

# UDAY KUMAR

R&D Engineer — Automotive, Automation & Heavy Machinery [Portfolio](#) [✉️](#)  
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## Professional Summary

R&D Engineer specializing in **Powertrain and Body-in-White (BIW) design**, with hands-on experience in **automotive, automation, and heavy machinery product development**. Proven ability to translate engineering research and complex technical concepts into high-performance, reliable, and manufacturable solutions aligned with **global automotive and industrial standards**.

Experienced across the **full product development lifecycle**, including concept development, detailed design, validation, system integration, and production readiness. Expert in developing **structurally optimized, lightweight, and cost-effective components**, balancing performance, durability, manufacturability, and quality.

Strong focus on **research-driven engineering, automation, and precision manufacturing**, leveraging advanced technologies to enhance product **quality, repeatability, and efficiency**. Highly skilled in **3D CAD modeling, assembly integration, and FEA**, contributing to **heavy machinery, automotive, and automation systems**.

Proficient in **Siemens NX, CATIA, PTC Creo, Autodesk Inventor, and ANSYS**, delivering **complete models, assemblies, and FEA solutions** that support cross-functional collaboration. Committed to **innovation, continuous improvement, and future-ready vehicle and industrial platforms**.

## Core Skills

- Powertrain and Body-in-White (BIW) Design, Heavy Machinery and Automation Systems, Precision Engineering and 3D CAD Modeling
- Finite Element Analysis (FEA), Design for Manufacturability (DFM) and Assembly (DFA), Assembly Integration and Process Optimization
- Geometric Dimensioning and Tolerancing (GD&T), BOM Management, PLM and PDM Workflows
- Industry 4.0 and Smart Manufacturing, Research-driven Engineering and Product Development

## Technical Tools

- 3D CAD Software: Siemens NX, CATIA V5, PTC Creo, Autodesk Inventor, SolidWorks, AutoCAD
- Simulation and Analysis: ANSYS Mechanical, ANSYS Fluent, Hypermesh, ANSA, MATLAB
- CAD/FEA Workflow Automation and Digital Twin Applications

## Professional Experience

### Chropynska India Private Limited

R&D Engineer – Powertrain & BIW Design

Oct 2025 – Present

- Led end-to-end design of **Powertrain and BIW components**, improving structural integrity and manufacturability.
- Developed **100+ CAD parts and assemblies** using Siemens NX, CATIA, Creo, and Inventor.
- Performed **FEA-driven validation** in ANSYS to reduce failure risk and improve durability.
- Applied **DFM/DFA principles** to optimize weight, cost, and production feasibility.
- Collaborated with R&D, manufacturing, and quality teams to ensure **first-time-right designs**.
- Ensured compliance with **global automotive standards and Industry 4.0 practices**.

## JK Fenner India Ltd

*Quality & Product Design Engineer*

2021 – 2022

- Supported product design through **3D modeling and simulation**.
- Assisted quality validation, achieving **reduced rework and improved reliability**.
- Enhanced manufacturability while ensuring **industry standard compliance**.

## Internships & Industrial Training

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**Bajaj Engineering & Skills Training (BEST), PES University**

Feb 2025 – Jul 2025

*Mechatronics & Automation Trainee*

- Hands-on experience in industrial automation, robotics, PLCs, sensors, motion control, and Industry 4.0.

**Conceptia Konnect / Prime Tooling – CAD/FEA Trainee Intern**

Feb 2025 – May 2025

- CAD modeling, FEA, and design optimization using ANSYS, SolidWorks, and Creo.

**Bharat Fritz Werner Ltd – Industrial Trainee**

Oct 2023 – Nov 2023

- Practical exposure to CNC machining and manufacturing workflows.

**Belathur Industries – Mechanical Intern**

May 2023 – Jun 2023

- Worked on CAD modeling, machining operations, and technical drawings using CATIA V5.

**Bosch Diesel Services – CFD Intern**

Feb 2023 – Mar 2023

- Conducted fluid flow and thermal simulations on diesel injection systems using ANSYS Fluent.

## Projects

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**Free Convection in a Trapezoidal Cavity with Porous Media**

- FEM-based simulations to analyze natural convection and heat transfer.
- Studied Rayleigh number, porosity, and boundary conditions using MATLAB.
- Generated insights for **thermal management and industrial energy systems**.

**Modeling & Analysis of Vertical Axis Wind Turbine (VAWT)**

- Designed and analyzed Savonius and Darrieus-type VAWT blades.
- Performed **FEA and aerodynamic analysis** using ANSYS, QBlade, CATIA, and SolidWorks.
- Proposed design optimizations for efficiency and structural safety.

## Education

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**B.E. in Mechanical Engineering**

2022 – 2025

Bangalore Institute of Technology, Bengaluru — CGPA: 8.5

**Diploma in Mechanical Engineering**

2018 – 2021

Jawaharlal Nehru Polytechnic, Bidar — Percentage: 72%

## Certifications

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- CATIA V5, SolidWorks, ANSYS Workbench

## Additional Information

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Languages: English, Kannada, Hindi, Marathi

Areas of Interest: Automotive Research and Development, powertrain systems engineering, heavy machinery design, industrial automation, advanced manufacturing, and CAD/CAE-based product development.