



Thermal Management for

Medical Applications



Medical Applications Cooling

Laird Thermal Systems offers a broad range of thermal management solutions for the medical industry to address bulk heat removal of x-ray systems, precise temperature control of detector plates and refrigeration of medical diagnostic chambers.

Our product portfolio ranges from solid-state thermoelectric coolers and assemblies, to integrated temperature controllers, ambient liquid cooling systems and recirculating chillers.

We design and manufacture cooling components and systems for the top companies in the healthcare industry. With unmatched thermal management expertise, our global engineering team uses advanced thermal modeling and management techniques to solve complex heat and temperature control problems in medical applications including:

- Computerized Tomography (CT)
- Positron Emission Tomography (PET)
- Cardiovascular Medical Imaging (CV)
- Magnetic Resonance Imaging (MRI)
- Radiation Therapy (RT)
- Reagent Cooling
- Medical Centrifuges
- Point of Care (POC) Test Devices
- Medical & Cosmetic Lasers

Learn about our thermal management capabilities for medical applications here



Computerized Tomography

In computed tomography (CT) X-Ray systems, the tube and detector are both rotating at fast speeds around the patient to produce a detailed 3D image. A reliable cooling solution that withstands high g-forces is critical for bulk heat removal and precise temperature control.

Temperature stability will ensure
High image quality
Long life operation

Learn more about [CT Scanning Solutions](#)



Reagent Cooling

Reagents used in medical diagnostics require precise cooling to well below ambient temperatures. Without proper refrigeration, reagents may deteriorate or become contaminated by microbial growth, affecting test integrity.

A thermal solution will
Ensure reliable test results
Extend life of reagents
Lower costs

Learn more about [Reagent Cooling Solutions](#)



Medical Centrifuges

Centrifuges utilize high-speed centrifugal force to separate liquid mixtures used for analysis in medical research. Active cooling is required to dissipate heat away generated by the spinning centrifuge and maintain a steady temperature of samples.

Thermal management will
Ensure proper reaction
Reassure viability

Learn more about [Medical Centrifuge Solutions](#)

LAIRD THERMAL SYSTEMS PRODUCTS AND SOLUTIONS

Custom Liquid Cooling Systems

Why Liquid Cooling Systems?

- High reliability
- Superior heat routing
- Higher efficiencies than air-based heat transfer mechanisms



Thermoelectric Coolers

UltraTEC™ UTX Series
 HiTemp ETX Series
 CP Series



Thermoelectric Cooler Assemblies

SuperCool X Series
 PowerCool Series
 Tunnel Series



Why Thermoelectrics?

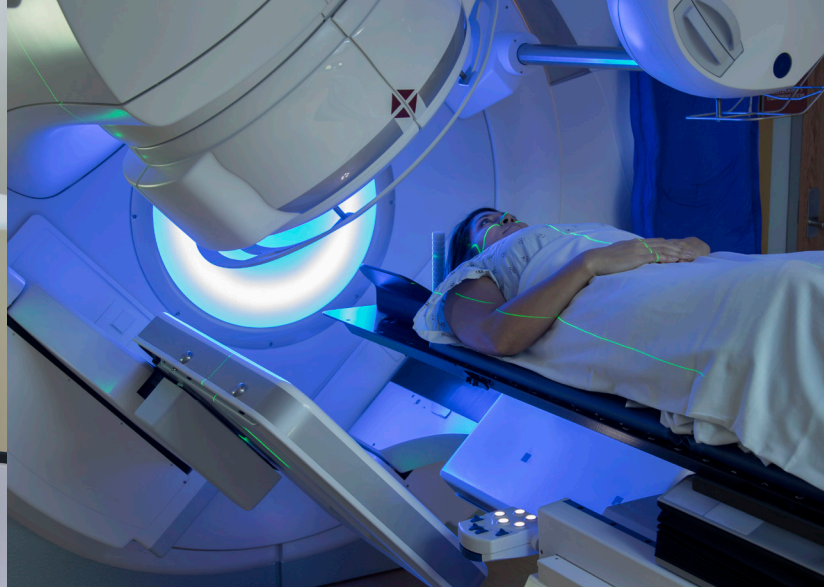
- Compact form factor
- No vibration
- No refrigerants
- High reliability
- Low noise operation
- Low maintenance



Why Refrigeration Systems?

- High reliability
- High Coefficient of Performance (COP)
- Increased uptime
- Environmentally friendly refrigerants





Positron Emission Tomography

PET is a gamma-based imaging technique that allows doctors to check for diseases in the body. The scan uses a special dye that contains radioactive tracers. The gantry system consists of a number of detectors requiring precise temperature control.

Temperature stabilization will enhance
Image quality
System reliability

Learn more about [PET Scanning Solutions](#)

Cardiovascular Imaging

CV technology enables the capturing of real time x-ray images during surgery. A liquid cooling system is required to enhance imaging performance during procedures to address heart diseases or diseases of the blood vessels.

Precise temperature control reassures
Maximum imaging performance

Learn more about [CV Scanning Solutions](#)

Magnetic Resonance Imaging

MRI uses strong magnetic fields and radio waves to create detailed images of organs in the body. An enormous amount of energy is required to create the magnetic fields for the imaging process, which place high demands on the cooling system.

Proper cooling will
Enhance image performance
Prevent disruptions during examination

Learn more about [MRI Solutions](#)

Radiation Therapy

Radiation therapy utilizes ionized radiation to treat cancer by controlling and eliminating malignant tumors. Temperature control of system devices is critical to optimize radiation beam and destroy as few healthy cells as possible.

Temperature stabilization will
Ensure high precision treatment
Minimize damage of healthy tissues

Learn more about [Radiation Therapy Solutions](#)

LAIRD THERMAL SYSTEMS PRODUCTS AND SOLUTIONS

Liquid Cooling Systems
 Nextreme™ Performance Chiller



Bulkheat removal

Custom Liquid Cooling Systems
 Liquid Heat Exchangers



High heat pumping capacity

Why Liquid Cooling Systems?

High Reliability

Custom Liquid Cooling Systems



Superior heat routing

Custom Liquid Cooling Systems



Higher efficiencies than air-based heat transfer mechanisms



Point of Care Testing

Point of Care testing allows medical staff to perform real-time testing in the doctor's office or at home. Because conductivity varies when blood temperature changes, temperature of blood samples must be accurately controlled.

Temperature stabilization reassures
Reliable test results

Learn more about **POC Testing Solutions**



Medical Lasers

Lasers used in medical and cosmetic surgery offer several benefits such as minimal damage to the body and improved recovery time. However, heat generated by the laser must be efficiently dissipated to protect the patient, and the laser electronics.

Active cooling helps
Maintain peak performance
Reduce pain for patient

Learn more about **Medical Laser Solutions**

About Laird Thermal Systems

Laird Thermal Systems designs, develops and manufactures thermal management solutions for demanding applications across global medical, industrial, transportation and telecommunications markets.

We manufacture one of the most diverse product portfolios in the industry ranging from active thermoelectric coolers and assemblies to temperature controllers and liquid cooling systems.

With unmatched thermal management expertise, our engineers use advanced thermal modeling and management techniques to solve complex heat and temperature control problems. We have more than 50 years of experience in the design, manufacture and servicing of thermal management solutions with millions of installations in operation today.

Contact us for a solution to your next thermal management challenge.

Learn more by visiting www.lairdthermal.com

LAIRD THERMAL SYSTEMS PRODUCTS AND SOLUTIONS

Thermoelectric Coolers

PowerCycling PCX Series
HiTemp ETX Series
CP Series

Thermoelectric Cooler Assemblies

Tunnel Series

Thermoelectric Coolers

UltraTEC[™] UTX Series
CP Series

Thermoelectric Cooler Assemblies

SuperCool X Series
PowerCool Series
MRC Series

Why Thermoelectrics?

- Compact form factor and low weight
- Mountable in any orientation
- No vibration
- DC operation which is readily available on instrument
- Solid-state construction providing long life and low maintenance



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