CASE STUDY

Advanced Energy's range of power solutions enables market launch for leading Cell Sorter

INDUSTRY	SOLUTION	EQUIPMENT
Life Science	Artesyn® uMP series	Cell Sorter

CHALLENGE

Cell sorting has a significant positive impact in biomedical research. It allows scientists to perform many experiments while rapidly viewing and sorting cells that have particular traits. Using this data, scientists are better equipped to understand human health, conditions and treatments.

Our client, a leading medical Life Science equipment OEM, was developing a new system that would enable scientists to carry out more tests in shorter time periods.

The challenge for this customer's engineers was to identify power solutions to drive various independent parts of the system. The equipment consisted of two distinct subsystems. The first sub system required 2 isolated DC voltages of 24 V @ 250 W and 12 V @ 350 W. The second subsystem required 2 x 3.6 V @ 280 W each and 2 x 12 V @ 220 W each.

System size was also important as the equipment was designed to be a bench-top system.

SOLUTION

On review with the customer, we identified that the previous generations of this type of equipment had used six separate AC-DC power supplies to deliver the system power.

The engineers had encountered significant safety and EMI certification challenges, due to the interaction of the various power supplies used. Conducted and radiated EMI compliance had added months to their development schedule in addition to significant costs for additional filtering components and shielding. This approach and the additional EMI filtering solutions had impacted the overall size of the system. The engineers were very conscious of schedule adherence, while also meeting the market challenge of improved performance in smaller system.

The challenge was solved by the use of Advanced Energy's Artesyn uMP modular configurable power supply family.

The uMP10T was used to deliver the 24 V and 12 V demand in the subsystem, capable of delivering 1000 W AS 90VAC, this 1U high compact solution eliminated the need for two power supplies. The second subsystem's power needs were addressed by using a uMP16, providing four isolated outputs of 3.56 V, 3.6 V 12 V and 12 V. The use of these 1U high compact power supplies helped reduce the power supply count of the total system from six to two. Furthermore, as both power supplies are from the same family, system EMI compliance was simplified, saving significant engineering effort for the system designers. The use of two compact power supplies provided >50% space savings to the customer, as well as significantly lower cabling and integration costs.

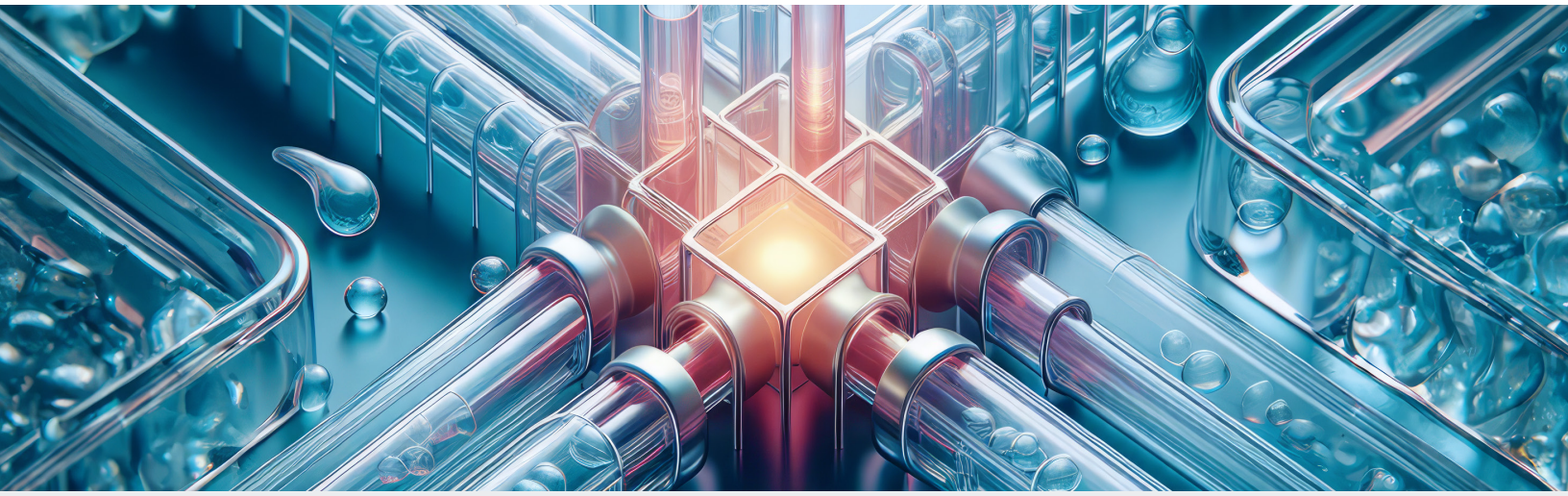
The uMP series is fully certified to both IEC62368 and the latest medical standards of IEC60601-1. Its modular design provides equipment design engineers the flexibility they need for voltage, power, and current leakage requirements to meet their low voltage medical needs.

During the design, the customer encountered supply chain issues for the non-isolated point of load converters they were using to drive FPGAs in the system. This had the potential to impact system launch by nine months. They consulted with our team, and we identified that the LGA50D series of dual output point of load (POL) converters from Advanced Energy would not only drive their FPGA, but also reduce the number of converters needed in the system. Rapid delivery product samples, coupled with field applications engineering support, allowed AE to accelerate the qualification of these parts, thereby helping the customer meet their planned market launch.

RESULT

Samples of the uMP were quickly configured based on the customers technical requirements and tested. Using two power supplies of the same family yielded predictable EMI performance and greatly simplified system compliance. The 1U size helped the customer achieve their system size target without any compromise in performance.

Finally, the fast response of our engineering and field applications engineers helped the customer avert a launch delay due to supply chain issues from another DC-DC supplier. The responsiveness and expertise of our team accelerated the integration of Advanced Energy's POL converters into the system and helped the customer meet launch schedules and come in under budget.



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