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

LAIRD THERMAL SYSTEMS PRODUCTS AND SOLUTIONS

**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 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
- Reasure viability

Learn more about Medical Centrifuge Solutions

**Why Refrigeration Systems?**
- Compact form factor
- No vibration
- Low noise operation
- High reliability
- Low maintenance

**Why Thermoelectrics?**
- High reliability
- 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

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**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

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**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

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**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

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**LAIRD THERMAL SYSTEMS PRODUCTS AND SOLUTIONS**

**Liquid Cooling Systems**
- Nextreme™ Performance Chiller

**Why Liquid Cooling Systems?**
- **Bulkheat removal**
- **High heat pumping capacity**
- **High Reliability**
- **Superior heat routing**
- **Higher efficiencies than air-based heat transfer mechanisms**

**Custom Liquid Cooling Systems**
- **Liquid Heat Exchangers**
- **Custom Liquid Cooling Systems**
**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](http://www.lairdthermal.com)

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**Thermoelectric Coolers**

- PowerCycling PCX Series
- HiTemp ETX Series
- CP Series

**Thermoelectric Cooler Assemblies**

- Tunnel Series

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**Thermoelectric Coolers**

- UltraTEC™ UTX Series
- CP Series

**Thermoelectric Cooler Assemblies**

- SuperCool Series
- PowerCool Series
- MRC Series

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**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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**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**

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**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

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Learn more about POC Testing Solutions

Learn more about Medical Laser Solutions

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