Abhilash Kumar Venkatayogi

MECHANICAL DESIGNER - AutoCAD, SolidWorks, CATIA

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SKILLS

- **Design Software**: AutoCAD, SolidWorks, CATIA, PTC Creo, NX Unigraphics for 3D modeling and 2D drawings.
- **Mechanical Design**: Solid modeling, sheet metal, surfacing, assembly design, structural design analysis.
- **Manufacturing & QA**: Fabrication planning, ISO/BIS compliance, QMS audits, process optimization, QA checks.
- **Finite Element Analysis**: Stress & failure analysis, aerodynamics studies, hardware/software integration, FEA tools.

WORK EXPERIENCE

Mechanical Designer (Freelance)   February 2024 – Present
Abhiyantriki Inc   *Ontario*

- Engineered parametric 3D CAD models of overhead conveyor support structures using SolidWorks, enhancing modular integration & streamlining the design-to-manufacturing pipeline with DFM principles & CAD-based tolerance analysis.
- Conducted nonlinear static and FEA simulations with Siemens NX Nastran, validating designs for load-bearing, fatigue stress, safety factors, and modal analysis per ASME/ISO standards, utilizing convergence studies for optimization.
- Created GD&T-compliant drawings using AutoCAD and SolidWorks, applying ANSI Y14.5M standards, weld callouts, geometric tolerances, machining fits, and assembly instructions for fabrication accuracy and process validation.

Production Associate   August 2023 – December 2023
Electromac   *Ontario*

- Assembled precision-machined metal and plastic components using torque-calibrated tools, pneumatic presses, automated assembly systems, and custom assembly fixtures based on engineering blueprints and process sheets.
- Conducted in-process & final dimensional inspections using micrometers, vernier calipers, digital height gauges, CMM (Coordinate Measuring Machine), laser scanning systems, ensuring geometric compliance with GD&T & ISO 2768.
- Implemented 5S lean manufacturing practices, executed TPM (Total Productive Maintenance) routines, and maintained visual work instructions, error-proofing techniques (Poka-Yoke), and process flow mapping to reduce downtime.

Mechanical Designer   November 2017 – June 2023
Research Centre Imarat (RCI)   *India*

- Designed high-precision CAD models and BOMs for defense components using SolidWorks & NX Unigraphics, ensuring ITAR compliance, robust integration with missile subsystems, compatibility with MIL-STD-461 EMI/EMC standards.
- Performed structural load, fatigue, and modal analysis using FEM tools like ANSYS and Abaqus to optimize sheet metal, composite, and bonded joint designs under thermal, vibrational, shock, and creep stress conditions.
- Designed ruggedized mechanical enclosures & EMI/EMC-shielded packaging for electromechanical systems, validated for MIL-STD-810, MIL-STD-461, defense-grade durability in extreme environmental conditions, ensuring resistance.

Mechanical Designer   April 2015 – September 2017
Essener Transformers   *India*

- Modeled oil-cooled and dry-type transformers in NX Unigraphics and AutoCAD, implementing dielectric clearance, insulation coordination, thermal management, and core-lamination layout techniques aligned with IEC 60076 standards.
- Analyzed mechanical and electromagnetic stresses under fault conditions using FEA and Ansys Maxwell simulations to ensure structural reliability, thermal stability, surge withstand capability, compliance with IEEE C57 design criteria.
- Improved transformer energy efficiency and cost-effectiveness through optimization of magnetic flux paths, stepped core geometry, and interleaved copper winding layouts, enhancing short-circuit strength and reducing stray losses.

Graduate Apprentice Trainee   January 2014 – January 2015
Bharat Dynamics Limited (BDL)   *India*

- Coordinated interdepartmental workflow scheduling using SAP ERP modules (PP/MM), optimizing resource allocation, implementing Kanban systems, and supporting just-in-time production for high-precision, defense-grade assemblies.
- Executed advanced Statistical Quality Control (SQC), including control charts (R, p-charts), Pareto analysis, Six Sigma methodologies, and process capability studies (Cp, Cpk, Pp, Ppk), ensuring compliance with AS9100 and MIL-STD.
- Facilitated to internal and external quality audits aligned with ISO 9001, AS9100, MIL-STD standards; documented NCRs, initiated Corrective and Preventive Action, implemented root cause analysis using 8D and Fishbone methods.

PROJECTS

Air Sorties

- Simulated aerodynamics using FEA tools, refining airflow over fuselage to cut drag by 25%, optimizing lift coefficients.

Van Trail Testing

- Captured vehicle data across 100+ trials, refining load distribution strategies, enhancing fuel efficiency by 15%.

EDUCATION

Bachelor's in Mechanical Engineering   July 2009 - June 2013
Siddhartha Institute of Engineering and Technology, India

CERTIFICATIONS

- **AutoCAD, SolidWorks, CATIA, Pro-E, NX Unigraphics**