

# SAURABH MODAK

## Product Development & Design Engineer

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Dynamic mechanical engineer with experience in Design engineering, New Product Development, Product & Project management with proven track record on time project execution, possessing passion for innovation, laser focused on creating sustainable business growth, looking for assignments in Mechanical Design Engineering/NPD/Battery technology.

## PROFILE SUMMARY

- 6 years of experience in **New Product Development, Design Engineering, Product & Project management across Battery & Thermal Insulation industry**
- Comprehensive experience in design engineering using **SolidWorks, Creo, CATIA & AutoCAD** with focus on Design for Manufacturing to deliver flawless manufacturing
- 5+ years of field experience in SolidWorks and AutoCAD** with all key features like parametric modeling, **solid modeling, assembly, motion study** along with creation of **part, assembly & detail drawing**
- Detailed understanding and problem-solving capabilities for manufacturing operation i.e., **Casting, Assembly, Plastic Injection Moulding, Extrusion & foaming, Sheet Metal Operations & other post processing operations**
- 5+ years of hands-on experience in **Structural Analysis** (static & transient), **Drop test, Explicit Dynamics, Modal, Harmonics, Response Spectrum analysis, Thermal & Thermal Electric simulation, Linear & Non-Linear analysis** through **ANSYS Mechanical**
- Comprehensive understanding of different battery technologies i.e. **Lead Acid Battery (Tubular, Traction, SLI, AGM & Gel VRLA), Li-ion Battery**, In-depth understanding of **Lead acid battery chemistry esp. AGM VRLA batteries**
- Strong understanding of **Strength of Materials, Fluid Mechanics, Thermodynamics and Thermal Engineering**
- Comprehensive user experience in **SAP S/4 Hana in PP module**
- Experienced in **GD&T and Tolerance Stack up** analysis for Plastic and Steel assembly components
- Comprehensive understanding and application of **DFMEA, DVP, Risk assessment** to ensure designs being "first time right"
- Strong knowledge of international standards & guidelines i.e., **ASTM, ASME, ISO, IEC ANSI, IEEE, BCI, UL, BS.**
- Developed **advanced battery design concept to achieve high energy density** for e-mobility solution
- Worked on developing **IP67 rating for Li-ion battery pack** as per **AIS 156** and **3** requirement and passive fire protection solution of EV batteries.
- Developed prototype of **low-cost battery monitoring system** for **Lead Acid Battery with Arduino Mega 2560** with **16 battery channels**

## WORK EXPERIENCE

**Assistant Manager, Product Development** • Jan'23 - Present  **armacell**  
**Armacell India Pvt. Ltd.**

- Launched new product range of **Component Foams** for Automotive NVH application through **technology transfer from Armacell, Brazil**
- Launched multiple products through product customization for special OEM customer requirements
- Taken strategic decisions in placing **new product pipeline** for optimal business organic & inorganic growth
- Created and maintained **product specification** for new and existing products
- Taken care of new product testing in the 3<sup>rd</sup> party laboratories and product certifications as per customer and product conformity requirements
- Managed multiple product portfolios, addressed internal & external customer grievance through critically **reviewing quality parameters** and **implementing quality improvement actions** liaising with Global R&D team
- Participated in **Early Product Management** pillar of Armacell's World Class Manufacturing activities as **co-pillar leader**
- Grasped and implemented various tools of EPM such as **DoE, KANO, QFD** in new product development

## Achievements

- Developed & launched 2 new product ranges (ArmaComp EnsoLite NSC75 and ArmaClad Dura) within 5 months of joining the organization



## Core Competency

- ▶ New Product Development
- ▶ Mechanical Design Engineering
- ▶ 2D & 3D Modelling
- ▶ FEA & CAE
- ▶ PLM
- ▶ FMEA
- ▶ Casting, Moulding, Sheet metal

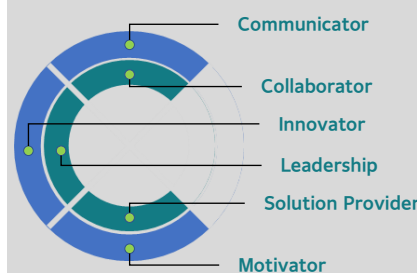


## Technical Skills

AutoCAD	SolidWorks	Creo
CATIA	ANSYS	MATLAB
SAP S4/HANA		C/C++
Python	Microsoft Office	



## Soft Skills



## Exide R&D Center

- Launched Front terminal range of batteries for Indian Data Center application and International Telecom application through technology transfer projects with East Penn Manufacturing, USA
- Launched new product range for critical UPS backup application offering lucrative TCO to the end user
- Developed a Long-life battery (2V 1000Ah) for BESS application which achieved 200% life in bench testing as compared to standard product
- Handled the complete stationary VRLA (12V UPS Batteries) product range which was responsible for 25% of the overall revenue of the company for all development and product management activities
- Implemented FEA platform for analysis & simulation of various mechanical & electro-mechanical components of battery and battery packs
- Created timebound product development roadmap, investment & milestone planning
- Used DFM principles, GD&T and tolerance stack-up analysis to ensure seamless manufacturing of the product.
- Released of final product drawings, specifications, process parameters, SOPs, control plan to manufacturing
- Performed proto build, testing & validation coordination as per the international standard compliance
- Created and maintained new product BOM, Costing in SAP ERP System
- Driven innovation through technology and research to develop advanced battery technologies such as Twin Lug VRLA battery design, Bipolar Technology etc.
- Developed intelligent battery diagnostic solution for battery monitoring for critical application.

## Achievements

- Achieved annual cost saving of Rs.7.8 Cr. through material change, 5.2 Cr. through value engineering
- Reduced product cost by 14% through enhancement of material utilization and launched as new product range
- Attended European Lead Battery Conference ELBC-2022 and prepared technology roadmap based on the learnings

## EDUCATION & QUALIFICATION

### National Institute of Technology, Durgapur

- B. Tech in Mechanical Engineering

### Jenkins School, Cooch Behar • Jun'11 – Jun'13

- Higher Secondary, Science

## TRAINING & INTERSHIP

### National Thermal Power Corporation, Farakka • May'16 – Jun'16

- Acquired knowledge on the basic working principle of a thermal power plant
- Gained in-depth learning of the critical equipment operations, e.g. boiler drums, heat exchangers, feed pumps and steam turbines

### National Institute of Technology, Durgapur • Dec'15

- Practiced application of finite volume method and finite difference method to solve problems of Fluid Mechanics and Thermal Engineering in MATLAB

## CERTIFICATION

### Central Tool Room & Training Center

- CATIA V6: Enovia Introduction, Part Design, Generative Shape Design, Generative Sheet Metal Design, Assembly Design, Kinematics Analysis, Drafting, Machining
- Overview of SolidWorks

### Henry Harvin Education

- SAP Power User Program



## Academic Achievement

- Achieved 8<sup>th</sup> rank in Higher Secondary examination 2013 in West Bengal Council
- Achieved 8422 All India Rank in JEE Mains 2013



## Language

### ➤ English

Read, Speak, Write

### ➤ Hindi

Read, Speak, Write

### ➤ Bengali

Read, Speak, Write

### ➤ Japanese

Read, Speak, Write



## Hobbies



Playing Guitar



Cooking



Singing



Drawing



Playing Games



## Address

- 63, Thakur Bari Sarani, Belgharia, Kolkata, West Bengal, 700083

## Annexure

**Project: Component Foam for Automotive NVH application; Jan'23 to May'23**

**Client: Automotive Tier-II Converters**

**Achievement:** Successfully developed and launched new range of engineered foam for Automotive NVH application through technology transfer from Armacell Brazil and Armacell Mebane

**Project: Modular backup solution development for Telecom-Outdoor IP55 Cabinets with & w/o SMPS modules; May'22 to Oct'22**

**Client: Indus Towers**

**Achievement:** Developed a close packed double tier module tray with 48V battery system suitable for modularity & scalability and installation in customer OD cabinets. Sheet metal tray design with knockdown features offers lowest stillage cost, ease of handling & transport and easy & quick installation

**Project: Elimination of Container Deformation Through Introduction of New Grade of Plastic Material; Mar'22 to Jun'22**

**Client: CBSEA**

**Achievement:** Reduced the container wall deflection at elevated temperatures by 3.5% and complied to IS1146 standard.

**Project: Development of Very Long-Life Battery for ESS Application; Feb'20 to Mar'22**

**Client: BESS**

**Achievement:** The product has already delivered 200% life (and still delivering) in alpha validation (validated as per relevant test IS15549) when benchmarked against standard products. Successfully performed DFMEA, measurement of design limitations in the standard product, application data interpretation, material research & end-to-end project management to conclude on the final design and process.

**Project: Elimination Battery Container and Cover Deformation (for different SKUs) Through Design Optimisation in ANSYS; Nov'21 to Feb'22**

**Client: I-UPS OEM**

**Achievement:** Completely eliminated container & cover deformation during different stages of manufacturing and consistently delivered design requirements established through complete validation.

**Project: Complete Changeover of Plastic Material of VRLA Batteries to Eliminate Chances of DC Ground Fault; Feb'21 to Nov'22**

**Client: I-UPS OEM**

**Achievement:** Complete elimination of propensity to crack when simulated under field usage practices by the end user and so the chances of DC ground fault occurrence.

**Project: Development of Low Cost Battery Management System for UPS and ESS Application;**

**Sep'21 to Present**

**Client: Data Centre & BESS**

**Achievement:** Developed concept low cost BMS by reducing the number electronic components but keeping all functionalities same as of full scale BMS available in the market through Arduino Mega 2560 and 16 X 1 multiplexer.

**Project: Extending the Service & Warranted Life of the Product Through Introduction of State-Of-The-Art Manufacturing Process; Dec'20 to Jan'22**

**Client: I-UPS OEM**

**Achievement:** Completed the commissioning of the equipment and successfully operated at the target process parameters required to deliver higher service life. A new product range has been launched with enhanced life & warranty declarations claiming exclusive USPs & lowering total cost of ownerships (TCO).

**Project: Development of Twin Lug design VRLA battery for high specific power delivery capability, Sep'20 to Dec'21**

**Client: E-Bike OEM and Aftermarket**

**Achievement:** Successfully applied mechanical design engineering skills & developed the Jigs & fixtures suitable for mass manufacturing of the Twin lug technology. Product specific tools and moulds were developed successfully suitable for automatic mfg. process.

**Project: Enhancing the Material Utilisation of the Existing Products to Achieve the Desired Product Performance; Sep'20 to Jan'21**

**Client: I-UPS OEM & Data Centre**

**Achievement:** Completed the proto building, alpha validation and successfully launched the product range & accomplished 14% higher power density than the standard product.

**Project: Elimination of Battery Inter-Cell Connection Melting Using Thermal Electric Simulation; Sep'18 to Feb'19**

**Client: I-UPS OEM**

**Achievement:** Eliminated melting issue through design correction and mould modification.