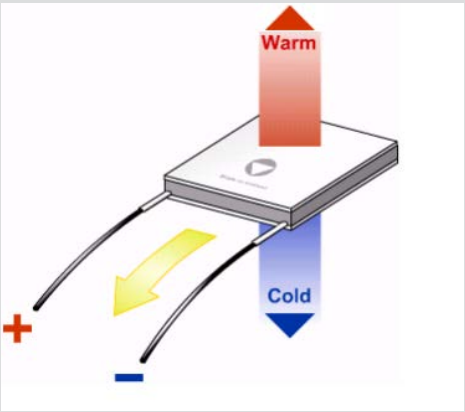
Applying AdvanceCore™ Thermoelectric Cooling Technology to Medical-Grade Refrigeration

ARTICLE

Solid state thermoelectric cooling is an innovative alternative to traditional cooling technology for medical-grade refrigeration. However, applications for thermoelectric cooling have been limited by the efficiency of the technology, especially when considering the demanding performance requirements for cold storage used to protect medications, vaccines, and critical clinical samples. With new advancements in materials and manufacturing processes, this technology has been proven effective and reliable as the cooling system for Helmer Scientific MLR102 1.8 cubic foot countertop refrigerator.

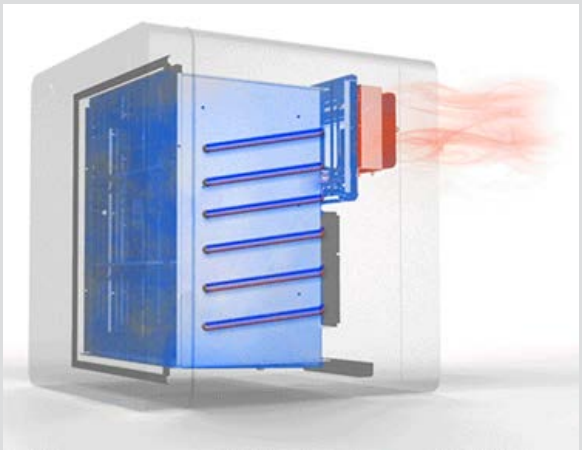


Thermoelectric Devices History:

In 1834 Jean Peltier performed experiments passing an electric current through a closed circuit of 2 dissimilar metals. This work demonstrated that heat energy can be absorbed by one dissimilar metal to create a cooling effect, and discharged by the other dissimilar metal to create a heating effect. These experiments were the foundation of modern thermoelectric technology in which a Peltier device allows electricity to flow through material to allow one side to warm, and the other side to cool. Used as an alternative to compressor-based refrigeration for cooling applications, thermoelectric cooling devices have had limited use in mainstream medical-grade refrigeration due to expense and efficiency.

More recently, applications have expanded for thermoelectric cooling as new materials and methods have become available to create more efficient devices.

AdvanceCore™ Thermoelectric Technology:



The Helmer Scientific MLR102 Countertop Refrigerator leverages innovation in thermoelectric cooling technology. This unit is a 1.8 cubic foot compact medical-grade refrigerator that incorporates AdvanceCore™ thermoelectric technology. AdvanceCore™ is a specially designed solid-state cooling system that uses thermoelectric technology to efficiently move heat from the core of the storage cabinet. Tubing contained within the walls of the refrigerator contains CO^2, a natural refrigerant that absorbs and transfers heat away from the refrigerator chamber. A solid-state heat pump efficiently dissipates small levels of heat into the ambient environment without the use of any moving parts. This technology has been optimized for the compact cabinet space in the 1.8 cubic foot Helmer Scientific MLR102 refrigerator.

AdvanceCore™ Performance in a Compact Medical-Grade Refrigerator:

AdvanceCore™ technology has been applied to the Helmer Scientific MLR102 countertop refrigerator. This refrigerator has been designed for medical storage applications in small installation spaces close to patient care or staff work areas, and has the following benefits:

Medical-Grade Performance: Allows for precisely maintained temperatures to meet demanding needs of clinical applications through an electronic control system that varies power, maximizing the efficiency of heat transfer. The Helmer Scientific MLR102 incorporates an internal forced air system to ensure chamber uniformity (+/-1° C) and quick temperature recovery after door openings.

Low Sound Profile: Reduces sound profile through the use of solid-state cooling technology that limits the use of moving parts and compressors that can vibrate and result in unnecessary noise in patient care and staff areas.

Limited Energy and Heat: Minimizes energy draw to lower cost of ownership. Reduces heat dissipation into patient care areas; electrical inputs are set to match energy needed to maintain set temperature. Design eliminates most installation clearances for ventilation.

Universal Power Supply Compatibility: Enables the Helmer Scientific MLR102 refrigerator to function with standard Universal Power Supplies (UPS). UPS backups can help protect sensitive medications and vaccines from power outages in locations without backup generators.

Reliability and Warranty: Solid state design limits moveable parts that require maintenance or service. The Helmer Scientific MLR102 refrigerator, which comes standard with a 2 year manufacturer's parts and labor warranty, is designed for long-term reliability for applications that demand confidence in tight temperature control.

For more information on AdvanceCore™ technology or the Helmer Scientific MLR102 Countertop Refrigerator, please visit info.helmerinc.com/MLR102.