

EV POWER DENSITY SOLUTION - INTEGRATED DCDC AND ON BOARD CHARGER

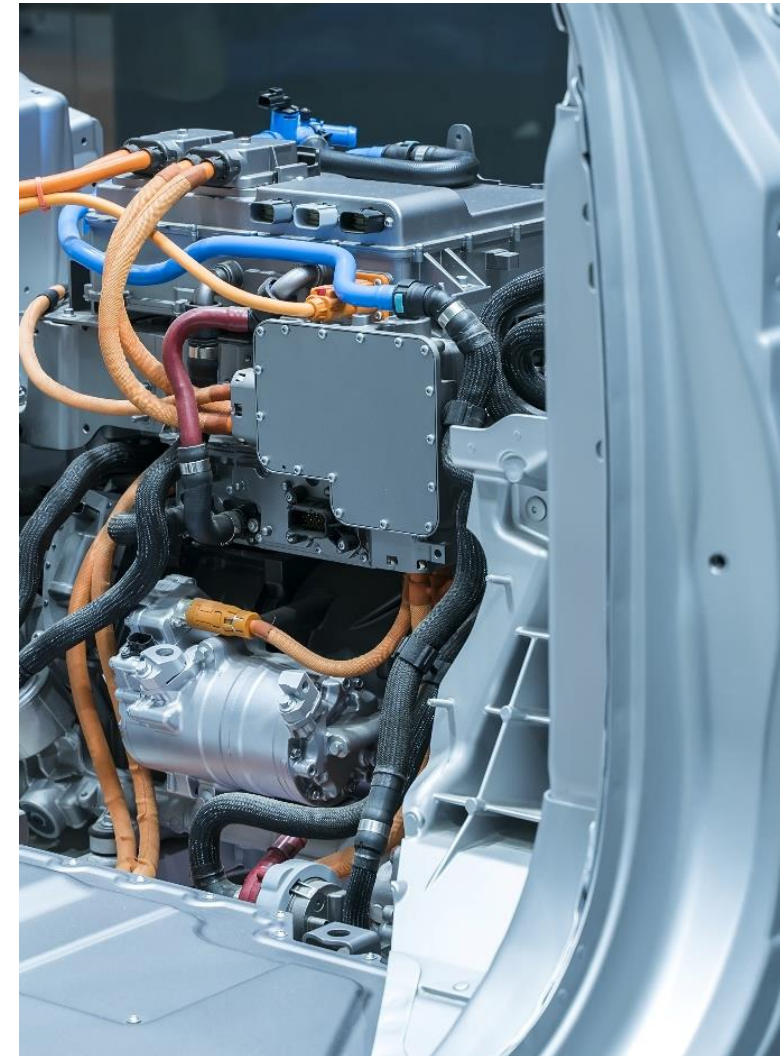
Customer Challenges

Our client is a global Tier-1 supplier of electric powertrain solutions to OEMs all over the world. Our customer devised a Combo Power Converter unit with the growing demand for higher power density across EV systems, such as batteries, traction systems, and power converters.

The goal was to create a single module that combined a DC-DC converter and an onboard charger to obtain a higher power density solution that was also more efficient, cost-effective, and adaptable.

Scope

- Create a compact design of the integrated module
- Engineering design- PCB Board, Packaging and Enclosure (IP67)
- New Thermal Management system design
- System Validation on Virtual Prototype



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Approach

Tata Elxsi combined its hardware, mechanical, and electrical engineering expertise to design and build the unified Power Converter and Charger module. The module hardware was developed economically to reduce the total volume of the module.

Impact

- Using this as a baseline, thermal management systems were optimized to achieve the power density targets.
- Power density achieved: 3.08 KW/L
- Coolant flow rate: 4L/min
- 25% volume reduction through combo design
- Increased Efficiency of the vehicle level Thermal Management system due to combo design
- This solution was used by the customer to differentiate their portfolio in the EV Tier 1 market.

