWorks and imported it into ANSYS Workbench for pre-processing, mesh generation, and boundary condition configuration.
- Performed Computational Fluid Dynamics (CFD) simulations using ANSYS Fluent to analyze airflow patterns, drag coefficient (Cd), lift force distribution, and pressure contours around the vehicle body at various speeds (60–120 km/h).
- Identified high-drag zones and wake regions at the rear of the vehicle; proposed design modifications to the spoiler and underbody geometry, achieving a simulated drag reduction of approximately 12%.
- Compared CFD results against theoretical aerodynamic benchmarks, validating the simulation accuracy and documenting findings in a structured technical report with visual pressure/velocity contour plots.
- Applied knowledge of fluid mechanics, boundary layer theory, and turbulence modeling (k-epsilon) to interpret results and suggest practical aerodynamic improvements for fuel efficiency and vehicle stability.

Low-Volume Complex Components for Military Equipment Using RTIIC

Tools: Rapid Tooling Injection Molding (RTIIC), CAD Design, Technical Research

- Conducted an in-depth research study on Rapid Tooling Injection Molding (RTIIC) for producing complex, low-volume precision components for defense applications.
- Analyzed cost-effectiveness, design flexibility, and manufacturability of RTIIC versus conventional production methods, demonstrating up to 40% cost reduction potential for low-volume production runs.
- Proposed eco-efficient manufacturing solutions aligned with modern defense-sector needs, emphasizing reduced lead times, improved material utilization, and scalable production.
- Presented research findings in a structured technical report with actionable recommendations, reviewed by faculty and industry mentors.

ADDITIONAL INFORMATION

Languages: English (Professional), Hindi (Native), Marathi (Native)

Key Interests: Automotive Aerodynamics, CFD Simulation, EV Technology, Fluid Mechanics, Manufacturing Innovation

Location: Mumbai, Maharashtra | Open to opportunities in Mumbai, Pune, Bangalore, and pan-India