

Case Study

Achieving Precise Temperatures for Sterile Infusion of Blood

Company

Smisson-Cartledge
Biomedical, LLC

Industry

Medical Devices

Products

ThermaCor[®] 1200 Rapid Thermal Infuser /
Exergen IRT/c-HB non-contact sensors

Portable fluid infusion devices are essential tools used during trauma treatment and surgical procedures. Smisson-Cartledge Biomedical developed the ThermaCor[®] 1200 to deliver body-temperature fluids safely and efficiently. To ensure precise and sterile operation, they needed a non-invasive temperature sensing solution. Exergen's Micro IRT/c-HB sensor, with patented heat balance technology, was selected.



Challenges

Operating in life-or-death situations, the challenge is to bring fluids (including blood) to precise temperatures. Under high stress, every part of the system must be completely reliable at all times. Measuring internal fluid temperature accurately, without introducing infection risk or delays, is critical for delivering life-saving treatment. If the patient is infused with fluid that is too warm, it can damage blood cells. Too cold, and the risk of hypothermia increases.

Solutions

Exergen's Micro IRt/c-HB infrared sensor measures the temperature of blood entering and exiting the infusion system without ever touching the fluid. Our patented heat balance equation allows sensors to be precisely calibrated, enabling the system to deliver sub-second response times and high precision (within 0.1° C / 0.2 ° F). Because this is a non-contact sensor, it can safely be used repeatedly, unlike disposable contact sensors, which are a rising cost consideration.

Benefits

- Accurate to $\pm 0.1^{\circ}\text{C}$ for critical blood temperature control
- Non-invasive and reusable sensor, ensuring sterility and cost-efficiency
- No recalibration or service needed in the field
- Rapid response time (50–150 ms) for use in emergency situations
- Smooth integration, reliable operation supporting patient wellbeing



David C. Field, CEO, Smisson-Cartledge Biomedical.

Exergen's sensors safeguard sterility and accuracy—helping ensure safe, life-saving infusions.

Results

ThermaCor® 1200 now delivers precise-temperature fluids reliably across a wide range of clinical situations, from cardiac and transplant surgery to trauma resuscitation. It adjusts automatically to donor blood temperature and flow rate, optimizing patient care. "This system is the culmination of our team's work to bring a faster, easier and safer infusion to the market for better patient care," says David C. Field. "Exergen's engineers worked closely with our engineers, delivering a solution that safeguards patient safety and ultimately, the patient's life".

Conclusion

By integrating Exergen's infra-red sensor technology, Smisson-Cartledge Biomedical has created an important device for safe, high-speed fluid infusion. The non-contact sensor guarantees sterility while maintaining the precise thermal control essential in trauma and surgery. Now medical teams can focus on their life-saving duties, safe in the knowledge that the ThermoCor® 1200 is working optimally thanks to strong collaboration and smart engineering. The result: better outcomes, reliable treatment, and greater confidence in patient care.