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Design and Development of Battery Driven Welding Machines Enclosure



The client engaged Motherson Technology Services to design and develop an enclosure for a battery-driven welding machine. The objective was to create a compact, durable, and manufacturable battery box capable of housing NHL components, PCBA, and batteries within the constraints of Form, Fit, and Function. The enclosure needed to meet high safety, performance, and serviceability standards.

Technology

System Integration

Mechanical Design and



Engagement Requirement Gathering and Validation | Manufacturability and Compliance Validation

Solution Approach

- Engineered a compact enclosure to accommodate batteries and PCBA while maintaining optimal airflow
- Designed internal supports to ensure structural integrity and minimize vibration impact
- Conducted manufacturability checks and ٠ assembly feasibility analysis
- Verified safety, thermal, and servicing constraints for real-world operational conditions
- Performed load bearing and fatigue simulations to ensure long-term durability
- Delivered manufacturing-ready 3D CAD models and validated prototypes

Client & Industry

American Swedish welding and cutting equipment manufacturer based out of India.

Motherson Technology Services was approached by a leading welding equipment manufacturer to design and develop a robust enclosure for a batterypowered welding machine, ensuring optimal fit, structural integrity, and compliance with safety and manufacturability.

Expertise

The project leveraged expertise in various areas, including:



Mechanical Design & Engineering



Design for Manufacturability (DFM)



Thermal and Structural Analysis



Prototype Development & Validation



Compliance with Industry Safety and Assembly Standards

Benefits Delivered

The development of the battery-driven welding machine enclosure provided the client with a robust, manufacturable, and service-friendly design that enhanced product reliability and operational efficiency. By leveraging simulation-driven design and optimizing for manufacturability and assembly, the project reduced time-to-market and minimized development costs. The final enclosure supported long-term durability in rugged industrial environments, enabling the client to launch a high-performance portable welding solution and strengthen their position in the competitive industrial equipment market.