

FlexiCharge FC1500 is disrupting the traditional design approach of aesthetic medical laser systems

INDUSTRY

Medical Life Science

SOLUTION

FlexiCharge FC1500

EQUIPMENT

Aesthetic Medical Laser

OVERVIEW

Aesthetic Medical laser systems are often multi-functional and need to deliver a range of treatments in addition to laser treatment, such as such as IPL (Intense Pulsed Light). Each of these have their own specific power (volts and amps) needs. Furthermore, there is the system house-keeping power required for cooling, control, touch panels and processing. Often, this results in several different discrete power supplies designed into these systems. This adds complexity to system design, and it can also create challenges in meeting leakage current and EMI requirements. These systems also need to be light weight, compact and mobile for ease of movement within clinics. The new AE FlexiCharge FC1500 product offering was specially designed to improve capacitor charging performance and at the same time reduce system design complexity.

CHALLENGE

After the release of FC1500, a leading company in the aesthetic medical laser market approached Advanced Energy for a solution to their new system design. The customer needed an improved capacitor charging process for both Intense Pulsed Light (IPL) and laser treatments. They needed 800V capacitor charging for use during Laser treatment. However, for IPL treatments, they required capacitor charging up to 350V. They also needed up to 750 watts of low voltage system power for control circuitry, TEC elements and pumps amongst other items.

SOLUTION



The FlexiCharge FC1500 product was designed specifically to provide the flexibility that this Aesthetic Medical laser system designer needed for their end application. The FC1500 combines superior capacitor charging capability with integrated ACDC low voltage power supply in one unit.

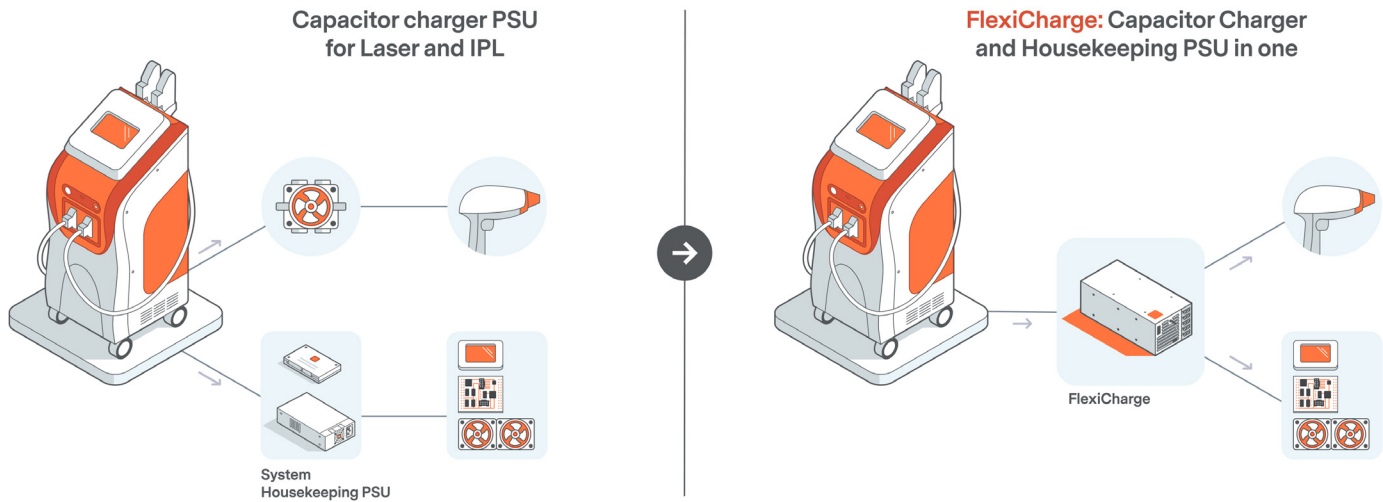
The design delivers highly efficient programmable Capacitor Charging power up to 1.5 kW and 1kV. It also has the added advantage of a built-in ACDC configurable power supply providing end users with up to 800 Watts of low voltage power for other system needs.

- Fully certified to IEC60601-1 3rd edition and IEC60601-1-2 4th edition (EMC)
- Constant Power Output (1500W) from 250V to 1000V
- Programmable capacitor voltages up to 1000 volts, and excellent pulse to pulse stability
- Built in 800 W ACDC low voltage modular power supply
- High Power density - (L x W x H) 348mm x 145mm x 106mm.
- Analog Control and monitoring capability as well as Digital Control and Communications via via PMBus™

RESULT

The customer provided AE with the IPL & laser capacitor charging voltages requirements for their system design in addition to the additional low voltage outputs needs for the system electronics. Quick turnaround configured samples were provided and delivered to the customer within one week. The programmable control, stability, and repeatability of the FC1500 capacitor charger exceeded customer expectations for both IPL and laser applications. As a constant power charger, it allowed the system designers to charge capacitors at lower voltages faster than with their previous solutions, enabling clinicians to carry out faster treatments.

The built-in low voltage power supply has the added advantage of being configurable. Various modules were selected (CoolMods) and added to configuration to provide the exact isolated voltages required for various parts of the system electronics. For this design, five CoolMods were used to provide 6 output voltages varying from 2.5 volts up to 36 volts, providing up to 750 Watts of power (see table 1 below).



The FC1500, with its unique integrated high voltage and low voltage solution eased regulatory compliance, with reduced leakage current and simplified system EMI design. Our customer recognizes the solution and how it significantly reduced compliance time and costs while also accelerating the time to market for their system.

CoolMod	Vnom (V)	Voltage setpoint adjust range (V)	I _{max} (A)	Power (W)	Output type
CMA	5	2.5 - 6.0	21	105	Single
CMG V1	24	3.0 - 30.0	3	90	Dual
CMG V2	24	3.0 - 30.0	3	90	Dual
CMC	24	15.0 - 28.0	8.3	200	Single
CMC	24	15.0 - 28.0	8.3	200	Single
CMD	48	28.0 - 58.0	4.16	200	Single

Table 1

CONCLUSION

The FlexiCharge FC1500 helps Aesthetic Medical Laser producers meet the system design challenges with its first-to-the-world unique design. The combined capacitor charging and ACDC power supply with constant power capacitor charging capabilities, provides a flexible platform to improve and simplify system design.

The Aesthetic Medical laser solution was delivered due to the FC1500 product design, flexibility, and capability and also due to the technical experience and support provided by the AE team.



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