CASE STUDY

CoolX1800 meets the power density, digital control, and monitoring needs for aesthetic laser treatment

INDUSTRY	SOLUTION	EQUIPMENT
Medical Life Science	CoolX®1800	Aesthetic Laser Treatment

CHALLENGE

Lasers are widely used in aesthetic treatments for various skin conditions such as sun damage, acne scars, fine wrinkles, Melasma, Naevus, Rosacea, Angiomas, and small varicose veins. They are also used for tattoo and hair removal.

There are many challenges in designing these types of laser systems because they need to be portable and compact. This means power delivery, control, and monitoring systems must be compact and light weight. In this type of application, the power density of the AC/DC power supplies is a critical parameter.

Advanced Energy's medical group has worked closely with the top medical laser companies for several years providing AC/DC and High Voltage DC/DC products to meet their system power requirements.

A leading aesthetic laser equipment manufacturer needed a compact AC/DC power supply to deliver 1300 W over all input AC line voltages, along with intelligent control to modulate laser pulses and provide system voltages.

Our CoolX1800 configurable AC/DC power supply product was evaluated for the system power.

SOLUTION

The CX18M medical AC/DC power supply platform is certified to the latest medical safety standards IEC60601-1 (3rd edition) and IEC60601-1-2 (4th edition). Its modular design provides equipment design engineers the flexibility they need to achieve multiple isolated output voltages while also meeting the medical isolation and stringent leakage current requirements for system medical compliance. The platform can provide up to 12 isolated DC voltage outputs, which can be parallel connected for higher currents and series connected for higher voltages (up to 348 VDC).

For this application, several CoolMods were connected in parallel to deliver the higher currents required to drive laser pulses. It was also critical for the customer that they could both control and monitor these voltages. These needs were easily fulfilled and integrated into the customer's software and control system thanks to the PMbus digital intelligence built into the CoolX platform.

RESULT

After extensive system testing, the CoolX1800 power supplies were selected for use in this next-generation aesthetic laser equipment. The customer's reasons for selecting this model included:

- The CoolX1800 can deliver up to 1800 W in a compact 1U package, with industry leading power density, which is ideal for portable aesthetic laser treatment systems.
- The large selection of modules offered the customer design engineer the flexibility to meet all the low voltage requirements for their portable system.
- The modules can be connected in parallel and easily arranged to provide the extra current requirements for a laser system.
- The CoolX platform has a built-in PMbus digital system with unique firmware that provides the ability to monitor and control critical parameters within the power supply, which reduced the need for customers to incorporate hardware and software requirements into their systems.
- The digital PMbus system provided the customer with voltage control and monitoring capabilities that simplified their design requirements, allowing for outstanding laser pulse control.

CONCLUSION

AE's medical group supports the world's leading aesthetic and surgical laser treatment equipment suppliers, and for many years has been the go-to AC/DC power supply for each new generation of their equipment. The knowledge gained through these experiences has been incorporated into our next-generation CoolX AC/DC products. This case study highlights how our hardware design and additional firmware features support development of the latest equipment for laser treatments.

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