

Case Study: **Battery management redesign reduces cost and simplifies assembly**

Project Summary

A client developing a battery backup power bank for medical devices approached Partner Electronics to design a battery status display for a trolley-mounted system. The display was required to communicate with a smart battery using an SMBus interface and provide users with a clear indication of the battery's state of charge.

During the assessment, Partner Electronics found that the existing approach lacked power management and that inrush currents had damaged previous boards. The team proposed a two-board solution comprising a dedicated display PCB and a separate power management PCB to better suit the application.



Project Outcome & Impact

A two-board solution that reduced manufacturing costs while improving assembly and product functionality.

The team delivered two manufacturing packs and a code release for the display PCB. The new design provides reliable battery state-of-charge information and introduced a dedicated power board, improving connectivity, control and safety.

The redesigned electronics simplified assembly, reduced wiring complexity and lowered the overall cost of the solution by 26%. Additional features, including display dimming, overload detection, colour adjustment and battery disconnection detection, further enhanced the finished product.

Key Capabilities & Tools

- Hardware design
- PCB design and layout
- Embedded firmware
- SMBus interface
- Power management
- Inrush current protection

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