ThermoKey®

Heat Exchange Solutions

V-Tower

Power-J V-Tower dry cooler

Evaporative Panel System Fluid Cooler

INDUSTRIAL HIGHLIGHTS

NO AEROSOLS

Indirect cooling system with no aerosol.

HIGHER SPECIFIC CAPACITY

Adiabatic system with evaporative panels to reach higher specific capacity compared to a traditional Fluid Cooler.

COMPLETE CONTROL

Optimization and complete control of the adiabatic system.

SMART MODULARITY

Smart modularity of the system to obtain maximum simplicity in use and reliability.

The EPS adiabatic system

ADIABATIC SYSTEM: HOW IT WORKS

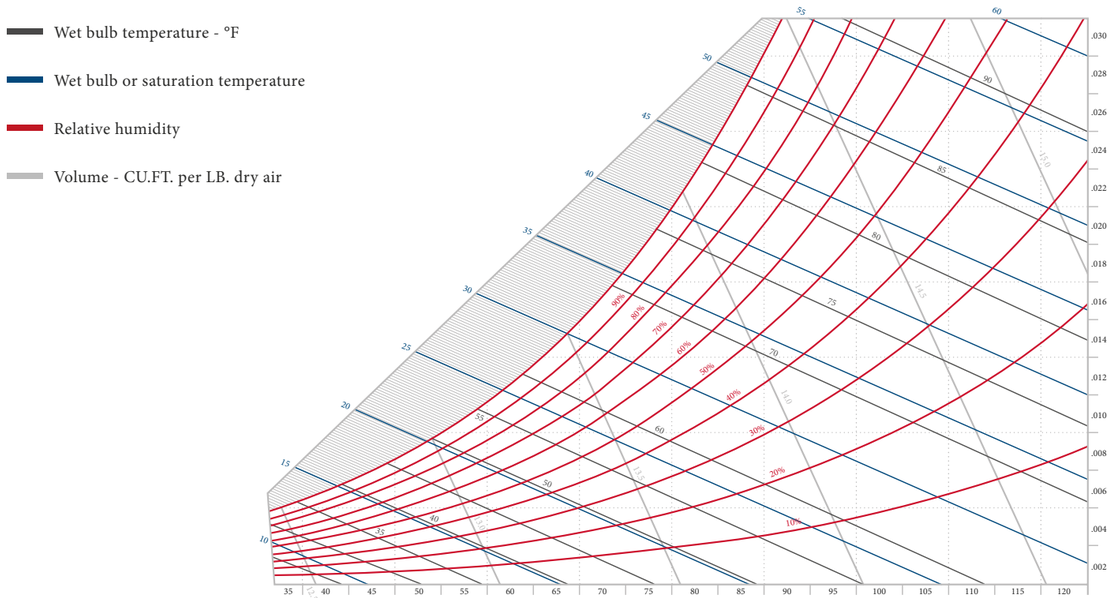
The physical principle is the latent heat of evaporation: when evaporating the water absorbs heat from the air entering in the heat exchanger and lowers its temperature.
The adiabatic system applied to fluid coolers and large remote condensers or gas-coolers is activated in order to reduce the air inlet temperature and increase the heat exchange.

ThermoKey has developed different adiabatic systems to be effective and efficient under various environmental conditions.

CUSTOM MADE SYSTEM

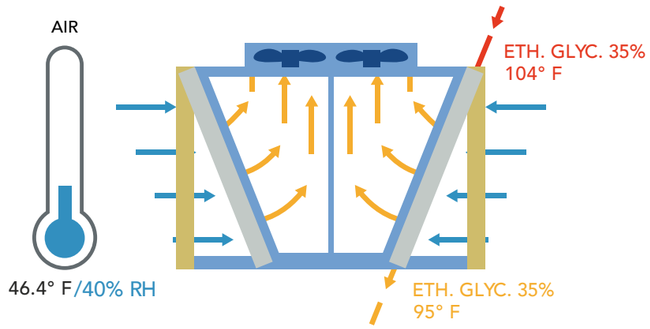
The most important parameters to take into consideration when choosing the correct adiabatic system are:

- Forecasted working hours per year;
- Obtainable relative humidity gap (efficiency);
- Obtainable saturation; maximum difference of dry bulb temperature between ambient air temperature and suction air temperature after the adiabatic cooling.



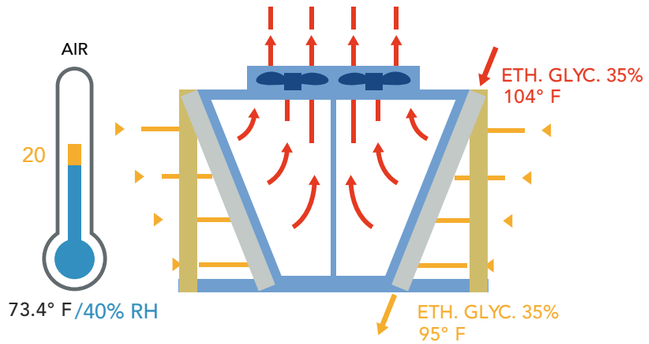
OPERATING MODES OF THE ADIABATIC SYSTEM

- **Water Saving:** increased specific capacity when using H_2O - (H_2O when engine at maximum).
- **Energy Saving:** energy saving to help the fan (H20 immediately).



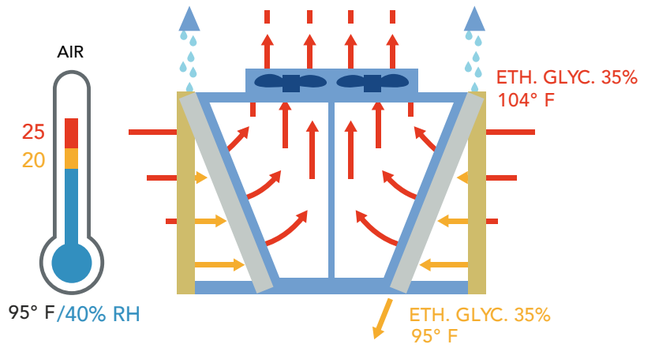
DRY CONDITION

with low ambient temperature, below the switch-point temperature, with fans at minimum.



DRY CONDITION

with high ambient temperature, below the switch-point temperature, with fans at maximum.



WET CONDITION

with ambient temperature above the switch-point temperature. Fans at maximum to save water or fans in regulation to save energy.

Operation and Strengths of V-Tower

NO WATER TREATMENT NEEDED

The water used for the adiabatic system equipped with evaporative panel does not require specific treatments.

REDUCED WATER AND ENERGY CONSUMPTION

The system works using the minimum amount of water required for the adiabatic cooling, thanks to the high efficiency of the panels, to the water distribution and flow regulation systems. Energy consumption is optimized through the use of low consumption electronically controlled fan motors in combination with the use of the adiabatic system.

UNLIMITED HOURS PER YEAR

The used panels have no limitation in operation hours.

LOW TOTAL COST OF OWNERSHIP

The easy installation of the modular EPS system, the minimized operating costs, the reduced maintenance, and the cost-free panel disposal mean that the cost of ownership during the operational life is extremely low.

NO TREATMENT OF THE HEAT EXCHANGER

No treatment of the heat exchanger is necessary because the EPS system does not generate aerosols.

HEAVY DUTY DESIGN

The adiabatic EPS system has a strong structure and uses materials suitable to last even the most severe environmental conditions.

Benefits

- Easy installation and maintenance
- Energy efficient
- Custom made solutions
- High resistance to corrosion
- Low ratio of capacity vs. footprint
- Process temperature control
- 2-Year Warranty

Applications HVAC/R, Energy and Process Cooling

- Power generation
- Food process cooling industry
- Data Center cooling
- Air conditioning
- Industrial process cooling
- Tooling machines
- Metal processing
- Pharmaceutical
- Plastic
- Textiles

Technical features

HIGHLY FUNCTIONAL EVAPORATIVE PANELS

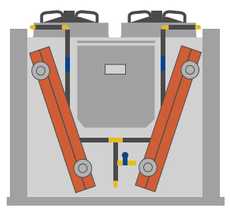
- No water treatment required
- High quality materials
- Easily removable panels for maintenance and storage, available in two solutions: vertical (J- and Super J- Series) for a better water distribution and sloping (Super J-Series) for the systems where it is necessary to save space, allowing better air recovery as serial large installations.
- No aerosols
- Legionella-free
- Dry cooled coil
- No deposits or corrosion
- Reduced disposal costs

EXCEPTIONAL DESIGN FOR WASTE AND ENERGY SAVING MODE

- Reduced water consumption
- Microprocessor fans controller
- Low energy consumption thanks to EC fans
- Phase cut speed controller
- Inverter
- Low water consumption thanks to dry/wet control board and regulating devices
- Wired and ready to use

EPS SYSTEM COMPLIANT TO HYGIENE DIRECTIVES

- Hygenic operation
- Plume-free
- No accumulation and stagnation of water
- Automatic draining

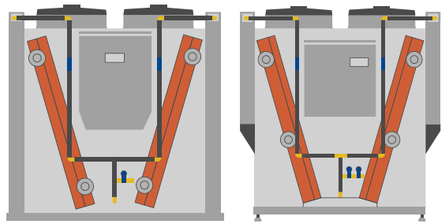


J-SERIES V-TOWER

Capacity Range Up to 400 tons of cooling
Up to 16 fans

Sizes 33ft

Weight 11,000 lbs

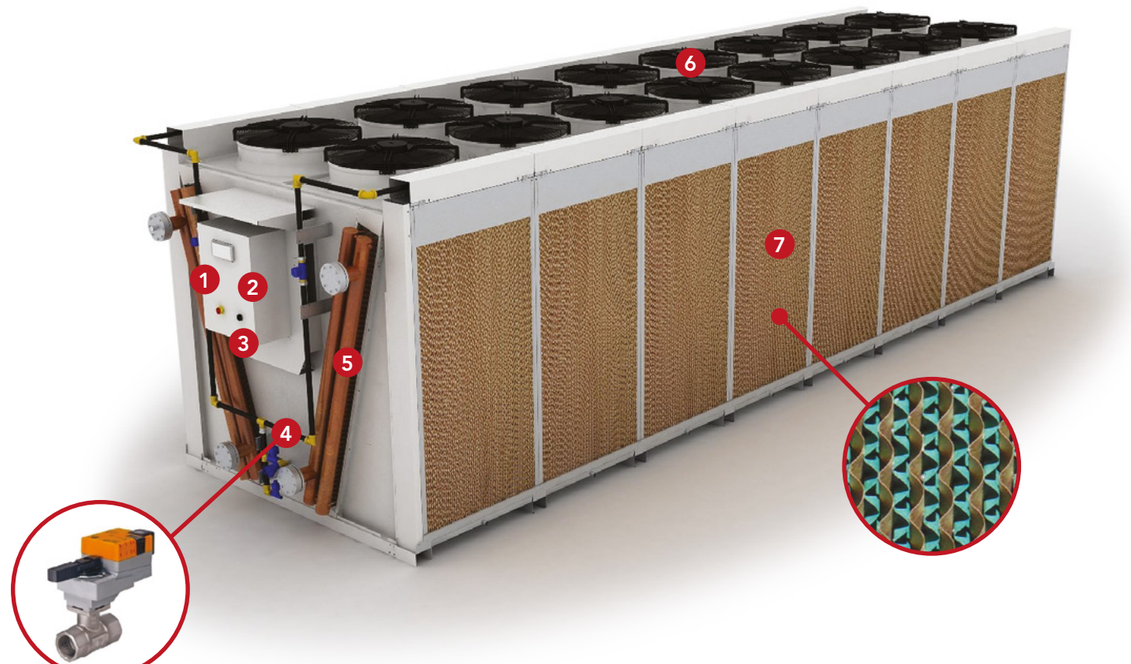


SUPER J-SERIES V-TOWER

Capacity Range Up to 400 tons of cooling
Up to 20 fans

Sizes 40 ft

Weight 13,860 lbs



1 ELECTRICAL PANEL

Electrical panel for EC fans with paint coated metal casing, controller mounted inside the box, protected by automatic switches (circuit breakers) connected to groups of fans, fan regulation control (modbus RS485).

2 SPECIFIC CONTROL BOARD FOR EPS SYSTEM

Controls the water opening and closing valves to optimize their consumption.

3 PIPING NETWORK CONNECTION

HD polyethylene pipe, brass fittings, manual balancing valves, charging solenoid valve, discharge solenoid valve (pre-assembled), fixing brackets, and stainless steel screws.

4 MOTORIZED MODULATING VALVES

Balanced flow valves with electronic signal control for optimal regulation of the flow rate of each EPS system ramp.

5 WATER DISTRIBUTION PIPING FOR EPS MODULES

HD polyethylene pipe, brass fittings, stainless steel hoses, RAL7035 painted FeZn pipe fixing brackets (pre-assembled). RAL7035 painted FeZn tube protection metal sheets, and stainless steel screws.

6 910 EC FANS

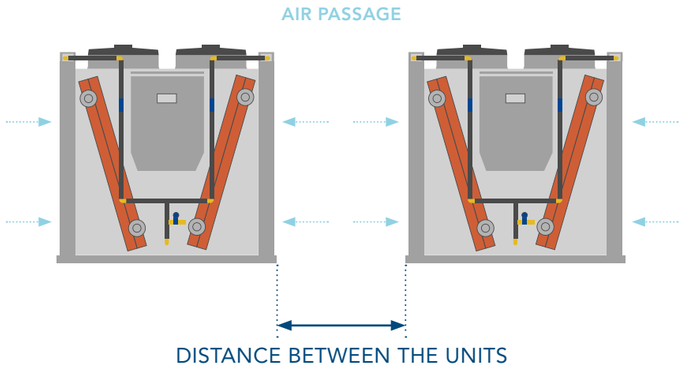
Up to 20 fans

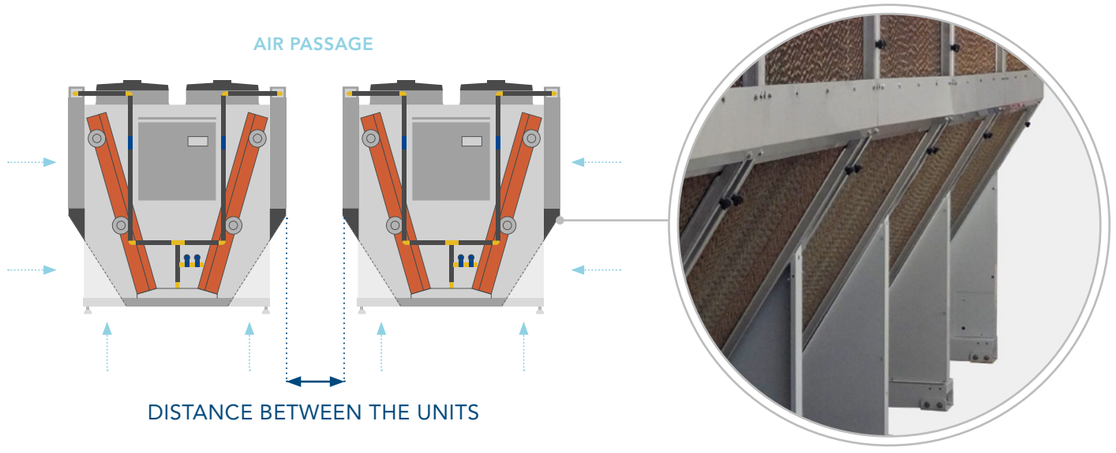
Fan regulation with Electrical Panel with EC manager control.

7 EPS MODULE KIT

Removable stainless steel modular frame, cellulose-treated evaporative panels, water distribution cross with full cone nozzles, modular discharging driptray with piping, resistant to low and high temperatures, resistant to ultraviolet rays and aggressive substances with pre-assembled EPDM lamellar gaskets. Upper covers openable for nozzle cleaning. Nozzles easily disassemblable.

Industrial vertical V-Tower vs sloping V-Tower





The sloping V-Tower solution saves space when there are more than one unit next to one another without reducing the operating efficiency.

Construction Features

STANDARD FRAMES

The standard frames have a high structural rigidity in galvanized metal sheets with a high thickness of zinc to guarantee resistance and durability in the most severe environmental conditions. All the visible galvanized metal sheets are also painted with RAL7035 epoxy-polyester powders after the mechanical operations to guarantee the maximum protection possible against corrosion.

MAXIMUM SECURITY

In addition, to ensure maximum safety in handling and installation operations for the entire life of the product, the lifting and fixing supports are made of hot galvanized structural steel as well as being painted with epoxy-polyester powder, and the internal reinforcement brackets are in stainless steel as well as the all fixing elements (screws, nuts and rivets).

HEAT EXCHANGER

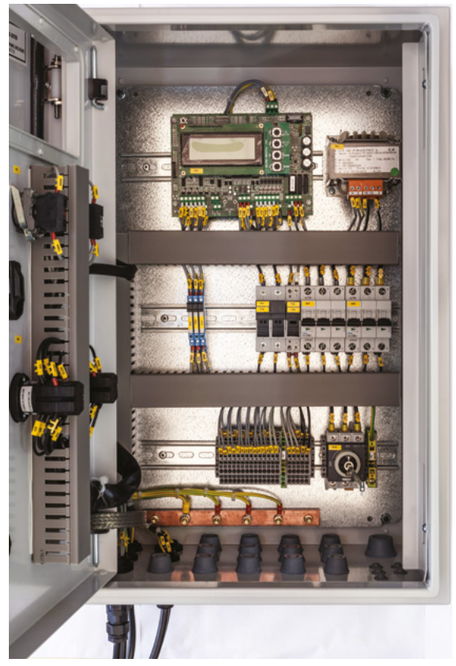
The finned pack heat exchangers use aluminum alloy plates with deep-drawn holes to avoid damage to copper pipes due to thermal expansion. The high magnesium content alloy gives structural resistance and high protection from atmospheric agents, guaranteeing the maximum heat exchanger operational life.

MATERIALS AND SPECIAL TREATMENTS

Special materials and treatments can be supplied on request both for the frames and for the exchangers with different combinations for the maximum protection possible in particularly extreme environments.

Intelligent Control

Control operation becomes fundamental and strategic for efficient functioning, such as automatic self-adjustment to reduce consumption costs.
Furthermore, the operating capacity of the single units is fully optimized, the installation is easy, can be adapted to different types of spaces, and the parameters can be comfortably entered to guarantee maximum operating efficiency.



Optional

FANMOTORS WITH AXITOP

On request the fan motors can be equipped with diffusers that allow the reduction of the sound level or the increase of efficiency and performance and the increase of the air throw.

FAST SUITABLE DRAINING HEAT EXCHANGERS

FAST SELF-DRAINING SYSTEM ThermoKey has designed a reliable self-emptying drainable system during winter time to avoid freezing risk of the finned pack.

HEAT EXCHANGERS WITH SURFACE TREATMENTS

Fin painting for extreme environments (e.g. to avoid oxidation).

STAINLESS STEEL TUBES, FINS AND COIL CASING

ThermoKey can also produce heat exchangers completely in 304 or 316L stainless steel for special applications (particularly extreme environments) or fluids.

EC E AC FANMOTORS WITH DEDICATED CONTROL

- R - phase cut speed controller
- SINGLE-PHASE R – phase cut speed controller
- G – step fan speed controller
- Z – inverter speed controller with sinusoidal filters installed
- P – special cut phase fan speed controller (on demand)

SHOCK ABSORBERS

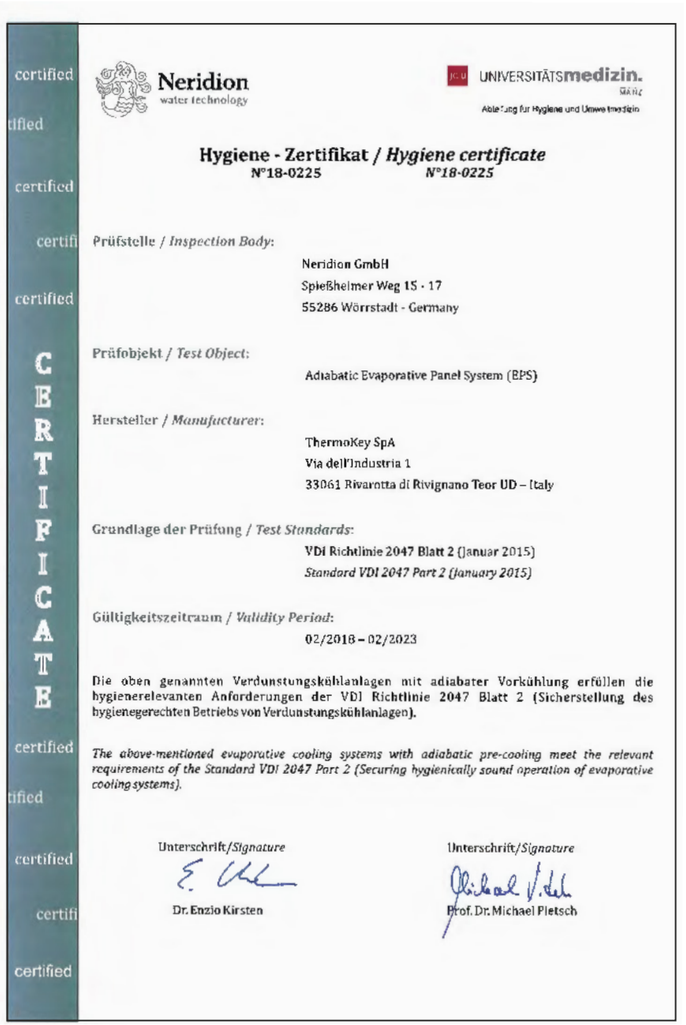
Shock absorbers can considerably reduce the vibratory disturbance, as well as the noise, since they are installed between the source of vibration and the mechanical anchoring. It is possible to select these anti-vibration bases or require special dampers for high-seismicity environments.

ELECTRICAL PANELS FOR REMOTE CONTROL AND READING

The control panels of EC fan motors and EPS system are available on request. The on-board electronics are prepared for modbus signal distribution (RS485).

Hygienic Certification

To guarantee the highest quality and safety of its products, ThermoKey has had its EPS system (Adiabatic Evaporative Panel System) certified by an independent institution.
The hygienic certificate refers to VDI 2047-2 which takes into consideration the requirements set by the law and by industry standards in the main countries of use of the specific product.



certified

Neridion water technology

UNIVERSITÄTSmedizin. Mainz

Abteilung für Hygiene und Umweltmedizin

Hygiene - Zertifikat / *Hygiene certificate*
N°18-0225 **N°18-0225**

Prüfstelle / *Inspection Body*:
Neridion GmbH
Spießheimer Weg 15 - 17
55286 Wörrstadt - Germany

Prüfobjekt / *Test Object*:
Adiabatic Evaporative Panel System (EPS)

Hersteller / *Manufacturer*:
ThermoKey SpA
Via dell'Industria 1
33061 Rivarotta di Rivignano Teor UD – Italy

Grundlage der Prüfung / *Test Standards*:
VDI Richtlinie 2047 Blatt 2 (Januar 2015)
Standard VDI 2047 Part 2 (January 2015)

Gültigkeitszeitraum / *Validity Period*:
02/2018 – 02/2023

Die oben genannten Verdunstungskühlanlagen mit adiabater Vorkühlung erfüllen die hygienerelevanten Anforderungen der VDI Richtlinie 2047 Blatt 2 (Sicherstellung des hygienegerechten Betriebs von Verdunstungskühlanlagen).

The above-mentioned evaporative cooling systems with adiabatic pre-cooling meet the relevant requirements of the Standard VDI 2047 Part 2 (Securing hygienically sound operation of evaporative cooling systems).

Unterschrift/*Signature*
Dr. Enzio Kirsten

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Prof. Dr. Michael Pietsch

CERTIFICATE

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