



**ThermoKey®**  
Heat Exchange Solutions

# Dry Coolers



**ThermoKey<sup>®</sup>** 

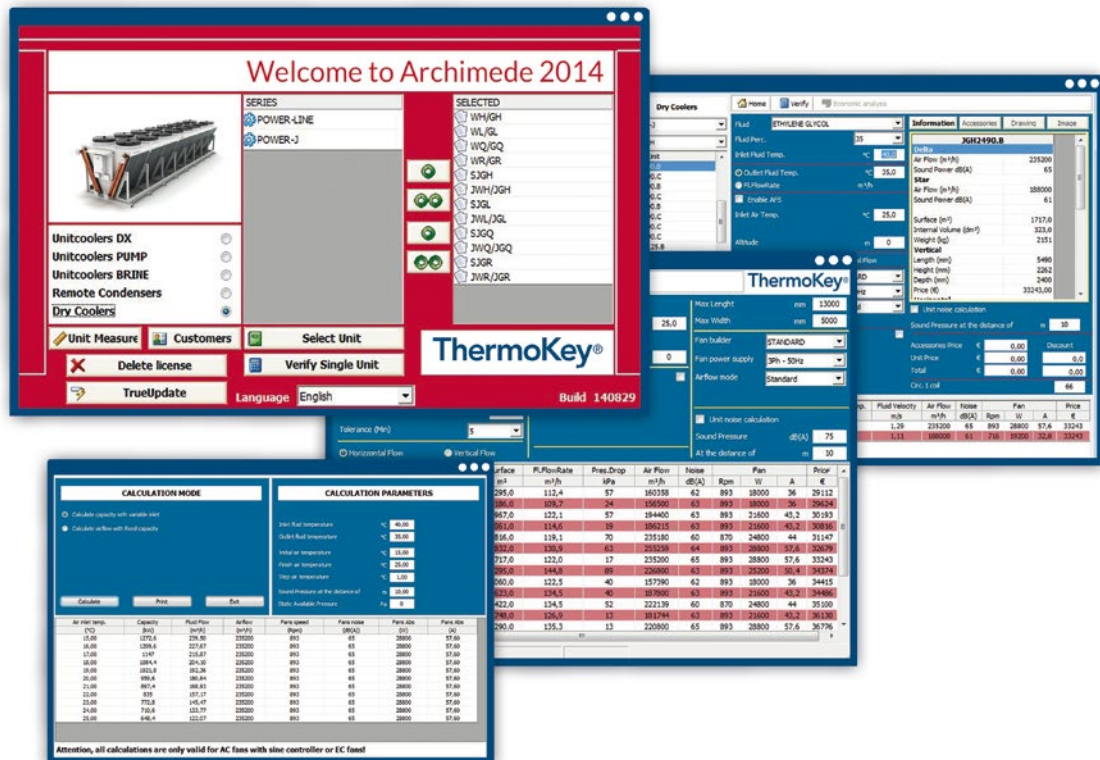
**Every detail, even the smallest one,  
is designed to achieve  
the best Dry Cooler solution  
which meets the customer needs.**

# ThermoKey offers over 180,000 Dry Cooler solutions

- More than 6,000 models.
- 6 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;**
- **fins** 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

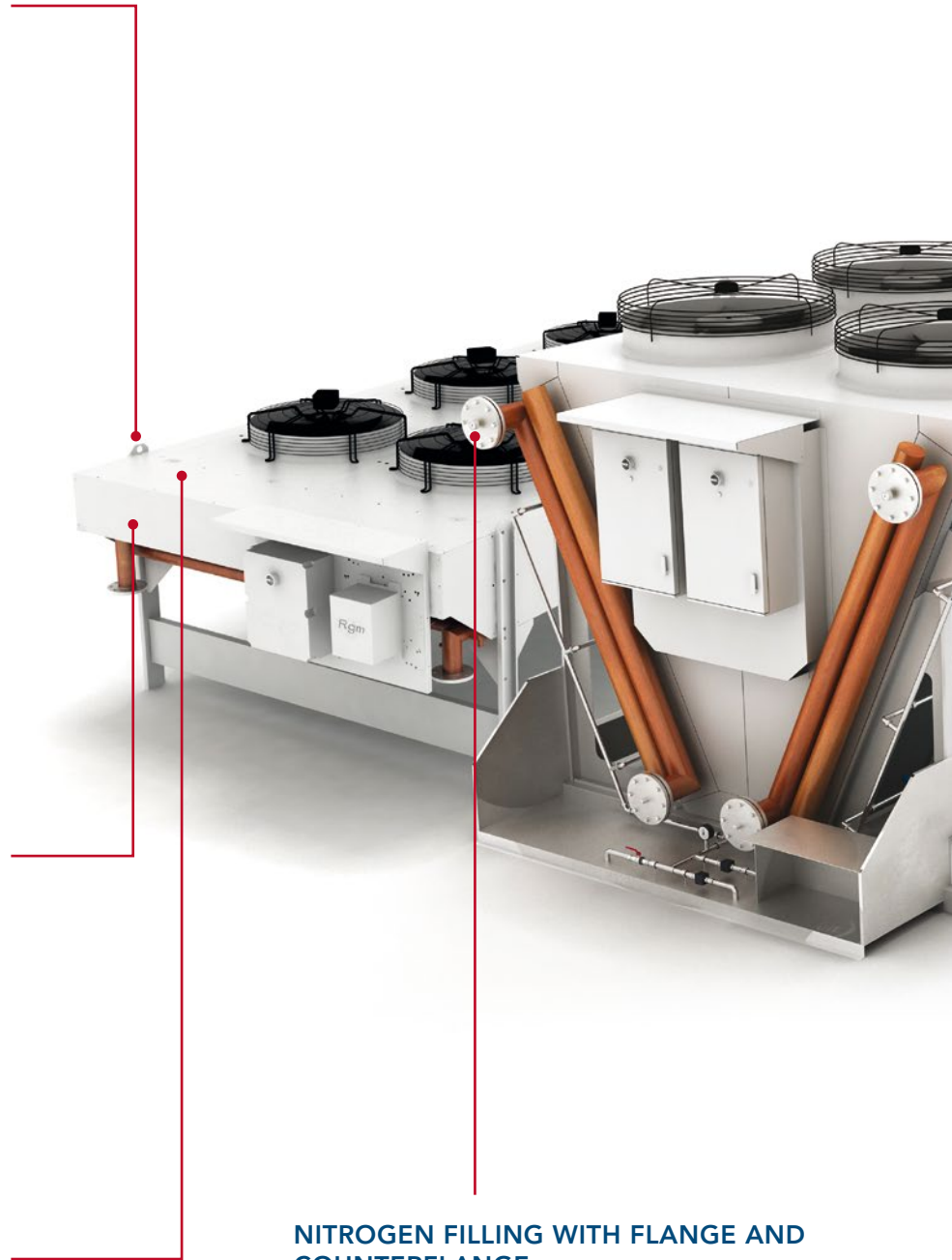
Each fan module is separated from the other thanks to panels in order to **avoid air by-pass** and to **optimize the efficiency of the heat exchanger**. In this way the correct and **proportional functioning of each module is granted**.

## 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**.



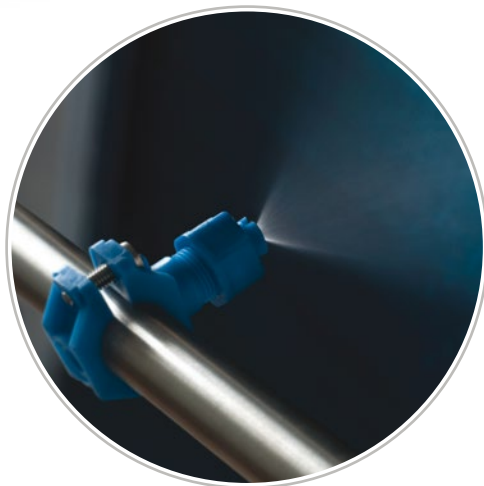
## NITROGEN FILLING WITH FLANGE AND COUNTERFLANGE

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.**

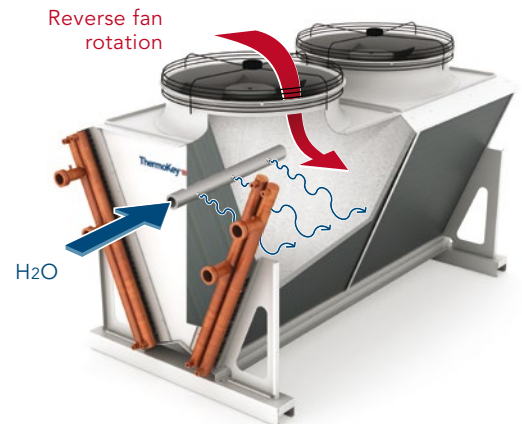


SCS

[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]

**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.

[OPTIONAL]

**THERMOKEY ADIABATIC COOLING SYSTEMS: HIGH EFFICIENCY TO MEET THE MOST DEMANDING CONDITIONS**

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 900). The user can choose whether to privilege the consumption of water or electricity.

AFS

**AIR FRESH SYSTEM**

ThermoKey adiabatic cooling system which allows, thanks to special high pressure nozzles ("misting" effect spray), to dissipate power peaks with minimum water consumption.

# Dry Coolers range

## HEAT EXCHANGER

The combination of three factors such geometry configuration, optimized pipe diameters and special high efficiency fins, allows to improve the following features:

- maximum capacity in relation to the heat exchanger size;
- optimized pressure drops of the primary fluid thanks to the use of different tube diameters and achievable circuits;
- possibility to select the optimal unit thanks to the use of different modules.

## FANS

It is possible to choose between EC or AC fans in 5 different diameters: 500, 630, 800, 900 and 1000 mm; ThermoKey range provides units with 1 up to 20 fans in single or double rows, V- or table type in order to cover the capacities from 8.5 kW to 2219 kW. Thanks to the use of integrated electronic fans(EC), ThermoKey guarantees each noise level in compliance with the strictest environmental rules in terms of noise pollution.



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

**Performance range:** Capacity from **8 to 890 kW**  
(ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C)

**Fans** Diameter Ø 500, 630, 800, 900, 1000 mm, AC or EC motor

**Benefits** 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)

**Performance range** Capacity from **45 to 1123 kW**  
(ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C)

**Fans** Diameter Ø 500, 630, 800, 900, 1000 mm, AC or EC motor

**Benefits** 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



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

- 
- Performance range** Capacity from **70 to 961 kW**  
(ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C)
- Fans** Diameter Ø 900, 1000 mm, AC or EC motor
- Benefits** High efficiency geometry  
Modular design, 2-8 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)

- 
- Performance range** Capacity from **126 to 1585 kW**  
(ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C)
- Fans** Diameter Ø 900, 1000 mm, AC or EC motor
- Benefits** 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) o WFS (Wet Fin System), available upon request  
Casing in galvanized steel, powder painted



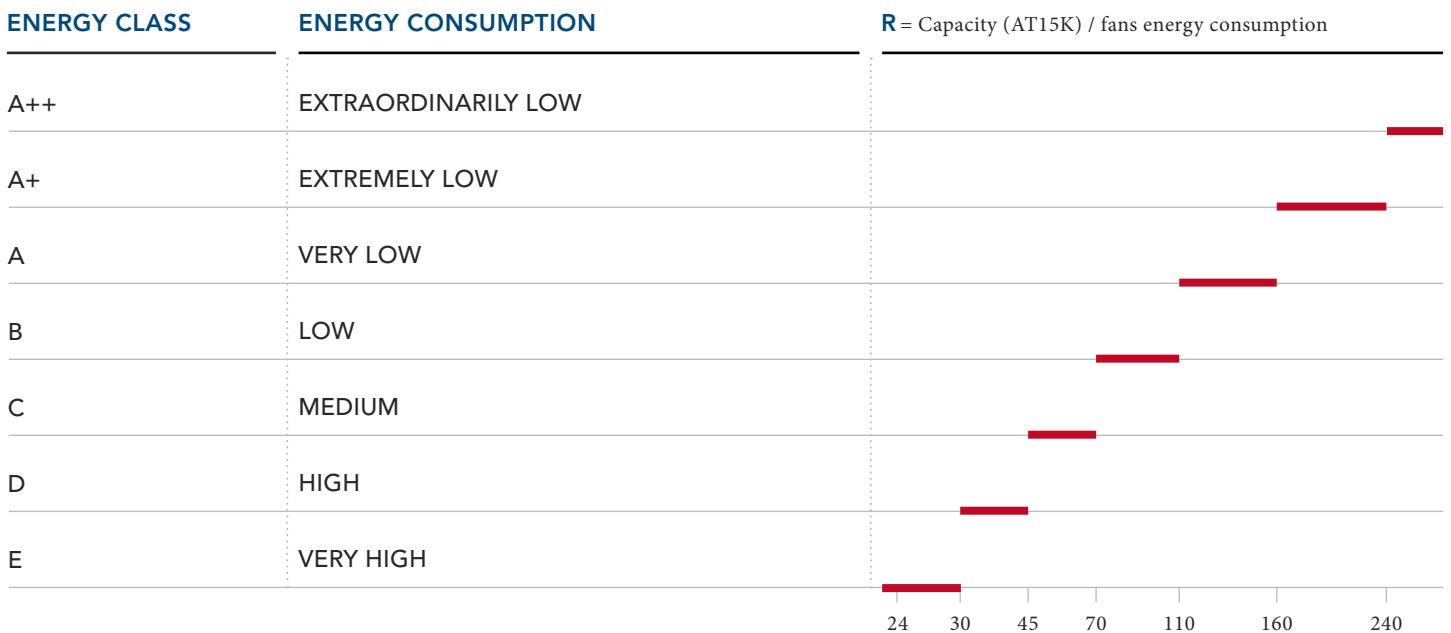
### SUPER POWER-J DRY COOLERS (2 FAN ROWS)

- 
- Performance range** Capacity from **290 to 2219 kW**  
(ethylene glycol 35%, Tw1=40°C, Tw2=35°C, T1=25°C)
- Fans** Diameter Ø 900, 1000 mm, AC or EC motor
- Benefits** 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 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

	SJ	G	H	2	3	80	A	-	Y	/4	V	E	I	R	A	F	(EC)
<b>• CONFIGURATION</b>																	
-	Table type																
J	Jumbo V-type																
SJ	Super Jumbo V-type																
<b>• PRODUCT SERIES</b>																	
W	Dry cooler with 32 geometry coils																
G	Dry cooler with 46 geometry coils																
<b>• SOUND LEVEL</b>																	
H	High																
L	Low																
Q	Quiet																
R	Residential (ultra quiet)																
<b>• NUMBER OF FAN ROWS</b>																	
<b>• NUMBER OF FANS PER ROW</b>																	
<b>• FAN DIAMETER</b>																	
	50=500mm, 63=630mm, 80=800mm, 90=900mm, 10=1000mm																
<b>• CAPACITY LEVEL</b>																	
	A, B, C																
<b>• MODULE</b>																	
-	Dry coolers with fans Ø 500 - Ø 630 - Ø 800																
N	Dry coolers standard module																
X	Dry coolers extended module																
Z	Dry coolers super extended module																
<b>• FAN-MOTOR CONNECTION</b>																	
D	Delta																
Y	Star																
M	Singlephase																
<b>• NUMBER OF TUBES PER CIRCUIT</b>																	
<b>• AIR FLOW DIRECTION</b>																	
H	Horizontal																
V	Vertical																
<b>• WIRING</b>																	
E	With junction box																
Q	With electrical panel and CE marking																
W	With electrical panel built as per customer specifications																
W[E]	With junction box and main switch																
W[E]3	With junction box, main switch and 3Pole switches																
<b>• REPAIR SWITCH</b>																	
	(available 3Pole, 6Pole and main switches)																
<b>• SPEED CONTROLLER WITH PROBE</b>																	
R	Cut phase fan speed controller																
G	Step fan speed controller																
Z	Inverter fan speed controller																
P	Special cut phase fan speed controller																
J	EC controller																
W[En]	EC wiring + EC NANO speed control																
W[En]3	EC wiring + EC NANO speed control + 3Pole switches																
W[Eb]	EC wiring + EC BASIC speed control																
W[Eb]3	EC wiring + EC BASIC speed control + 3Pole switches																
W[Epl]	EC wiring + EC PLUS speed control																
W[Epl]3	EC wiring + EC PLUS speed control + 3Pole switches																
W[Em]	EC wiring + EC MANAGER speed control																
W[Em]3	EC wiring + EC MANAGER speed control + 3Pole switches																
<b>• SHOCK ABSORBERS</b>																	
<b>• ALUMINIUM PN10 SLIP-ON FLANGES</b>																	
	(stainless steel PN16 flanges available on request)																
<b>• FAN TYPE</b>																	
-	AC fans																
[EC]	EC fans																

# 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

Data Center in Poland for National Centre for nuclear research.

**NEED** controlling precisely the temperature of data center servers to improve their efficiency.

**CAPACITY REQUIRED** total 600 kW

**SOLUTION** 2 pcs Power-J Dry cooler model JWL2290ADQJAF(EC)S with Air Fresh System, CE electrical panel, EC speed controller, shock absorber and flanges.



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 m<sup>3</sup>/h (500 m<sup>3</sup>/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 m<sup>2</sup> 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.

Direction

**Acrobatik.it**

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