Hashim Khan

Senior Mechanical Engineer : Oedec Group

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Professional Summary

Accomplished Senior Mechanical Designer with a robust background in R&D, product design, SPM design, Machine tool design and defense manufacturing. Expert in CAD tools like SolidWorks,Solid edge and Siemens NX, coupled with a strong project design and management and team management acumen. Proven track record in enhancing machining capabilities and implementing cost-saving measures, achieving significant in-house manufacturing advancements.

Experience

Senior Mechanical Engineer
January 2025 to Present
OEDEC Engineering Pvt Ltd - Pune, Maharashtra

- Led R&D and mentored teams in designing robotic and marine automation systems including magnetic crawler ROVs and smart draft survey tools for cargo ships.
- Developed Cartesian and XYZ gantry robots for material handling and spectroscopy in steel and mining industries.
- Designed compact drive systems using chain-sprocket, gear-pinion, and screw mechanisms for high-load, space-constrained applications.
- Performed kinematic and dynamic analysis: DH parameters, forward/inverse kinematics, torque/power calculations, and robotic workspace studies.
- Engineered drive trains with harmonic, planetary, cycloidal, and worm gearboxes for ROVs, AGVs, and robotic arms.
- Selected motors, encoders, rails, and sensors based on load, precision, and environmental conditions.
- Integrated AI-based adaptive logic into mechanical systems for performance and autonomy enhancement.
- Designed SPMs (e.g., fastener counting/sorting) for industrial clients across Europe.
- Applied DFM, GD&T (ASME Y14.5), ISO 1101, 2768, 2553, 13920, BS 8888 and stack-up analysis to 2D/3D CAD deliverables.
- Used SolidWorks (CSWP), Siemens NX, Solid Edge, NX and BricsCAD for end-to-end mechanical system design.
- Performed stress and feasibility analysis using FEA tools prior to prototyping.
- Managed vendor coordination, QA, fabrication review, and part inspection.
- Created complete documentation: BOMs, assembly drawings, testing plans, and technical reports.
- Ensured compliance with ISO, CE, and Machinery Directive standards across all deliverables.

Assistant Manager
June 2023 to January 2025
Kalyani Group, Bharat Forge Ltd - Pune

- Collaborated on major defense artillery projects including MGS 155x39 Caliber, ATAGS 155x52 Caliber, Garuda 105, and Naval SRGM 76 Caliber for the Indian Armed Forces.
- Created accurate 2D/3D CAD drawings, part modeling and assembly using NX and Solid edge for manufacturing and documentation
- Designed and developed defense-grade machine tools, selected appropriate materials, and applied GD&T for precision drafting.
- Created multi-stage CNC turning process plans and detailed 2D drawing layouts for barrel development.
- Designed long machining test fixtures and inspection test rigs to ensure dimensional and performance accuracy.
- Generated multiple design iterations to improve product durability, reliability, and manufacturing

efficiency.

- Implemented a data-backed consumption trend analysis (over 2 years) for machining tools and inserts used in MGS and ATAGS defence programs, leading to proactive procurement planning, reduced QA bottlenecks, and improved tool inventory accuracy, ultimately saving man-hours and minimizing downtime.
- Led cost-saving initiatives aimed at achieving robust and optimal production volume.
- Spearheaded new product development from concept through prototyping and final application.
- Conducted tolerance stack-up analysis for assembly precision and performance.
- Developed critical production documentation, including Manufacturing Quality Plans (MQPs), gun barrel drawings, Inspection Test Plans (ITPs), cycle time charts, and Tooling SOPs.
- Led a cross-functional team of mechanical, electronics, embedded, and software engineers for full system integration.
- Established in-house manufacturing capabilities for automated machine tools used in defense production.
- Implemented lean methodologies like 5S, KAIZEN, TPM, and Tooling SOPs, resulting in reduced human fatigue and enhanced productivity.
- Developed and validated defense tooling and fixtures that improved machining capacity and part accuracy.
- Managed Bill of Materials (BOM) and Engineering Change Notices (ECNs) across multiple development stages.
- Conducted non-destructive testing (NDT) including Ultrasonic Testing, Magnetic Particle Inspection, and Optical Borescope Visual Testing.
- Standardized defense inspection documentation for product size and tolerance verification.
- Handled tooling cost planning, CAPEX distribution, and cost center allocations for monthly shop floor operations.
- Created standardized shop-floor documentation such as cycle time charts, ID inspection charts (for DHD and honing), and straightness analysis reports.
- Supervised and led operations including lathe machining setup, autofrettage, deep hole drilling (DHD), honing, and threading.
- Performed data collection and analysis of production cycle time in MS Excel for accurate production forecasting.

Engineer R&D

August 2020 to June 2023

Kalyani Group, Bharat Forge Ltd - Pune

- Product Development for 3axis vibration sensor enclosures and DAQ with multiple iterations (Forging, Machining).
- R&D on various product materials to cater the strength, durability and aesthetics's of Forgebrain (DAQ) like -wood, aluminum, plastic, glass.
- R&D on 3D printed wireless Sensor enclosure product design and development for heavy forging machines, with magnetic anywhere mount system.
- R&D on Flexible 3D printed Sensor Cable support design for power input cable.
- Sensor Data Acquisition and analysis on AI-ML model for predictive maintenance.
- Historical data analysis from shop floor SME for machine behavior analysis.
- R&D on Development of medical product - Sanjeevani (COVID-19) SpO2 Based Smart Oxygen Delivery System.
- R&D and product design and development on SpO2 sensor and developed 3d printed product with soft plastic and medical grade plastics
- Oxygen control unit design and development containing electro-pneumatic, push-buttons, Touch screen, USB ports, pneumatic ports for oxygen pneumatic circuit and Bio-sensors.
- Mathematical modeling of forging press kinematics using python.
- Crafting SPM systems for diverse shops for Computer vision based inspection system, crack detection and marking system, executing LM Guide rail selection, ball screw selection, linear Bearing selections, motors selections.
- Design and Developed electromechanical systems pick and place robotics system, Robotic cell design and operation planning for drive shafts and crankshafts.
- Design and Development of Robotic gripping and rotating system for computer vision based inspection.
- Sensorization of Old/legacy machines like- material hopper, Grinding, milling, crankshaft storage, forging

press to make digital connectivity across the plant for IIoT solutions.
- Design of BIW door parts using Catia V5 for vehicles.
- Designed Eco-friendly plastic solutions catering to both Industry 4.0 and medical product.
- Demonstrating proficiency in 3D CAD- Solidworks, Catia V5, 3D printing, machining, prototyping.
- Collaborating closely with experts to ensure accurate machine data and machine data analysis using python.
- Managing diverse projects and vendor relationships across multifaceted projects.

Mechanical Designer
January 2020 to August 2020
Beauto Systems - Pune
- R and D in the company's first robotics project and setting up the labs
- Developed algorithms and workflow of AGVs, Robotic arms for warehouses and Battery charging farms
- Designing and fabrication of parts, assembly, and testing in workshop facility
- Working on system simulations, material selections, and mathematical modeling simulations for the systems
- Working on and Solidworks for design
- Designed various food process automation systems.
- Performed FEA analysis to validate designs prior to production launch.
- Provided technical support throughout the product lifecycle from concept development through production launch.
- Created detailed fabrication drawings with GD&T specifications to ensure product accuracy.
- Ensured compliance with industry regulations by performing safety checks during the design process.
- Assembled and disassembled complex mechanical systems.
- Provided technical support to other employees regarding mechanical design, fabrication, testing and documentation.

Mechanical Product Developer
April 2019 to August 2019
Footloose Labs - Bengaluru
- Developed 5-6 DOF arm with drive systems integration and pharmacy warehouse automation
- Conducting precise engineering calculations for machine parts optimization
- Leveraging MATLAB, Octave, SolidWorks, and Ansys for intricate design and simulation tasks
- Managing vendors and meticulously organizing inventory
- Overseeing the fabrication and rigorous testing of prototypes.
- Communicated effectively with internal teams regarding progress updates on projects.
- Participated in brainstorming sessions with other developers to generate ideas.

Design Engineer
August 2017 to March 2019
Aliyance Mechatronics - Pune
- Collaborating with the Government of Gujarat at Roboseum, part of Gujarat Science City, to create an engaging Robotics museum spanning history to modern innovations.
- Design and developed various robotics systems for specific automation system requirements
- Hand's on experience on 3D cad using Solidworks, FDM 3D printing and postprocessing
- Contributing to the design and simulation of robotic systems, including Arm Manipulators, XYZ Gantries.
- Performed 3D printing Lab management, inventory and materials management
- Developed ALROCO Model project which was 3D construction printer
- Liaising with govt officials for weekly project review.

Tea Supplier
May 2009 to June 2017
Self Employed - Kanpur
- Tea supply to local tea stalls and hotels.
- Paper cup distribution to the customers.
- Managing costing and supply demand for the local market.
- Maintained records of purchases, including item descriptions, quantities purchased, prices paid, deliveries.
- Managed relationships with vendors in order to obtain competitive pricing on goods and services.

Teacher
February 2013 to March 2017
Self Employed - Kanpur

- Education initiative in High school level Physics, Chemistry and Mathematics.
- Motivated and engaged students, developing skills and knowledge for academic foundation.
- Provided feedback to parents regarding student's academic growth and behavioral development.
- Developed experimental setups for physics and chemistry experiments for better understanding.

Education

Bachelor of Technology : **Mechanical Engineering**, May 2017
Dr. APJ Abdul Kalam Technical University

SSC : June 2013
Ramjas Sr Sec School No.4 - New Delhi

Certifications

- Certified Solidworks Working Professional- Dassault Systems
- CATIA V5 Automotive Chassis Training - Tata Technologies
- Python For Mechanical Engineers - Decibel labs
- Catia V5- Automotive, Industrial - Udemy
- Pro-E Wildfire/Creo - I Cad Cam Software solutions
- Solidworks 2024 Advanced Part Modeling Workshop - Tata Technologies
- CATIA V5 Automotive Structures Training - Tata Technologies
- Siemens NX- Automotive, Industrial - Udemy
- AutoCAD Mechanical Design - I Cad Cam Software solutions
- Introduction to Geometric Dimensioning and Tolerancing - LinkedIn

Skills

- Design Skills
- Machine Tool Design
- SPM
- Robotics Design
- Electromechanical Systems
- Plastic product design
- BIW trims
- Process Design
- ECN
- Manufacturing
- Tool Development
- Defense Manufacturing
- CAD Skills
- Siemens NX
- Catia V5
- ANSYS Simulations (Stress, Strain, Static, Heat)
- Design Thinking
- Time Analysis
- Documentations
- Vendor Development and Management
- Inventory Management
- Cost Reduction
- Product Design
- Engineering Calculations
- FEA
- Automation System Design
- Pick and Place mechanisms
- Industrial Design
- Manufacturing Skills
- 3D Printing
- Control Charts
- Machining
- NPD
- Sheet-metal
- Solidworks (CSWP)
- Solid-egde
- AutoCAD
- Solidworks Simulations
- Project Management
- Team management
- MS Office
- SAP
- Product Design Iterations
- Task Delegation

- Operations Management
- Manufacturing process knowledge
- Prototyping and testing
- FEA and failure analysis
- Mechanical system design
- CAD Drafting
- CATIA V5
- Data Analysis
- Root Cause Analysis
- Microsoft Excel
- FMEA
- Test procedures
- IIoT
- Geometric dimensioning and tolerancing
- Electromechanical systems integration
- Engineering documentation
- Prototype Development
- Mentoring and training
- Product Development
- SolidWorks 3D models
- Metal Fabrication
- Vibration analysis
- Design reviews
- Complex problem solver
- Sensorization

Website, Portfolio and Profiles

- https://www.linkedin.com/in/scienaut/
- https://scienaut.github.io/

Languages

- **Hindi**
  Native
- **English**
  Bilingual

Publications

- Enhancing mechanical properties of jute fibre/glass fiber and epoxy combined hybrid composite laminates
- Robotic Arm Joint Gearbox comparison
- Importance of Soil tests