Rajan D. Patel

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PROFESSIONAL PROFILE

Mechanical Design Engineer with **4.5 years of experience in special-purpose machines**, CNC/VMC systems, and industrial automation. Strong combination of design work (3D/2D CAD, GD&T, documentation) and extensive on-floor exposure in installation, trials, troubleshooting, and continuous improvement. Experienced in process optimisation, tooling and fixture design, and close collaboration with production teams to deliver safe, reliable, and cost-effective engineering solutions.

CORE TECHNICAL SKILLS

- Expertise in **mechanical system design**, **structural design**, sheet-metal fabrication, and automation-focused machine solutions.
- Strong capability in **machine integration**, interfaces, bases, frames, guards, enclosures, and production-ready equipment design.
- Proficient in **3D/2D CAD modelling and documentation using SolidWorks, AutoCAD, Fusion 360, CATIA, and Inventor**.
- Experience in **design automation, parametric modelling**, and **Fusion 360 CAM** for complex machining toolpaths.
- Hands-on knowledge of **GD&T, BOM creation, fabrication drawings, machining drawings,** and complete engineering documentation.
- Skilled in **tooling**, **jig**, and **fixture design** for machining, welding, and assembly operations.
- Actively involved in **R&D, prototyping, shop-floor trials, testing,** and **design validation**.
- Experience in **installation, commissioning, troubleshooting,** and post-test design improvements.
- Strong exposure to **process improvement**, **line balancing**, cycle-time reduction, and downtime minimisation.
- Proven ability in **vendor coordination**, **production support**, and cross-functional collaboration.
- Familiar with **risk assessment**, **FMEA participation**, and formal design reviews.
- Capable of producing **technical manuals**, **work instructions**, **and procedures** for operations and maintenance.
- Comfortably working with **SAP ERP, Jira, and MS Office** in structured engineering environments.

PROFESSIONAL EXPERIENCE

Ag Growth International / Naperville, USA (Remote Work) Jul 2024 to Present

Assistant Engineer – AGI GPM Drafting

- Designed permanent handling components and complex assemblies, ensuring manufacturability and performance.
- Prepared detailed 3D models and 2D drawings using SolidWorks, CATIA, and Inventor.
- Managed comprehensive BOM creation, validation, and documentation.
- Performed QA checks on automatically generated models, drawings, and BOMs.
- Developed **Design Automation Software** for generating:
    - Auto-created 3D models, drawings, and BOMs.
    - Standardised title blocks and metadata.

    - Parametric updates using macros and coded logic.
    - Reduced design cycle time by 40% through automation.
- Worked with Jira, CoLab, and internal collaboration tools.
- **Extensive product knowledge across:**
    - Bucket elevators (centrifugal discharge), head & boot assemblies, casings, drive assemblies.
    - Conveyor systems, transitions, pulleys, belt take-up mechanisms, guarding, and supporting structures.
- Contributed to standardised documentation, automated QA reviews, and engineering data management for AGI's global material-handling product lines.

Yantra Design / Surat — Oct 2022 to Jul 2024

Design Engineer

- Designed CNC drilling systems, laser machines, and SPM using SolidWorks and Fusion 360.
- Prepare detailed fabrication, machining, and casting drawings with full GD&T, datums, and surface references.
- Develop nesting layouts and CNC cutting programs to improve material utilisation and reduce scrap.
- Produced fabrication drawings and machining drawings with proper GD&T, datums, and references of mating surfaces, Bill of Materials (BOM) and purchase list for manufacturing.
- Design and optimise jigs, fixtures, and tooling for CNC, drilling, welding, and assembly operations, improving ergonomics, accuracy, and setup time.
- Lead and support process improvement activities focused on reducing cycle time, changeover time, and improving process stability for new machines.
- Assist in project planning and production control to ensure timely execution and delivery.
- Created Fusion 360 CAM programs for 3-axis machining, including 3D toolpaths.
- **Multi-Tool CNC Lathe (KX-120):**
    - Fully automatic machine for 1 mm – 20 mm rods, complete enclosure, modular tooling.
    - Worked closely with shop floor teams to refine tool layouts, coolant management, and guarding based on operator feedback.
- **3-Way H-Beam CNC Drilling Machine:**
    - Led the design of a machine capable of simultaneous top, bottom, and web drilling for beams up to 1500 mm × 2000 mm × 12000 mm.
    - Created the full SolidWorks model and 2D documentation with comprehensive GD&T, ensuring precise, maintainable construction.
    - Delivered high-efficiency production output with a modular, maintainable design.
- **Automatic Tool Changer (ATC) for BT-40:**
    - Engineered grippers, carousel, and actuator assemblies for automatic tool change, improving flexibility and reducing operator dependency.
    - Supported trials, adjustments, and reliability improvements directly on the shop floor.
- **CNC Machine Sheet Metal Enclosure:**
    - Designed a modular sheet metal enclosure to minimise coolant/oil leakage, improve safety, and enhance machine appearance.
- Optimised the design for bending, welding, and assembly and validated fit-up during manufacturing.

Citizen Industries Private Limited / Ahmedabad — Nov 2021 to Oct 2022

Design Engineer

- Reviewed AutoCAD drawings to determine the quantity of materials required for each AHU unit, including inner and outer materials, sections, insulation, coil materials, and additional components.
- Created indents in the SAP system for items such as fans, motors, filters, and other non-standard items based on client requirements and delivery dates.

- Prepared AHU production drawings in AutoCAD after completing material summaries and forwarded them to the production supervisor for Fabrication & assembly drawings for review and implementation.
- Maintained master records of all approved designs, production drawings, and data sheets with updated revisions to ensure accuracy and compliance.
- Reviewed and updated technical specifications and standards for AHU components to meet industry regulations and client specifications.

Citizen Industries Private Limited / Ahmedabad — May 2021 to Nov 2021

Diploma Engineer Training

- Reviewed AutoCAD drawings to determine the quantity of materials required for each AHU unit, including inner and outer materials, sections, insulation, coil materials, and additional components.
- Created indents in the SAP system for items such as fans, motors, filters, and other non-standard items based on client requirements and delivery dates.
- Prepared AHU production drawings in AutoCAD after completing material summaries and forwarded them to the production supervisor for Fabrication & assembly drawings for review and implementation.
- Maintained master records of all approved designs, production drawings, and data sheets with updated revisions to ensure accuracy and compliance.
- Reviewed and updated technical specifications and standards for AHU components to meet industry regulations and client specifications.

EDUCATION

Diploma in Engineering, Mechanical Engineering — May 2021

R.C. Technical Institute, Ahmedabad

CGPA = 8.9/10

Related Project

- **A Remote-Control Gripping Arm**, also known as an industrial robot, is a mechanical arm-like device that operates similarly to a human arm. It features multiple joints that move along specific axes or can rotate in various directions. This technology is designed to perform tasks remotely and is often used in industrial settings for automated processes.

TRAINING

Daikin Airconditioning India Pvt Ltd, Neemrana — 11 July 2021 - 20 July 2021

- Documented system information and provided training on line production systems, including Japanese systems such as the **5S system, 4RKYT, Daily Check Sheet, Safety protocols, Hourly Report procedures,** and **associated benefits.**