



## Dry Coolers





Every detail, even the smallest one,  
is designed to achieve  
the best Dry Cooler solution  
which meets the customer needs.

# ThermoKey offers over 180,000 Dry Cooler solutions

- More than 6,000 models.
- 10 types of wiring.
- More than 12 different types of fins and tubes material.
- More than 30 fan types.
- A wide range of fin spacing (from 1.6 mm to 4.5 mm).
- Various fins thicknesses.

## Software Archimede selects the best Dry cooler solution

(range from 6kW to 2219 kW)



# TKArchimede precision and reliability

### CALCULATION FUNCTION

Entry working conditions (requested capacity, temperature and type of the fluid, noise level and eventual other plant restrictions).

### VERIFY FUNCTION

It is possible to verify the performances of each unit in one or more specific working conditions.

### TKARCHIMEDE SELECTS THE UNITS ACCORDING TO PARAMETERS:

- main **fluids** present on the market;
- **altitude, humidity, inlet air temperature**;
- **fans** thickness (automatic adjustment of capacity);
- wide range of **accessories available**:

wiring in the junction box, EC electrical panel, electrical panel with on/off fans regulation, step -or inverter-cut phase speed controller, repair switches, shock absorbers, flanges, casing with a specific color, threaded or flanged connections and innovative adiabatic cooling systems.



### TKArchimede uses the climate data of 537 cities in the world to offer

- Economic analysis: to check the pay-back time on investment (running costs).
- Energy analysis: to verify the energy consumption and the noise levels.



# Every detail is designed to guarantee the best performances

## LIFTING HOOKS

ThermoKey has designed the lifting hooks to ensure a correct and **easy handling of the dry cooler** in compliance with safety standards.

## CROSS AND LONGITUDINAL SECTIONS OF EACH PART

Each fan module is separated from the other thanks to panels in order to **avoid air by-pass** and to **optimize the efficiency of the heat exchanger**. In this way the correct and **proportional functioning of each module is granted**.

## COVERS ON HEADERS AND CROSSES SIDES

A protection cover on headers side and a closing cover on crosses side of the coil **avoid any damage** even on most fragile parts.

## PAINTED CASING

Standard painted casing with C4 protection-class, designed in galvanized steel which is oven painted with polyurethanic resins to guarantee a **perfect durability over time**.

## NITROGEN FILLING WITH FLANGE AND COUNTERFLANGE

In order to **verify the correct pressure of the circuit**, the unit is supplied with a nitrogen filling of about 3 bars, which can be checked on the manometer mounted in factory.

## [OPTIONAL] SELF EMPTY DRENABLE SYSTEM

ThermoKey has designed a proper self empty drenable system during winter time to **avoid freezing risk of the finned pack**.

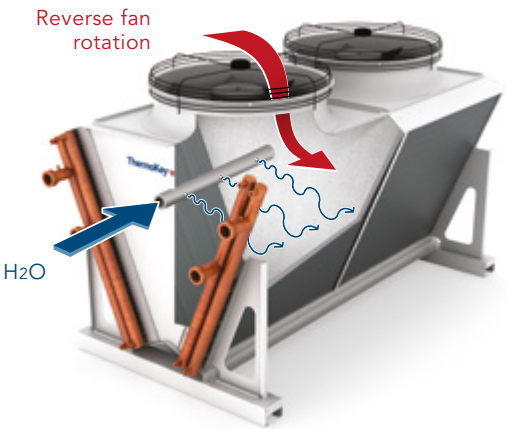
## [OPTIONAL] STAINLESS STEEL TUBES, FINS AND CASING

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



## SCS [OPTIONAL] SPRAY J CLEANING SYSTEM

On V-type units, ThermoKey designed a Cleaning System with internal nozzles, which sprays water from inside to outside, in order to clean the heat exchanger.



## [OPTIONAL] THERMOKEY ADIABATIC COOLING SYSTEMS: HIGH EFFICIENCY TO MEET THE MOST DEMANDING CONDITIONS

### AFS AIR FRESH SYSTEM

ThermoKey adiabatic cooling system equipped with special high-pressure nozzles, which allows to compensate for the speaks of power to be dissipated, with minimum water consumption for maximum of 500 hours per year.

### WFS WET FIN SYSTEM

ThermoKey hybrid cooling system which allows a complete flexibility of operation, working at low pressure (2-3 bars) and for a very high number of hours per year (up to 1000).

### EPS EVAPORATIVE PANEL SYSTEM

The evaporative panel system completes ThermoKey offer for adiabatic cooling. Thanks to a homogeneous and adjustable distribution of water on the panels this system allows to reach a high saturation level and therefore an efficient capacity increase with low water consumption (hours per year 8000).

# Dry Coolers range



## TKMICRO H<sub>2</sub>O MODULAR LIQUID COOLER

<b>Performance range</b>	Capacity for each module up to 120 kW*
<b>Fans</b>	Diameter Ø 800 mm, AC or EC motor
<b>Modules</b>	From 1 to n
<b>Benefits</b>	Modularity Compactness (maximum length of 2245 mm) Low installation costs Regulation or partialisation of the whole unit Lower enviromental impact Less weight Less fluid use Easy-to-clean microchannel core Core coating possibility in case of aggressive ambient



## POWER-LINE DRY COOLERS (1 FAN ROW)

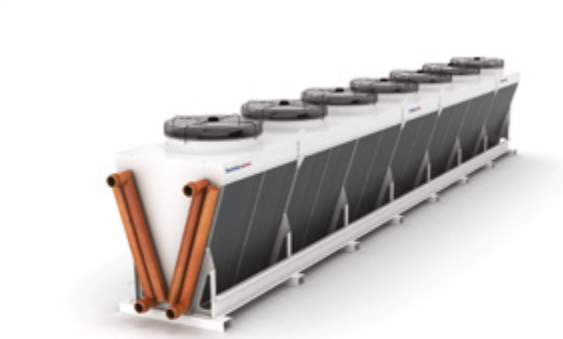
<b>Performance range:</b>	Capacity from 8 to 890 kW (ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C)
<b>Fans</b>	Diameter Ø 500, 630, 800, 900, 1000 mm, AC or EC motor
<b>Benefits</b>	High efficiency geometry Modular design, 1-10 fans 8 sound levels Piping in copper or stainless steel AISI 304 or AISI 316L Finned pack available in a wide range of materials Complete range of accessories Casing in galvanized steel, powder painted



## POWER-LINE DRY COOLERS (2 FAN ROWS)

<b>Performance range</b>	Capacity from 45 to 1123 kW (ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C)
<b>Fans</b>	Diameter Ø 500, 630, 800, 900, 1000 mm, AC or EC motor
<b>Benefits</b>	High efficiency geometry Modular design, 2-16 fans 8 sound levels Piping in copper or stainless steel AISI 304 or AISI 316L Finned pack available in a wide range of materials Complete range of accessories Casing in galvanized steel, powder painted

(\*) **Standard conditions** - ΔT = 15k ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C



## POWER-J DRY COOLERS (1 FAN ROW)

<b>Performance range</b>	Capacity from 70 to 961 kW (ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C)
<b>Fans</b>	Diameter Ø 800, 900, 1000 mm, AC or EC motor
<b>Benefits</b>	High efficiency geometry Modular design, 2-7 fans 8 sound levels Piping in copper or stainless steel AISI 304 or AISI 316L Finned pack available in a wide range of materials Complete range of accessories AFS (Air Fresh System) o WFS (Wet Fin System), available upon request



## POWER-J DRY COOLERS (2 FAN ROWS)

<b>Performance range</b>	Capacity from 126 to 1585 kW (ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C)
<b>Fans</b>	Diameter Ø 800, 900, 1000 mm, AC or EC motor
<b>Benefits</b>	High efficiency geometry Modular design, 4-16 fans 8 sound levels Piping in copper or stainless steel AISI 304 or AISI 316L Finned pack available in a wide range of materials Complete range of accessories AFS (Air Fresh System), WFS (Wet System) or EPS (Evaporative Panel System) available upon request Casing in galvanized steel, powder painted



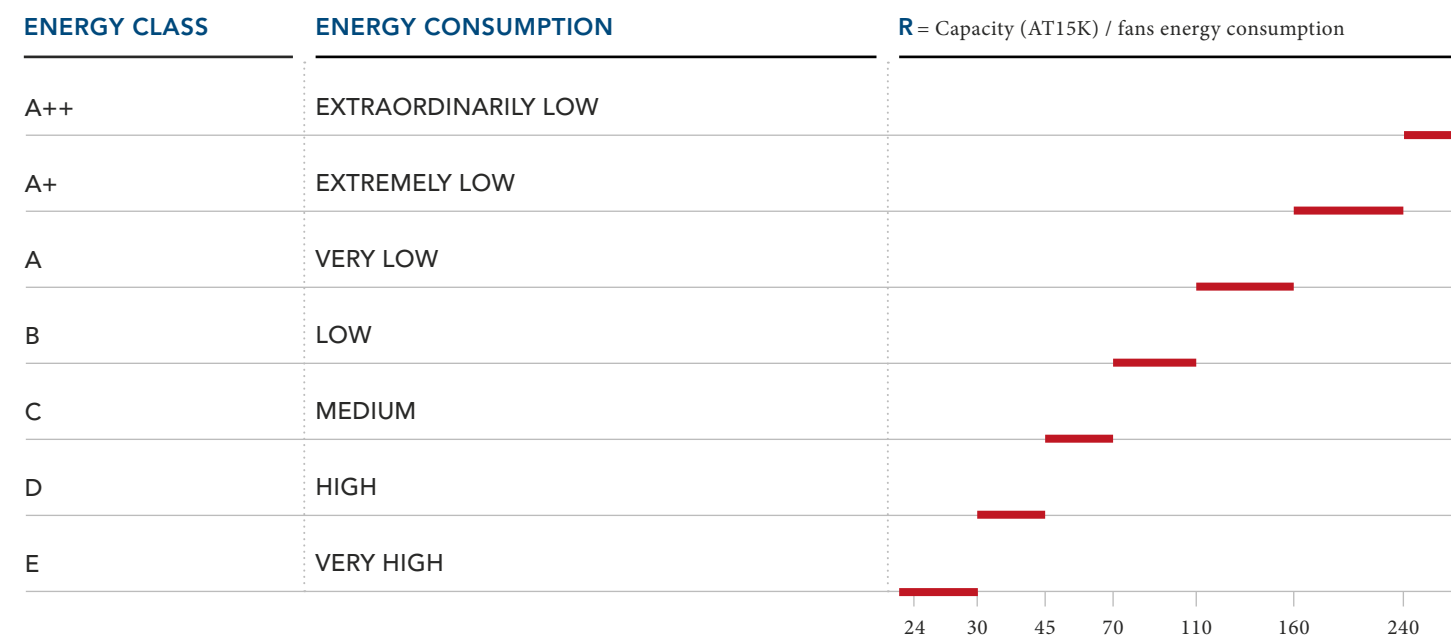
## SUPER POWER-J DRY COOLERS (2 FAN ROWS)

<b>Performance range</b>	Capacity from 290 to 2219 kW (ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C)
<b>Fans</b>	Diameter Ø 800, 900, 1000 mm, AC or EC motor
<b>Benefits</b>	Maximum performance, minimum footprint High efficiency geometry Modular design, 8-20 fans 8 sound levels Piping in copper or stainless steel AISI 304 or AISI 316L Finned pack available in a wide range of materials Complete range of accessories AFS (Air Fresh System) o WFS (Wet Fin System), available upon request

## Flexibility in energy management

ThermoKey range of dry coolers gives the opportunity to select units with energy class up to A ++.

With ThermoKey Adiabatic System (AFS) or even better with ThermoKey Hybrid System (WFS), the customer can choose whether to privilege the consumption of water or electricity or vice versa.



## FRAME AND COWLING

**APPLICATION:** to guarantee **maximum strength, solidity** and **resistance** to the external environment paying particular attention to the high-efficiency cowling use in order to reduce noise and electric fans consumption.

The casing is provided in galvanized steel (FeZn 275) which is oven painted with polyurethanic resins (standard RAL 7035).

## ACCESSORIES RANGE

It is available, on request, a complete set of accessories including:

- cut phase speed controller, step speed controller and inverter speed controller;
- standard and special electrical panels, which can be customized for specific applications;
- fins in different materials (aluminium, copper, prepainted aluminium, double layer, hydrophilic and hydrophobic);
- copper tubes and stainless steel pipe in AISI 304 or 316L for special applications;
- special motors: single phase for diameters 500 and 630 mm, with power at 60Hz, at different voltages and for high or low air temperature.

- \* Characters always present in the code

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# Applications

**Dry coolers are used in different applications:**  
**HVAC:** used as external units in HVAC contribute to the optimization of air-conditioning system in data center, hospitals, hotels, etc.

COOLING

Data center



The Dry Coolers have been specifically designed to provide the best and most efficient solution.

**NEED** controlling precisely the temperature of data center servers to improve their efficiency.  
**CAPACITY REQUIRED** total 6.1 MW  
**SOLUTION** 18 Dry Coolers model JGH2390CZ2/6QIEMAF(EC)(AFS)S and 2 V-Type model JWQ1290A3/8QIEMAF(EC)(AFS)S with electronic fans, adiabatic and self-cleaning system

ENERGY & PROCESS COOLING

Steelworks



Steelworks in the Middle East planned to produce 1.500.000 t/y of billets and placed in a desert area.

**NEED** cooling down the fume treatment plants. Water consumption: 150 m³/h (500 m³/h in normal plants).  
**CAPACITY REQUIRED** total 103,710 kW  
**SOLUTION** 30 pcs Super Power-J Dry cooler model SJGH2910CDQF(INK)S with self empty drenable configuration, CE electrical panel and flanges.

**INDUSTRIAL:** through the ambient air and a closed circuit - without wasting water - they dissipate the heat generated and not usable by production processes, power plants, engines and moulds.

AIR CONDITIONING

Hospital



Hospital in New Caledonia, with 82,000 m2 area, 635 rooms, 8 surgery rooms and 1 hall. Opening in 2015.

**NEED** perfect air-conditioning of the hospital under every weather condition.  
**CAPACITY REQUIRED** total 13,056 kW, Sound pressure 64dB(A) a 10m  
**SOLUTION** 12 pcs Power-J Dry cooler model JGH21090CQAF(EC)S with 20 fans for each unit, CE electrical panel, shock absorber, flanges and double layer fins for aggressive environment.

AIR CONDITIONING

Stadium



Football stadium in Poland build for Euro 2012. 236m length, 203m width, 45m high.

**NEED** perfect air-conditioning of the stadium with 43,615 seats.  
**CAPACITY REQUIRED** total 3,400 kW  
**SOLUTION** 4 pcs Power-J Dry cooler model JGL2690CDQIR with CE electrical panel, switches, cut phase speed controller.

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