



CONNECT AND PROTECT

Enclosure Cooling Solutions


nvent

HOFFMAN



nVent HOFFMAN Enclosures and Cooling

FOR COMPLETE AUTOMATION PROTECTION



nVent 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

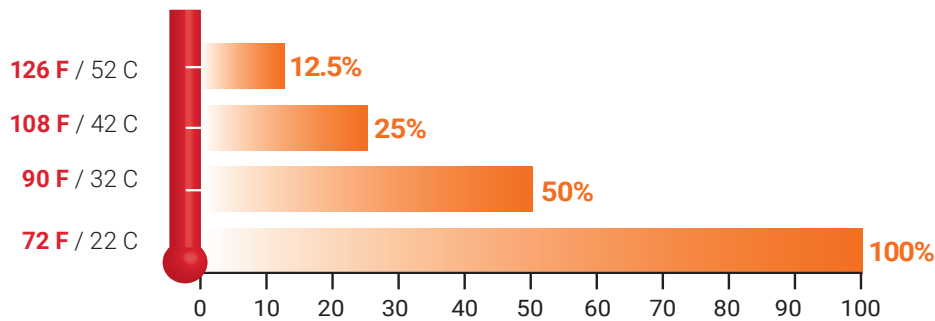
OVER
12,000
STANDARD
PRODUCTS

For more information: nVent.com/HOFFMAN

Why Use Cooling?

HEAT DAMAGES AND REDUCES THE LIFE OF YOUR ELECTRONICS

Electronics Life Expectancy is Reduced by Half with Every 18 F Rise Above Room Temperature



ELECTRONICS LIFE EXPECTANCY = %
Source: Digital Equipment Corporation

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



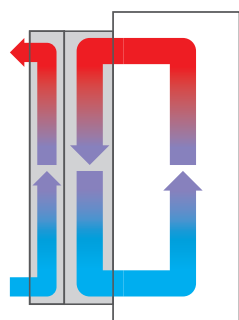
SpectraCool Air Conditioners are available in multiple configurations to fit a broad range of cooling capacities, power input, and mounting options.

Cooling Strategies

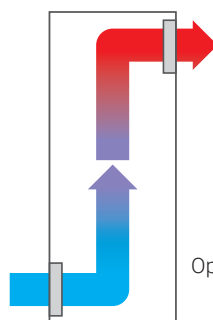
CHOOSING A SOLUTION TO MAXIMIZE THE OPERATIONAL LIFE OF YOUR ELECTRONICS

HOFFMAN COOLING SYSTEMS CHARACTERISTICS

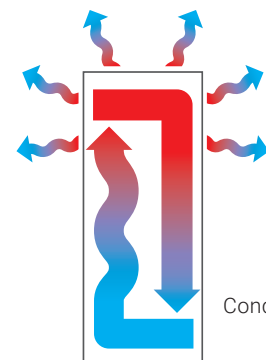
COOLING SYSTEM TYPE	TECHNOLOGY DESCRIPTION	HEAT REMOVAL RANGE	ENVIRONMENT TYPE	TYPICAL APPLICATIONS	Cools Below Ambient	Cools Above Ambient	Closed Loop
Air Conditioners	Forced air Refrigerant-based	High	Hot Environments (typically over 35 C/95 F) High Heat Load (300W-17,300W) Dirty or Corrosive Air Harsh/Humid Environments Hazardous Locations	Indoor or Outdoor Industrial enclosures Telecommunications Wastewater treatment Metal working Foundry Oil & Gas Operations	✓		✓
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 Hazardous Locations	Indoor or Outdoor Telecommunications Light-duty manufacturing Oil & Gas Operations		✓	✓
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 Hazardous Locations	Extreme conditions where air conditioners would be subject to failure Automotive manufacturing Machine tool Packaging Paper mill Oil & Gas Operations	✓		✓
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 Hazardous Locations	Heavy manufacturing Metal working Oil rig/refinery Paper mill Foundry Oil & Gas Operations	✓		✓
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

HOFFMAN Cooling

A WIDE RANGE OF THERMAL MANAGEMENT SOLUTIONS FOR CRITICAL APPLICATIONS

HOFFMAN SpectraCool Air Conditioners are available in multiple 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 multiple 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
- 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
- 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 Adapter 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



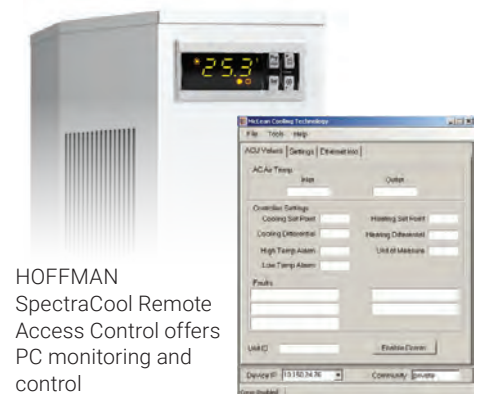
HOFFMAN Easy Swap adaptor plenums are available in a wide range of models. Download the Easy Swap App to your mobile device to easily identify your replacement air conditioner.

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, Profinet 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



Cooling products have robust designs and are engineered specifically for hazardous locations.



HAZARDOUS LOCATION COOLING

HOFFMAN Cooling products offer air conditioners with an attractive design, heaters, and Vortex coolers.

HAZLOC A/C FEATURES

- Class 1 Div 2 Groups B, C, D T4
- Models with 4,000 to 11,000 BTUs/hr cooling power for
- Attractive design with no heavy cast enclosure
- 115, 230, and 400/460 3-phase VAC power supply
- Narrow construction to fit any 12" deep enclosure
- Type 4, 4X and Offshore models available

HAZLOC HEATER FEATURES

- Class 1 Div 1 Groups A, B, C, D T4
- ATEX IECEx II2G Ex d IIC T3 / II2 D Ex Td A21 IP65 T200 C
- 50W, 80W, 200W, 300W, 400W and 600W models available
- Provides freeze Protection down to -76 F / -60 C
- Conductive and Convection heating types available

HAZLOC VORTEX COOLER FEATURES

- Class 1 Div 2 Groups A, B, C, D and Class 2 Div 2 Groups F & G
- Approved for 175 F (80 C) maximum ambient temperature
- Mechanical thermostat reduces energy consumption
- Quieter operation with noise level of 60 70 75 dBA
- Cooling capacities update to 5000 BTU/Hr. (1465 W)



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.

FEATURES

- Airflows ranging from 16 CFM (28 M3/Hr) to 571 CFM (970 M3/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



HOFFMAN ClimaGuard Air-to-Water Heat Exchangers for indoor sealed cabinets

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. 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
- UL Listed; CE Approved

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

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

Custom Engineering

DEVELOPMENT, TESTING & CERTIFICATION CAPABILITIES



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



Superior cooling solutions driven by highly experienced engineering and design teams

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

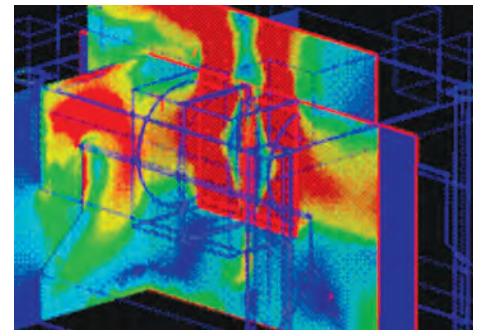
- Closed- or open-loop cooling
- Indoor and outdoor environments
- Remote monitoring and control capabilities
- Direct air cooling systems
- General, targeted or remote cooling
- Low- to no-maintenance solutions
- Custom packaged blowers and fan assemblies
- High-efficiency AC and DC power solutions 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

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.



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

TECHNICAL SUPPORT

cooling.support@nvent.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: +65.6768.5800



North America

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Tel: +1.763.421.2240

Mexico, D.F.

Tel: +52.55.5280.1449

Toronto, Canada

Tel: +1.416.289.2770

South America

Sao Paulo, Brazil

Tel: +55.11.5184.2100

Boitura, Brazil

Tel: +55.15.3363.9148

Europe

Betschdorf, France

Tel: +33.3.88.90.64.90

Straubenhardt, Germany

Tel: +49.7082.794.0

Dzierzoniow, Poland

Tel: +48.74.64.63.900

Lainate, Italy

Tel: +39.02.932.7141

Middle East & India

Dubai, United Arab Emirates

Tel: +971.4.378.1700

Bangalore, India

Tel: +91.80.6715.2001

Asia

Shanghai, P.R. China

Tel: +86.21.2412.6943

Singapore

Tel: +65.6768.5800

Shin-Yokohama, Japan

Tel: +81.45.476.0271

Seoul, Korea

Tel: +82.2.2129.7755

Qingdao

Tel: +86.532.8771.6101

Our powerful portfolio of brands:

CADDY

ERICO

HOFFMAN

RAYCHEM

SCHROFF

TRACER



nVent.com/HOFFMAN