

# Achieving Medical Standards with FlexiCharge FC4000 for Aesthetic Lasers

**INDUSTRY****Medical****SOLUTION****FlexiCharge FC4000****APPLICATION****Aesthetic Lasers****CHALLENGE**

A manufacturer of high-performance aesthetic laser and IPL systems was updating the certification of an existing system to the latest medical standard IEC60601-1, for Safety and EMC certification. During their testing, they encountered difficulties meeting some of the EMC levels. Despite working on this for several months, they did not progress in meeting the required standards. This caused significant delays in completing the system certification, putting future revenue at risk and jeopardized meeting

new regulations when the new standard became compulsory.

Upon learning about the recently introduced FC40M product, Advanced Energy's (AE) engineering team was approached to see if the product may be a suitable replacement for the customers' existing supply. They needed a 4 kJ charger to charge capacitors up to 1000 V. In addition, overall space and weight had been also important considerations as the customer had a fixed space available for the charger.

They also required a total of 600 W power for system electronics including 24 V for cooling element (TEC), 5 V and microprocessors, 12 V for touch panel/monitor (12 V) and 24 V for pumps. Their existing system used a separate multiple output power supply for this requirement which created challenges for system safety approval and EMI compliance.



## SOLUTION

The FC40M is a medically certified constant power charger, which can provide up to 4 kJ of charging power over a wide range of charging voltages. Additionally, the FC40M can deliver up to 800 W of system power. The customer had seen the recent press release of the FC40M from Advanced Energy and enquired about the availability of a sample.

The customer had a testing slot booked at an external EMI lab and needed the power supply within three weeks to allow them to test during this testing appointment. To ease the integration into the system, AE provided a sample with modified output wiring and connectors as well as modified control and signal interfaces to allow ease of interconnect with their existing connector arrangements.

The customer uses AE's CoolX modular power supplies to drive their system electronics. The FC40M uses the same CoolX output modules they are so familiar with and trust. With this solution they combined the charger power and systems electronics power into one compact power supply.

## RESULTS/ CONCLUSION

A sample product was delivered by AE's engineering team in under three weeks. In addition, AE's experienced field applications engineer was on hand during the installation and testing at the EMI lab, supporting the system designers throughout the testing.

The mechanical modification allowed the customer to seamlessly install the FlexiCharge FC40M into their system, allowing system tests to be carried out without delay. The system successfully passed all radiated and conducted emissions testing thereby derisking the full system compliance testing that would be booked subsequently.

The excellent flicker performance of FC40M was a major improvement over their previous charger. Additionally, combining both the charger and system power into one power supply greatly simplified system safety compliance where they had one critical power supply component instead of two. System compliance specifications for IEC60601-1, such as system leakage current (<300 uA), medical isolation requirements were achieved without any issues and eliminated the need for a bulky isolation transformer. Furthermore, the FlexiCharge FC40M solution reduced system weight by over 5 kg, while also providing 30% space saving over the customers' previous solution.



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