

# Sports injury recovery station with hot and cold thermal pads and applied pressure

## INDUSTRY

Medical Treatments

## SOLUTION

Excelsys™ CoolX® 1000

## EQUIPMENT

Sports Therapy System

## CHALLENGE

An innovator in recovery technology is developing a new therapy system using applied thermal/pressure pads to aid recovery of muscle injury. The system uses Peltier heaters and coolers to change water temperatures. Water is then pumped by motors to large thermal pads which attach to the patient's body. The system requires an AC-DC power supply to supply multiple DC outputs of different voltages and to supply the required peak power to the system. Additionally, the power supply must be silent to aid patient comfort and recovery. The supply should fit within a compact power system cabinet.

## SOLUTION

Advanced Energy's CoolX1000 was the only fanless product on the market that could provide the necessary variety of output voltages in a 1U compact enclosure while meeting the stringent acoustic noise requirements.

The 48 Volt outputs required by the two isolated motors are provided by two sets of two CmD modules in parallel which can provide a peak output power of 8.34 amps per module pair.

A CmB module in constant current mode provides power to a Peltier module which cools and heats water. PMBus® commands are used to set Itrim on the CmB module to enable constant current operation.

Working closely with the customer and utilizing the modularity of the CoolX platform, the Advanced Energy team was able to configure a power supply to meet the customers isolated multiple output requirements.

Parallel modules are used in this configuration to provide extra power to meet the customers needs. Additional benefits included:

- Fanless and convection cooled, the CoolX1000 generates no acoustic noise or vibrations. Patients can relax in a low noise environment while receiving treatment
- PMBus® for additional control and monitoring. Modules can be monitored (input voltage, module output voltage and current) enabled, disabled and trimmed as well as have their maximum current values set
- Aux power output ensures system front panel can operate without a dedicated power supply
- Side DIN rail mounting option allows easy integration to customer system.
- Safety approved to 5000 m altitude. The customer can now sell their products in higher altitude regions.

## RESULT

Given Advanced Energy's modular customization ability and exceptional applications support, the customer was able to incorporate highly tailored features easily, leading to a fast time to market and reduced development costs.

The CoolX1000 gives a high level of performance while meeting budget expectations. The solution offers high reliability and zero noise as required by many medical applications. The CoolX1000 is certified to IEC60601-1 and IEC60601-1-2 (EMC), greatly simplifying system compliance.



## CONCLUSION

Due to the advanced features of the CoolX product line, Advanced Energy can support isolated DC power requirements for a wide variety of applications in industrial, Medical and military systems. With little or no customization there is a fast time to market and cost savings due to lower engineering, qualification and certification costs.



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