

# Case study: - How Acal BFi's expertise in the medical market helped design a high-efficiency, uniquely sized, power transformer for medical trolleys



### Challenge

In the challenging and fast-paced environments medical professionals work in, equipment needs to be easy-to-access. This means new equipment must be flexible and customised to speed up treatment delivery.

Our primary customer is a manufacturer of medical trolleys for areas such as surgery rooms and intensive care. Their trolleys are modular to enable medical professionals to customise the equipment, by the application. However, finding a power supply for their trolleys was a challenge because standard certified products were the wrong size and a custom power supply needed to be medically certified.

In addition, with digital transformation driving an increasing amount of equipment in hospitals, power costs are growing and power-efficiency is becoming more important. Therefore, the manufacturer required a power supply which was extremely efficient. Their technical power supply requirements were:

- Over 96% efficiency
- Less than  $4x I_n$  (1 nominal) inrush current, rather than the standard  $12-18x I_n$
- A low leakage current ( $< 70\mu A$ ) according to the medical norm
- Low profile and suitable to fit with the dimensions of the trolley
- Certified to EN60601

### Solution

Acal BFi started working with this manufacturer during their design process to help scope out their total power requirements and tailor the specification. Noratel, a leading supplier of high-quality transformers was chosen because of its long history of creating customised, high-quality medical power supplies.

To support the manufacturer, Noratel produced a variety of prototypes throughout their design process. The power supply and enclosure were a specific size and low profile to reduce the amount of the trolley's capacity taken up by power. The power supply chosen, was a toroidal transformer which was designed to meet the manufacturer's exact requirements; including low losses, low inrush current to prevent dangerous EMI risks, over 96% efficiency and tested to meet the EN60601 standard.

### Benefit

Together, using Acal BFi and Noratel's expertise, we were able to help the manufacturer create a modular trolley which could be configured to a medical professional's exact application, making it easier to use and flexible for their application-specific requirements. As the power supply occupied less space, the trolley could accommodate more equipment.

Power consumption for each trolley was dramatically reduced, in turn lowering the hospital's total cost of ownership and provided ongoing operational costs savings.

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