AMIT BORKAR

Targeting senior level assignments in **Mechanical Design Engineer - Product Design and Development** with an organization of high repute preferably in **Pan India/ Overseas**

Contact Information

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Core Competencies

Design Engineering
Product Design & Development
Research & Development
Client Relationship Management
New Product Development
Root Cause Analysis
Team Building & Management

Certifications

2021: Manufacturing Process Becoming an Injection Molding Pro from Udemy

2021: Siemens NX design for Injection molding from LinkedIn

2021: PCB/Electronics: Thermal Management, Cooling and Derating from Udemy

Profile Summary

- Goal-oriented professional **with over 8years** of experience in **Mechanical Design Engineer - Product Design and Development**
- Experience in **product design & development** of Electro Mechanical Actuator Systems, Electro Optical Systems, Electronics Enclosures for missiles and surveillance system**s** in defense & aerospace industry
- Comprehensive experience in **end-to-end product life cycle experience in projects and** providingprocess support to manage engineering data throughout enterprise

Work Experience

Since May'13 with VEM Technologies Pvt. Ltd., Hyderabad
Growth Path:
May'13 – Jun'14 as Design Engineer Trainee
Jul'14 – Apr'18 as Design Engineer
Since May'18 as Senior Mechanical Design Engineer

- Concept Design and Development – using **3D Modeling in NX**
- Concept Review and Selection using **Pugh Matrix**
- Experience in mechanical part and assembly design with**Value Engineering and DFX Principles**
- Preparation and reviewing of **2D part and assembly drawings in AutoCAD**, **Release** of **manufacturing drawings**
- Skilled in applying Geometrical Dimensioning and Tolerancing as per **ASME y14.5 2009 and 2018**
- **Fits Selection,** Tolerance Allocation and **Tolerance Stackup Analysis** with **WCS** and understanding of **RSS**
- Good understanding of manufacturing processes like **(CNC Turning, Milling, EDM, WireEDM, Injection Molding, Sheet Metal, Welding, etc)**
- **Material Selection** of parts and mechanical elements**as per the design requirements**
- Project Experience in design & development:
  - **Electro-Mechanical Actuators**
  - **Electro-Optical Systems**
  - **ElectronicsEnclosures**
  - **15 kW Power Supply**
  - **Thermal Management in Electronics Cooling**
- Exposure in **Multi Body Dynamics (MBD)** analysis of mechanisms using **SolidWorks**
- **Selection** of Bought out components such as **Bearings**, **Motors, Vibration Mounts etc.**
- Performing System & Sub-system **Failure Root Cause Analysis** using tools such as **DFMEA, Pareto Chart**
- Coordinating with **Cross-functional teams** such as Mechatronics, Electronics, Manufacturing, Planning, Purchase for technical discussions and project management
- Experience in **creating BOMs**, Purchase documents, service entries in PDM tool **SAP**
- Experience in **Engineering Change Management** process, creating **ECN/ECR**
- Generating **repeated standard parts and dimension style** in NX to reduce the time consumption
- Recording & evaluating testing data, altering designs for product improvement
- An **effective communicator** with leadership, interpersonal, analytical and problem-solving skills and decision-making skills

Technical Skills

- **Design Tools:**
  - **UNIGRAPHICS NX:** 3D Modeling, Assembly and Drafting
  - **SOLIDWORKS:** 3D Modeling, Assembly, Multi Body Dynamics Simulation
  - **AUTOCAD:** Drafting as per ASME and IS Standards
  - **KISSSOFT:** Simulation of Planetary Gear Trains (Spur Gears) as per DIN and AGMA Standards
  - **PDM Tools:** SAP
- **Programming Skills:**
  - **Python**
  - **MATLAB**
- **Product Improvement:**
  - DFMEA, Tolerance Stackup Analysis, Value Engineering, Pareto Chart

Education

2013: B.Tech. (Mechanical Engineering) from Gitam University, Visakhapatnam (UGC) with 79.5%

2009: 12thfrom DAV Public School, Gevra Project, Korba (CBSE) with 87%

2007: 10th from DAV Public School, Gevra Project, Korba (CBSE) with 87.2%

Annexure

Project Title:15 KW Power Supply**Period:** Aug'21- Oct'21
Customer:DRDO (Defense Research and Development Organization)
Responsibility:

- **Material Selection** for Heat Sinks, Sheet Metal and Heat Treatment
- Analysis of **thermal resistances of** electronics ICs,components like DC-DC Convertor to **calculate thermal resistance for heat sink design**
- **Heat Sink Design Calculations for Forced Convection Cooling,** considering Spreading Resistance, Contact Resistance, etc
- **Fan Selection** for Cooling of Electronic Components
- **Thermal Interface Material Selection** for Electronic Components
- Sheet Metal Enclosure Design and Development

Project Title: Voice Coil Actuator**Period:**Aug'21- Oct'21
Customer:DRDO (Defense Research and Development Organization)
Responsibility:

- Concept Development of **Voice Coil Actuator** for motor, mechanical components sizing, etc.
- Concept selection using **Pugh Matrix and review meetings with customer**
- 2D part and assembly drawings, Release of manufacturing drawings
- Created **ECN/ECR** for implementing changes in components and assemblies
- **Force Calculations** for payload's linear movement
- **Lens Mount Design** for payload
- Potentiometer Thick Film Resistor development and Wiper Design

Project Title: Command Launch Unit Period: Feb'19-Jun'20
Customer:DRDO (Defense Research and Development Organization)
Responsibility:

- Concept developmentfor Optical Mounts, Focus Mechanisms and Electronics Packaging.
- Concept selection using **Pugh Matrix and review meetings with customer**
- Mechanical Design using **DFX (DFM, DFA,etc)** principles
- 2D part and assembly drawings, Release of manufacturing drawings
- **Fits Selection** and **Tolerance Allocation** as per the requirements using ISO Standards
- Cylindrical Cam Design for lens adjustments, with supporting **design calculations** like Torque, Gear Train and Force requirements
- Created **ECN/ECR** for implementing changes in components and assemblies
- Performed **Tolerance Analysis (WCA)** of opto-mechanical parts and assemblies
- **Application of GD&T** (ASME Standards-2009 and 2018)
- Worked in Mechanical & Optical Assemblies in laboratory for the testing of functional specifications
- Participated in the Measurement of Optical and Mechanical dimensions of parts and assemblies with QC team support using CMM machine to compare with the design specifications
- Prepared **failure analysis reports using** tools like **FMEA, Pareto Chart**
- Selected**DC motors, gearboxes** as per the requirements.

Project Title: Electro-Mechanical Actuators System**Period:** Apr'17-Dec'18
Customer: DRDO (Defense Research and Development Organization)
Responsibility:

- Concept Development of **Electro-Mechanical** Actuator for motor, mechanical components sizing, gear trains, shafts, etc.
- Concept selection using **Pugh Matrix and review meetings with customer**
- 2D part and assembly drawings, Release of manufacturing drawings
- Created **ECN/ECR** for implementing changes in components and assemblies

Personal Details

Date of Birth:14th November 1991

Languages Known: Hindi, English, Marathi and Telugu

Address: Flat 411, Hemadurga Heights, CineTown Road, Miyapur, Hyderabad-49, Telangana

- **Torque Calculations** for gear train design with **high G-loads** considerations.
- **Spur Gear Design** for Bending Strength and Contact strength as per **AGMA** standards;
- Spur Gear profile shifting for reducing interference and backlash calculations
- Creating Spur Gear teeth involute profile and tolerance calculation as per DIN-58405, contact ratio and efficiency calculations
- Application of **GD&T and tolerance stack up analysis** (WCA) to parts and sub-assemblies along with team
- Bearing selection as per Static, Dynamic loads andlife requirements
- Testing Setup development for functional testing and environmental testing
- Design documentation, Quality Assurance Procedure and Acceptance Test Plan
- Worked in mechanical assembly and testing of motor and integration of the sub-system to the main system
- Prepared **failure analysis reports** usingtools like **FMEA**

Project Title: Electronics Enclosure Assembly**Period:** Sep'15-Feb'17
Customer:DRDO (Defense Research and Development Organization)
Responsibility:

- Sheet Metal Enclosure, Machined Enclosure Design
- Concept Development as per functional and mounting requirements
- Operating conditions and environmental considerations like Thermal and Vibrations
- 2D part and assembly drawings, Release of manufacturing drawings
- Concept selection using **Pugh Matrix and review meetings with customer**
- Created **ECN/ECR** for implementing changes in components and assemblies
- Flexible PCBs routing and Cable Routing as per the functional requirements
- **EMI/EMC** considerations and preparation EMI gasket drawings to suppliers
- **Material Selection** for Heat Sinks, Sheet Metal and Heat Treatment
- Analysis of **thermal resistances of** electronics ICs,components like DC_DC Convertor to **calculate thermal resistance for heat sink design**
- **Heat Sink Design Calculations** considering Spreading Resistance, Contact Resistance, etc.
- Creation of mechanical layout drawings of Electronics PCBs, Cross-checking of the placement of electronics components on the PCBs for any interference with the mechanical enclosures
- Prepared **failure analysis reports** usingtools like **FMEA**

Project Title: Electro-Optical Assembly**Period:** Oct'13-Jun'15
Customer:DRDO (Defense Research and Development Organization)
Responsibility:

- Concept selection using **Pugh Matrix and review meetings with customer**
- Concept development for opto-mechanical mounts and assemblies using **DFX (DFM, DFA,etc)** principles
- Cylindrical Cam Design for lens adjustments, with supporting **design calculations** like Torque, Gear Train and Force requirements
- Non-Return Valve Design for Argon gas supply to JT-Cooled IR Sensor.
- Flat Spiral Spring design of a pneumatic high-pressure tube
- Sheet-Metal Spring Design for Mounting of Flat Mirror
- 2D part and assembly drawings, Release of manufacturing drawings
- Performed **Tolerance Analysis (WCA)** of opto-mechanical parts and assemblies
- **Application of GD&T** (ASME Standards-2009 and 2018)
- Created **ECN/ECR** for implementing changes in components and assemblies
- Participated in the Measurement of Optical and Mechanical dimensions of parts and assemblies with QC team support using CMM machine to compare with the design specifications
- Testing Setup development for functional testing and environmental testing
- Prepared **failure analysis reports** usingtools like **FMEA**