JAEGGI

NOT A DROP
OF COOLING WATER
WASTED

THE SUSTAINABLE ADIABATIC COOLING SOLUTION

USE UP TO 70 PERCENT LESS WATER AND KEEP IT CLEAN WITH JAEGGI ADIABATIC DRY COOLERS AND CONDENSERS.

THE TRUE COST
OF EVAPORATIVE COOLING

Evaporative cooling towers' low initial investment belies their long-term economic and environmental cost.

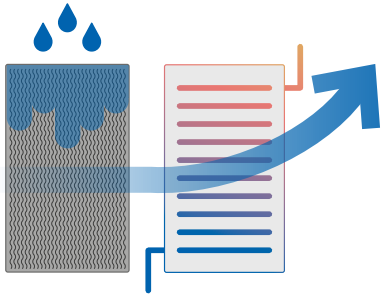
Evaporative cooling towers are widely used in industrial refrigeration, energy and process cooling systems – in the food and beverage industry, data centres, manufacturing, and power generation, to name only a few examples. This is mainly due to their relatively low initial investment costs. But in the long run, evaporative cooling is actually quite costly both for businesses and the environment.

By definition, evaporative cooling requires large amounts of water. This water must be disinfected and treated with chemicals on a regular basis to prevent bacterial infestation. As a result, businesses that use cooling towers pay heavy water (treatment) bills while depleting and polluting water reserves. Most of this is in fact unnecessary as the same cooling effect can usually be achieved completely without chemicals and, outside of load and heat peaks, evaporation. Fortunately, in this case "unnecessary" also means "avoidable".

THE SUSTAINABLE ALTERNATIVE

ADIABATIC COOLING SOLUTIONS

How can the water waste and pollution associated with cooling towers be avoided? One might think the answer is to only use them for extra cooling and rely on dry coolers whenever the load and ambient temperature are low enough. While this would require much less water, it wouldn't dispense with the need for treating it chemically. Besides, the cooling solution's physical footprint would be greatly increased.



A much better solution combining the benefits of dry and evaporative cooling is an adiabatic cooling solution. An adiabatic dry cooler or condenser is a hybrid device that operates dry in normal conditions. At peak loads and very high ambient temperatures, an evaporative pre-cooling system installed in front of the heat exchanger(s) is activated to provide additional cooling capacity.

Unlike a cooling tower, this pre-cooling system does not involve constantly warm, wet surfaces as potential breeding grounds for bacteria, so the little water it uses can remain untreated and clean.

Advances in adiabatic cooling design have made it possible to offer all this in a relatively compact device. Only slightly larger than a cooling tower, a modern adiabatic dry cooler or condenser minimises water consumption, requires only little maintenance and no expensive chemical water treatment. This keeps its running costs and environmental impact low, which makes it an investment that quickly pays off both economically and ecologically.

ADC-HD ADIABATIC DRY COOLERS
ADV-HD ADIABATIC CONDENSERS

Combining dry and evaporative cooling in a hybrid system, adiabatic ADC-HD dry coolers and ADV-HD condensers offer superior efficiency without the water waste and pollution associated with traditional cooling towers.

Adiabatic ADC-HD dry coolers and ADV-HD condensers combine dry-cooling heat exchangers with JAEGGI's pre-cooling system based on humidification pads, in one compact device. As long as the temperature in the cooling system does not exceed a pre-set threshold, the pad system remains inactive and no wetting water is used. Once the threshold is passed due to a peak in load or ambient temperature, humidification of the pads is activated and dynamically adjusted by the intelligent control module HybriMatic. The resulting evaporation chills the air passing through the pads just enough to provide the required level of extra cooling.

By keeping wetting water consumption to the absolute minimum, adiabatic ADC-HD dry coolers and ADV-HD condensers use up to 70 percent less water than comparable cooling towers. As the humidification pads dry during normal operation, no disinfection or other expensive chemical water treatment is necessary to ensure hygiene and efficient operation. Avoiding maintenance work, water waste and pollution in this way can easily amount to significant annual savings.

EXPLORE
OUR APPLICATIONS

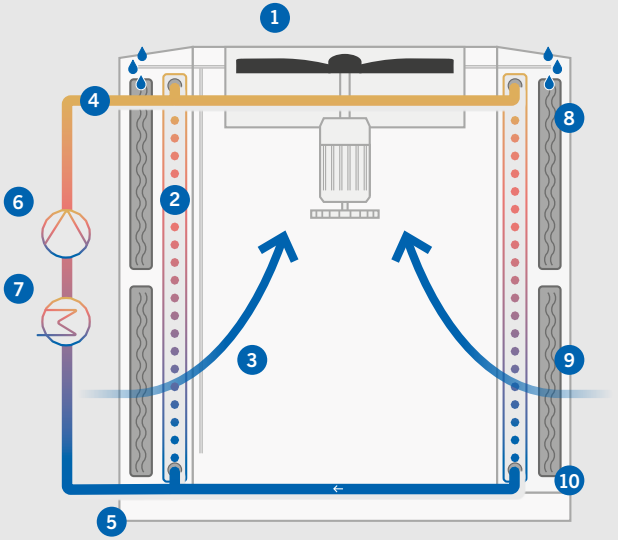
Dry cooler

The ADC-HD adiabatic dry cooler is a more cost and resource-efficient alternative to cooling towers in industries such as data processing, manufacturing, research institutions and power generation. It can also be used for HVAC applications.

Condenser

The ADV-HD adiabatic condenser is a more cost and resource-efficient alternative to cooling towers in industrial refrigeration systems, for example in the food and beverage industry.

TECHNICAL DETAILS



1 Fan unit
2 Heat exchanger
3 Air flow
4 Supply
5 Return
6 Primary circuit pump
7 Heat source
8 Wetting water inlet
9 Pad system
10 Wetting water outlet

ADC-HD | ADV-HD			
	Refrigerant	**Nominal capacity**	**Pressure stages**
Dry Cooler	Glycol	500 – 2,000 kW	16 bar
Condenser	NH_3	500 – 2,000 kW	32 bar

DIMENSIONS		
Length	**Width**	**Height**
2.6 m to 11.4 m	3 m	3.95 m

FANS	
	1 – 4 fans
Ø 2,133.6 mm (84")	✓

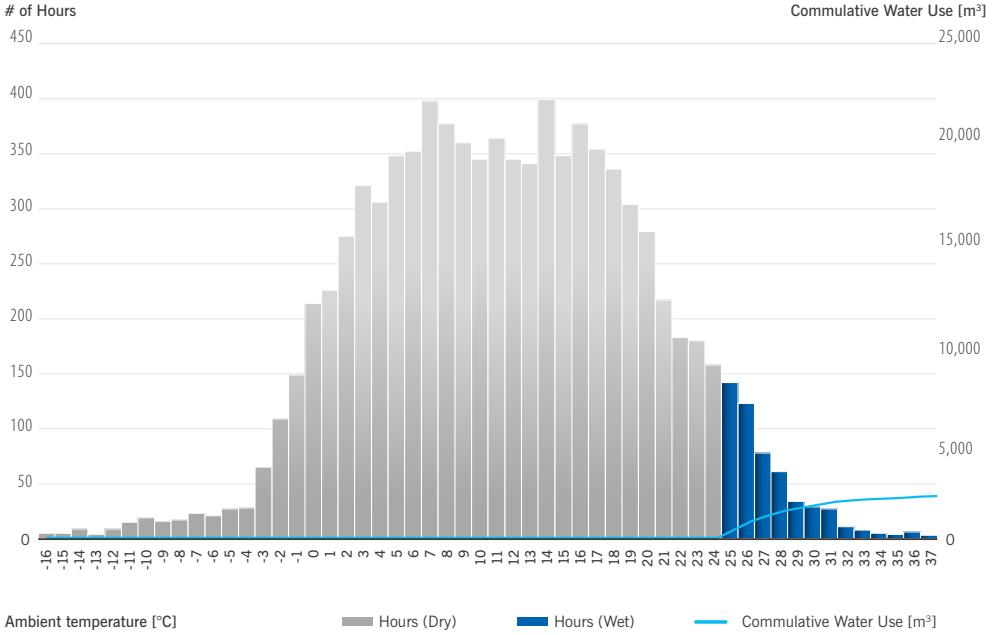
MATERIALS				
	Casing	**Fin**	**Frame**	**Tube**
Aluminium	✓	✓		
Aluminium - epoxy resin coating		(✓)		
Copper				✓
Galvanized steel			✓	
Stainless steel	(✓)			(✓)

✓ Standard (✓) Optional

CASE STUDY
FRANKFURT

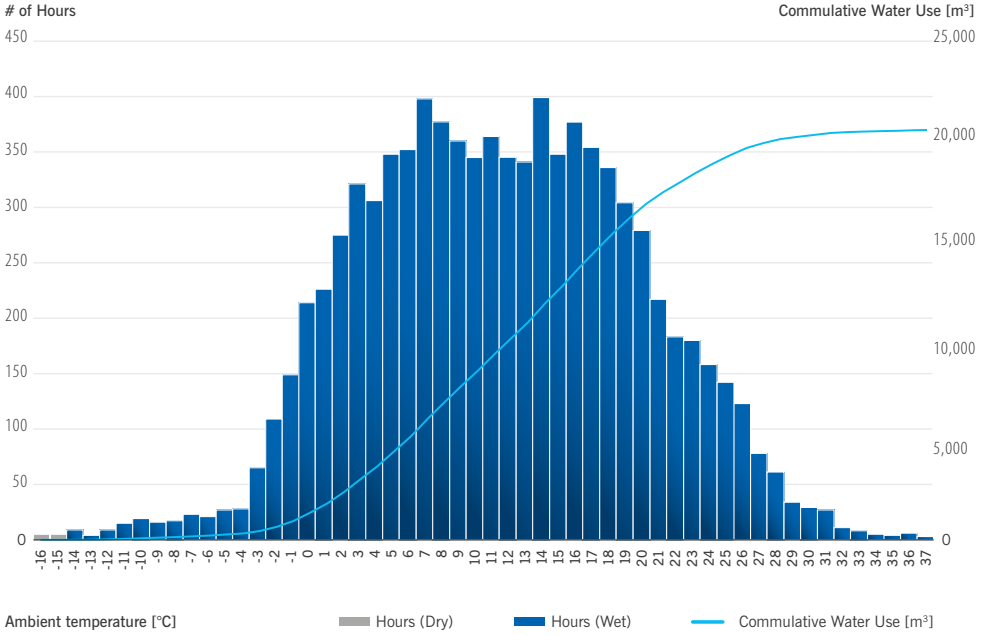
ADIABATIC COOLING ADC-HD

ANNUAL USAGE



EVAPORATIVE COOLING

ANNUAL USAGE



jaeggi-hybrid.eu