



*Hoffman®*

# ENCLOSURE COOLING SOLUTIONS

DESIGN WITH CONFIDENCE

PENTAIR EQUIPMENT PROTECTION

MCLEAN® IS NOW HOFFMAN® COOLING



# BETTER TOGETHER MCLEAN® IS NOW HOFFMAN COOLING

Hoffman Cooling (formerly McLean) helps create optimal conditions for the reliable operation of electronic and electrical components in manufacturing controls, telecom equipment, data networks, and other vital systems. From standard fan assemblies to air conditioners, to heat exchangers, to integrated cooling enclosures for a variety of applications, Hoffman assures maximum productivity and uptime while protecting the life cycles of controls and equipment.

Flawless operation is the expectation of OEMs, engineers, and end-users alike. That's why choosing the most qualified cooling technology provider reaches far beyond the implications of product performance to include service and support benchmarks.

As a premier global provider with decades of experience in cooling industrial automation and electrical components, Hoffman remains unrivaled with an industry-leading portfolio of proven products, pre- and post-sale support, and comprehensive engineering and testing services.

## REASONS TO CHOOSE HOFFMAN FOR YOUR COOLING SOLUTION

- Over 2,000 UL®-certified standard cooling, heating, and climate-control products for reliable operation and longer life of protected components
- Cooling specification is easier with energy-efficient, maintenance-friendly air conditioners in over 1,000 standard configurations
- Cooling products are stocked locally and supported by over 2,000 distributors in North America and regional stock worldwide for quick availability
- Easy upgrades to the latest Hoffman cooling technology from competitive or obsolete air conditioners with Hoffman Easy Swap™ adaptor plenums
- On-site thermal audits and consulting
- Available modifications including sizing, adaptation, power, custom paint, and accessories
- State-of-the-art, in-house laboratory testing, validation, and global agency certification services
- Complete custom engineering services for non-standard requirements

## THE ADVANTAGES OF ENCLOSURES WITH INTEGRATED COOLING SOLUTIONS

The integration of Hoffman enclosures and cooling offers best-of-class performance and protection.

- Advanced cooling products designed to complement our offering of standard enclosures
- Thermal load pre-calculation to provide optimum cooling options for components, enclosure package, and environment
- Ensures complete solution is engineered to maintain rating and certification
- Single-source accountability for support and service
- Ease of specification, ordering, and purchasing
- Reduced lead times and elimination of miscommunication between multiple vendors

OVER  
**2,000**  
UL-CERTIFIED  
COOLING  
SOLUTIONS

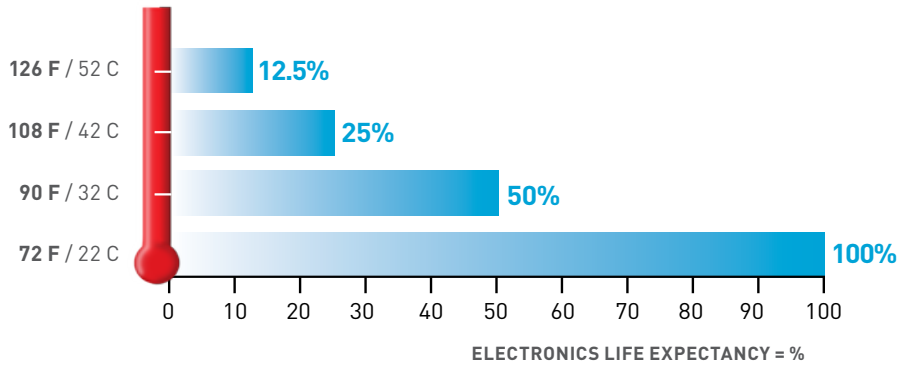
OVER  
**12,000**  
STANDARD  
PRODUCTS

*Hoffman*®

FOR MORE INFORMATION: [HOFFMANONLINE.COM](http://HOFFMANONLINE.COM)

# WHY USE COOLING?

HEAT DAMAGES AND REDUCES THE LIFE OF YOUR ELECTRONICS



Source: Digital Equipment Corporation

ELECTRONICS LIFE EXPECTANCY IS REDUCED BY HALF WITH EVERY 18 F RISE ABOVE ROOM TEMPERATURE

Keeping your electronics cool is essential to maximizing the life cycles of your electronic devices, reducing capital expenses, and keeping your business running. Heat can have a significant impact on electronics, reducing performance, causing damage, and affecting manufacturer warranties.

## SOURCES OF DAMAGING HEAT

Heat can be generated internally by electronic components and intensified by external sources. Inside a cabinet, uncooled components can generate as much trapped heat as a home furnace

- AC power supplies
- Controllers, drives and servos
- Transformers and rectifiers
- Processors and server racks
- Radio equipment

Heat is also generated from sources outside the enclosure such as

- Solar heat gain
- High ambient temperature
- Welding processes
- Paint oven
- Blast furnace
- Foundry equipment

## TRENDS TOWARD MORE HEAT

With expanding deployment of smaller, more powerful, and more portable mission-critical electronics into increasingly harsh environments and conditions, cooling and thermal management is now a primary engineering consideration. The density of modern electronics in smaller cabinets intensifies heat issues that can compromise component performance.

## CONSEQUENCES OF HEAT

Heat build-up can adversely affect industrial controls creating the potential for

- De-rated drive performance
- Intermittent fluctuations in I/C-based devices
- MTBF decreases exponentially
- Catastrophic component failure
- Warranty revocation
- Component replacement costs
- Late shipments
- Customer dissatisfaction
- Lost revenue
- Service outages
- Hours of factory downtime

## RECEIVE A NO-COST HOFFMAN THERMAL AUDIT

Your local Hoffman representative will perform a thermal audit of your application to assess your cooling needs, reveal cooling deficiencies that can damage electronics, and offer tailored solutions to your cooling challenges. A Hoffman thermal audit examines

- Heat load of enclosed electrical equipment
- Temperature ratings of the installed equipment (upper and lower limits)
- Ambient temperature (typical and extreme)
- Environmental conditions
  - Clean air (Type 1)
  - Dirty or wet environment (Type 12, Type 4/4X)
  - Closed- or open-loop
  - Indoor or outdoor
- Maintenance and frequency of access requirements

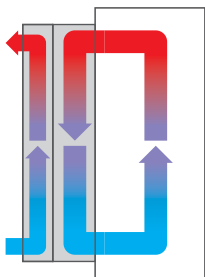


# COOLING STRATEGIES

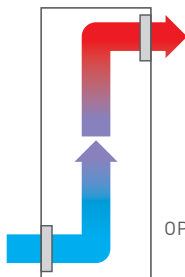
CHOOSING A SOLUTION TO MAXIMIZE THE OPERATIONAL LIFE OF YOUR ELECTRONICS

## HOFFMAN® COOLING SYSTEMS CHARACTERISTICS

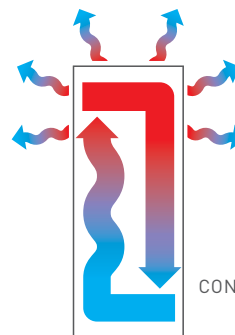
COOLING SYSTEM TYPE	TECHNOLOGY DESCRIPTION	HEAT REMOVAL RANGE	INDICATIONS FOR USE	TYPICAL APPLICATIONS	Cools Below Ambient	Cools Above Ambient	Closed Loop
Air Conditioners	Forced air Refrigerant-based	High	Hot Environments (typically over 35 C/95 F) High Heat Load (300W-17,300W) Dirty or Corrosive Air Harsh/Humid Environments	Indoor or Outdoor Industrial enclosures Telecommunications Wastewater treatment Metal working Oil rig/refinery Foundry	✓		✓
Thermoelectric Coolers	Peltier effect No moving parts or liquids	Low	Small Enclosures Low Heat Load (60-200W) Remote/ DC-powered applications	Indoor or Outdoor Telecommunications Battery cabinets Industrial enclosures Security systems	✓		✓
Air-to-Air Heat Exchangers	Closed loop No liquids	Moderate	Cool Air Environment Moderate Heat Load (7-150W/F) Dirty or Corrosive Air	Indoor or Outdoor Telecommunications Light-duty manufacturing		✓	✓
Air-to-Water Heat Exchangers	Close-coupled water cooling No moving parts exposed to environment	Highest	Very Hot Environments High Heat Load (870W to 6700W) Extremely Dirty/Dusty Air	Extreme conditions where air conditioners would be subject to failure Automotive manufacturing Machine tool Packaging Paper mill	✓		✓
Filter Fans, Blowers, Impellers or Direct Air Cooling Systems (DACs)	Forced, fresh air Open loop	Low to Moderate	Cool, Clean Air Environment	Industrial manufacturing Outdoor telecom Data networking		✓	
Vortex Coolers	Requires compressed air source Forced air No liquids or moving parts	Moderate	Hot Environments (typically over 35 C/95 F) Heat Load (up to 1,465W) Dirty or Corrosive Air Harsh/Humid Environments	Heavy manufacturing Metal working Oil rig/refinery Paper mill Foundry Hazardous location models available	✓		✓
Conductive (no cooling unit)	Passive Heat radiates through enclosure walls	Very Low	Cool Air Environment (<78 F/25 C) Low Heat Load (<50W)	Where enclosed components operate within recommended temperature range		✓	Per enclosure rating



CLOSED-LOOP



OPEN-LOOP



CONDUCTIVE

FOR MORE INFORMATION: [HOFFMANONLINE.COM](http://HOFFMANONLINE.COM)

# HOFFMAN COOLING

A WIDE RANGE OF THERMAL MANAGEMENT SOLUTIONS FOR CRITICAL APPLICATIONS

Hoffman SpectraCool™ Air Conditioners are available in three configurations



## ENVIRONMENTALLY FRIENDLY AIR CONDITIONERS FOR RUGGED ENVIRONMENTS

Delivering reliable enclosure cooling in the most extreme indoor and outdoor environments, **Hoffman SpectraCool™ Air Conditioners** feature a new, filterless design that reduces clogging, which can cause system failures. With its energy-efficient compressor and earth-friendly refrigerant, SpectraCool air conditioners are available in three configurations that offer a broad range of cooling capacities, power input, and mounting options.

### FEATURES

- Models with 1,000 to 20,000 BTUs/Hr cooling power for indoor, outdoor, and harsh environments
- Standard, Narrow, and Compact configurations
- Compressors that deliver up to 23 percent greater energy efficiency
- Produces just 68 dB for quieter operation
- Wide range of outdoor operating temperatures: -40 F/-40 C to 131 F/55 C
- Dust-resistant coil design supports filterless operation in most environments
- 115, 230 or 400/460 3-phase VAC power supply
- Integrated active condensate evaporator with heater strip
- Clean, aesthetic design
- R134a and R407c earth-friendly refrigerant
- Built-in flanges for easy installation

## A BOLT-ON UPGRADE SOLUTION FROM OLDER A/C UNITS

When older model air conditioners need to be replaced, **Hoffman Easy Swap™ adaptor plenums** provide a quick and easy way to upgrade to a state-of-the-art Hoffman SpectraCool unit using the existing enclosure cut-out with no modifications needed.

### FEATURES

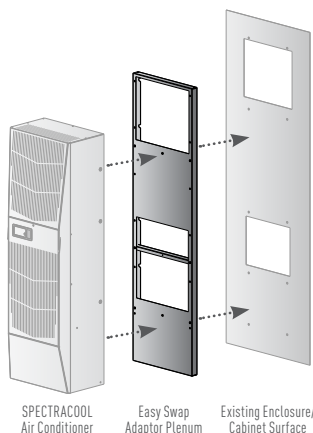
- Get the A/C you need with the enclosure you already own
- Consolidate A/C models and parts; save by reducing inventories and suppliers
- Eliminate labor to modify or cut existing cut-outs for unit upgrades
- Maintain Type 12 and IP54 ratings

## MONITOR AND MANAGE THE HEALTH OF YOUR ENTIRE COOLING SYSTEM FROM YOUR PC

**Hoffman SpectraCool Remote Access Control** is a parametric controller designed for monitoring and management of an entire network of SpectraCool air conditioners. Available as a factory-installed option integrated with select SpectraCool models, remote access control assigns a unique IP address to each equipped unit to monitor and control operation from a personal computer via USB using Modbus, or Ethernet using SNMP or EtherNet/IP. Units are pre-programmed with heating and cooling setpoints that can be viewed and easily adjusted to changing needs.

### FEATURES

- Direct and remote control of cooling, heating, alarms, compressor, ambient fan, and controller
- Integrated 3-digit display of status codes and cabinet temperature
- Seven non-latching alarm conditions including door open, smoke detection, high pressure, air inlet and outlet temperature sensors, low temperature, high temperature, and frost



Hoffman Easy Swap™ adaptor plenums are available in a wide range of models. Download the Easy Swap App to your mobile device to easily identify your replacement air conditioner.



Hoffman SpectraCool Remote Access Control offers PC monitoring and control





### SIDE-MOUNT FILTER FANS

Hoffman Filter Fans are available in a wide selection of Type 1, Type 12, and Type 3R models offering compact, click-fit design for easy installation in the tightest spaces.

#### FEATURES

- Airflows ranging from 16 CFM (28 M<sup>3</sup>/Hr) to 571 CFM (970 M<sup>3</sup>/Hr)
- Sizes from 4 in. to 13 in. with shallow depth models to fit tight spaces
- Reverse airflow option to push/pull air through higher static pressure
- Similar cut-out sizes to match other filter fan manufacturers



Peltier-effect cooling up to 200 Watts with the Hoffman Thermoelectric Cooler

### COMPRESSOR-FREE AIR CONDITIONING FOR SMALL INDOOR OR OUTDOOR ENCLOSURES

Hoffman Thermoelectric Coolers provide reliable, Peltier-effect cooling in small-space environments where conventional cooling methods are not feasible. Refrigerant-free, filterless design requires no compressor and virtually eliminates maintenance.

#### FEATURES

- 13 standard models
- Cooling capacities from 60 to 200 Watts (nominal); (204 to 682 BTUs/Hr)
- Broad operating temperature range of -40 F/-40 C to 131 F/55 C
- DC powered operation for 24 V and 48 V applications
- Optional temperature controller and condensate manager

### A ROBUST SOLUTION FOR COOLING CABINETS IN THE TOUGHEST INDUSTRIAL ENVIRONMENTS

Hoffman® ClimaGuard™ Air-to-Water Heat Exchangers are an efficient, maintenance-free, and low-noise solution for cooling indoor enclosures in industrial applications. Unaffected by airborne contaminants with no moving parts exposed to the environment, these side-mount heat exchangers outperform passive cooling solutions and fans. ClimaGuard heat exchangers are ideal for applications exposed to high-ambient temperatures and/or extremely dusty and dirty conditions that make traditional air conditioners susceptible to mechanical failures.

#### FEATURES

- 870 Watts to 6700 Watts (3,000 – 23,000 BTUs/Hr) available capacities
- Patented system for recovery and evacuation of condensation (REC)
- Filterless design for ease of maintenance
- Regulating mechanical thermostat
- 115 or 230 VAC power supply



Hoffman ClimaGuard™ Air-to-Water Heat Exchangers for indoor sealed cabinets

Compact and reliable Hoffman Vortex A/C coolers



### HIGHLY RELIABLE AND VIRTUALLY MAINTENANCE-FREE COOLING

Hoffman Vortex A/C Enclosure Coolers offer dependable operation with almost no moving parts. Designed for use with a compressed air supply, Vortex A/C units are ideal for high-performance cooling in ambient temperatures up to 175 F/80 C, dirty, corrosive or humid environments, and many hazardous location classes.

#### FEATURES

- Multiple cooling capacities available from 900 BTUs/Hr (264 Watts) to 5,000 BTUs/Hr (1,465 Watts)
- Requires just 1/10th of the space for comparable air conditioner units
- Up to 78 percent quieter than traditional tube vortex coolers
- NEMA 12, NEMA 4/4X and Class I, Div. 2, Class II, Div. 2 and Class III hazardous location-rated models available

FOR MORE INFORMATION: [HOFFMANONLINE.COM](http://HOFFMANONLINE.COM)

# LOCAL SERVICE

COVERAGE YOU CAN COUNT ON

With Hoffman, you're assured of the most complete maintenance and service offerings. That means reduced downtime, higher levels of overall system performance, and maximum operational life for your protected equipment. Our product quality and complete aftermarket care keeps your equipment running.

Hoffman offers pre- and post-sales services and support to let you choose the right cooling product for the job, and tailor the level of assurance you need to mitigate risks. Our plans and offerings include

- A choice of flexible service plans that can be customized to your needs
- Extended product warranties
- Operator and maintenance training programs
- Custom installation, commissioning, and upgrades



**6,700**  
AUTHORIZED  
TECHNICIANS  
WORLDWIDE

**Factory-authorized  
service available  
around the globe**

## AN UNRIVALED STRATEGIC PARTNERSHIP FOR THE MOST RESPONSIVE LOCAL SERVICE



Through partnership with Johnson-Northwest, Hoffman offers unsurpassed service presence and response in North America with expertise that reaches worldwide. JNW delivers full-service capabilities and complete in- and out-of-warranty service for Hoffman cooling products from over 570 local service locations in North America.

Through JNW, Hoffman offers

- 24/7/365 service availability
- Online service requests
- Factory-authorized expertise to service all Hoffman and McLean® models and many competitor models
- Local service in hundreds of North American cities and around the globe
- In-stock availability for selected cooling parts
- Global coordination of service and maintenance programs
- Expedited service and parts availability
- Extensive reporting capabilities including up-to-date status monitoring
- Automatic emails about change-to-repair-order status

**Hoffman®**



# PEACE-OF-MIND

INCLUDED WITH EVERY HOFFMAN PRODUCT

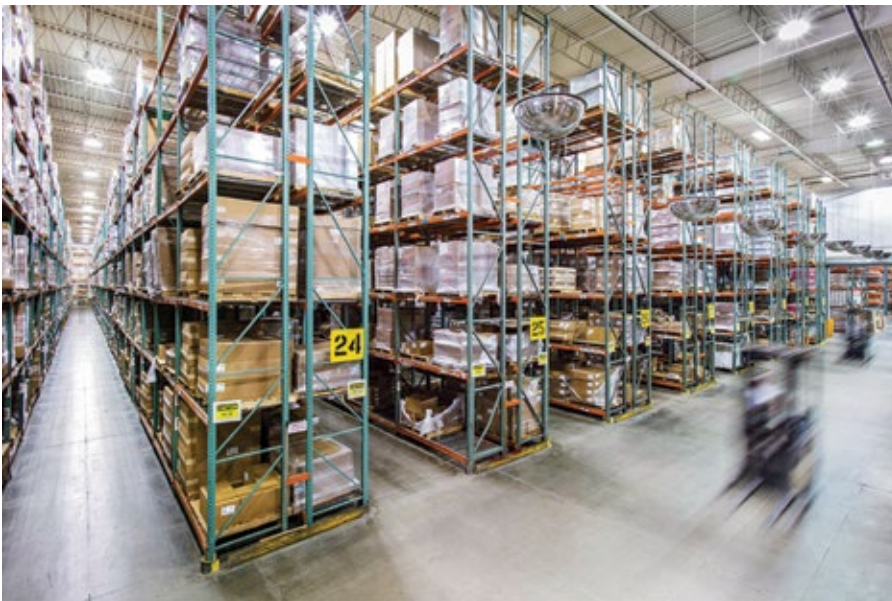
## ONE YEAR STANDARD WARRANTY

Hoffman Cooling products are warranted to be free from manufacturing defects in materials and workmanship for one year from date of shipment.\*

\* Subject to certain conditions and exclusions.

## EXTENDED COVERAGE AVAILABLE

Reduce the risk of unplanned repair costs and budget for predictable operating expenses with an extended coverage plan from Hoffman.



## PARTS BUNDLES HELP YOU STAY PREPARED

Designed for your specific Hoffman Cooling units and to anticipate the requirements of your applications, our maintenance and field support bundles offer essential parts to maintain your equipment or restore operation in the event of a failure. Maintenance and support bundles can be purchased when the unit is installed, or any time after the unit is put into service.

### HOFFMAN MAINTENANCE BUNDLES

- Includes the necessary consumables required to perform scheduled maintenance on your Hoffman unit

### HOFFMAN SUPPORT BUNDLES

- Includes critical service parts designed to quickly restore operation in the event of a breakdown
- Tailored to your Hoffman Cooling model and application

## LOCAL AVAILABILITY MEANS PARTS IN HOURS, NOT WEEKS

In each global region, our local distributors have access to large inventories of service parts. Repair technicians worldwide can place parts orders regionally, eliminating communication barriers and ordering delays. Hoffman parts are usually available in-stock or shipped within hours, versus shipping delays that can last weeks.

OVER  
**1,000**  
COOLING  
SPARE PARTS  
WHEN YOU NEED  
THEM

FOR MORE INFORMATION: [HOFFMANONLINE.COM](http://HOFFMANONLINE.COM)

# CUSTOM ENGINEERING

## DEVELOPMENT, TESTING & CERTIFICATION CAPABILITIES



### OUR DEVELOPMENT PROCESS ENSURES TIMELY DELIVERY

All custom cooling projects are assigned a lead thermal engineer and supported by a dedicated cross-functional team. Using proprietary software to develop cooling system prototypes, cooling performance is calculated and simulated utilizing different technologies, configurations, and sizes prior to build. Prototypes can be developed in as little as two weeks.

### TESTING AND CERTIFICATION

A battery of advanced testing is available with mechanical and environmental stresses measured beyond industry standards, including temperature extremes, airflow, UV, dust, corrosion and salt spray, seismic and vibration, EMI/RFI, and water ingress. Each system can be engineered to meet UL, cUL, CSA, Telcordia, NEMA, IEC, European Safety, and FCC compliances and standards.

### ENGINEERED SOLUTIONS TO MEET YOUR COOLING CHALLENGES

Hoffman can custom-engineer cooling solutions for many enclosed controls, electronic devices or electrical systems

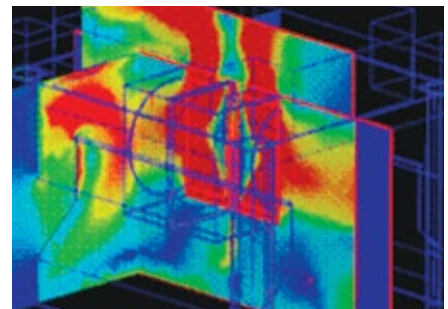
- Design and build capabilities to perform in extreme environments
- Rapid prototyping
- UL/CSD certified testing facility and capabilities to meet global certification standards
- 60+ years of custom engineering experience

Custom cooling projects are engineered to meet performance demands for thermal loads, size and configuration considerations, and environmental requirements. Solutions include

- Closed- or open-loop cooling
- Indoor and outdoor environments
- Remote monitoring and control capabilities
- Direct air cooling systems
- General, targeted or remote cooling
- Low- to no-maintenance solutions
- Custom packaged blowers and fan assemblies
- High-efficiency AC and DC power solutions and battery backup options
- Corrosion-resistant designs, materials and finishes including stainless steel, non-metallic materials, coatings, and paints
- Proven, environmentally friendly components
- Thermal and environmental management solutions including heating, condensation management, pressure compensation, temperature monitoring, and control



Superior cooling solutions driven by highly experienced engineering and design teams



State-of-the-art engineering, prototyping and testing combined with uncompromising manufacturing delivers optimal performance



## TECHNICAL SUPPORT

cooling.support@pentair.com

**1-866-545-5252**

- Technical assistance
- Service and warranty support
- On-line resources
- Specifications and drawings

## AFTERMARKET SUPPORT – REGIONAL LOCATIONS

### NORTH AMERICA

2100 Hoffman Way  
Minneapolis, Minnesota 55303-1745 U.S.A.  
Tel: +1-763-421-2240

### BRAZIL

Rua Joao Marcon, 165  
18550.000 – Centro  
Boituva – SP  
Tel: +55 15 3363 9100

### EUROPE

Langenalber Straße 96-100  
75334 Straubenhardt, Germany  
Tel: +49 (0) 7082 794-0

### CHINA

21st Floor of Cloud Nine Plaza  
No. 1118 West Yan'an Road  
Changning District, Shanghai  
P.R. China  
Tel: +86 400 820 1133

### SINGAPORE

18 Boon Lay Way  
TradeHub 21, #04-110/111  
Singapore 609966  
Tel: +65 6795 2213





FOR MORE INFORMATION AND TO CONTACT US, GO TO: [HOFFMANONLINE.COM](http://HOFFMANONLINE.COM)



**EQUIPMENT PROTECTION SOLUTIONS**

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