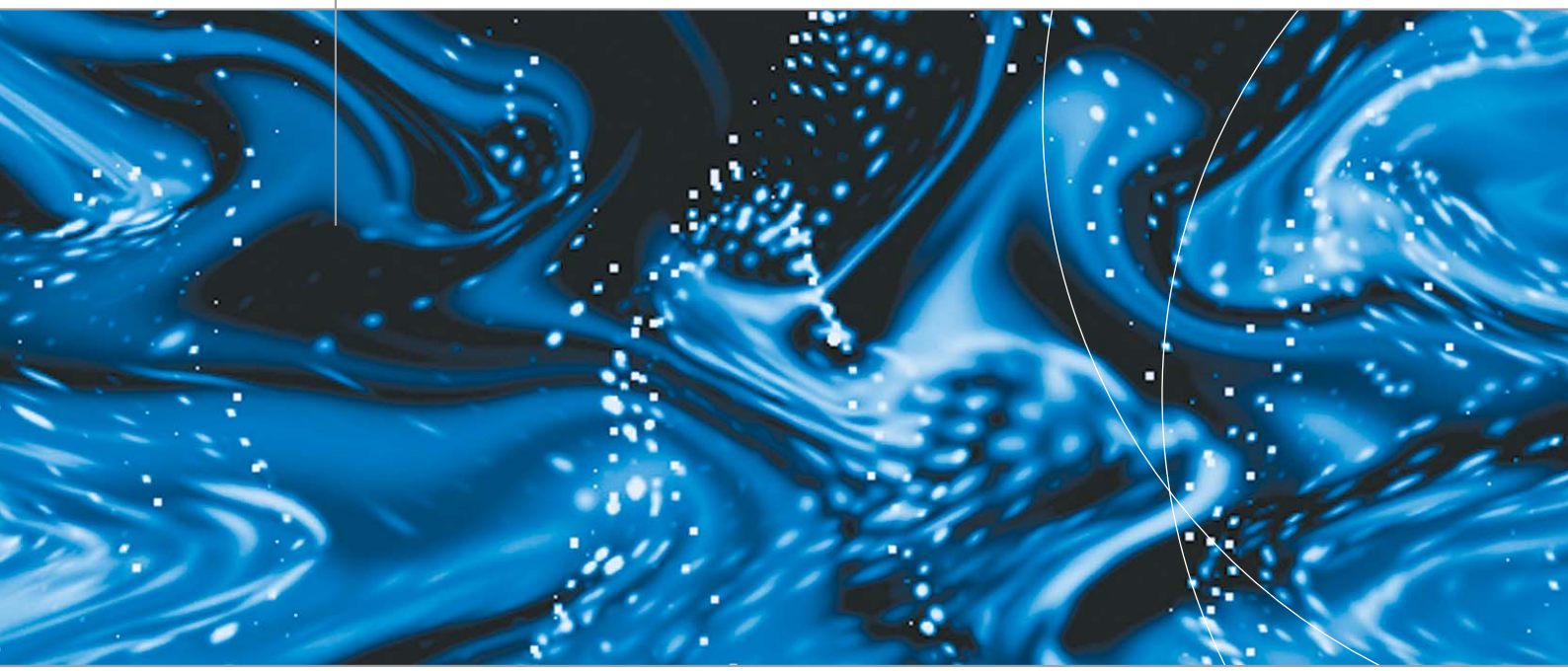
JAEGGI Hybridkühler Hybridcoolers

Hybrid dry coolers

HTK 1.2/1.8/2.4 and 3.24

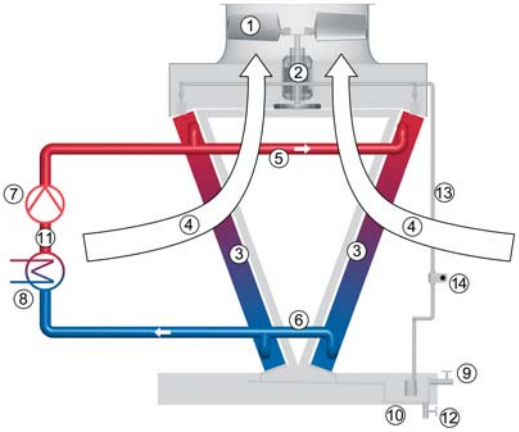


> Engineering a sustainable future

Hybrid dry coolers

Description

1) fan
2) fan drive
3) heat exchanger
4) air stream
5) primary circuit inlet
6) primary circuit outlet
7) primary circuit pump
8) heat source
9) make up water
10) low volume basin
11) primary circuit
12) blow down valvue
13) wetting circuit
14) conductivity sensor



Engineering a sustainable future

The hybrid dry cooler is a combination of air cooled dry coolers and closed circuit evaporative cooling towers. Thus the hybrid dry cooler combines the advantages of conventional dry and wet cooling in one product.

Design of hybrid dry coolers
The design software optimises the coolers for every use – optimising performance of annual temperature changes at the installation site and the expected load profile of the installation.

The result: A cooler without vapor plumes and minimised noise level and little water and energy consumption. Low operating costs generate short repayment periods.

Operating characteristic of hybrid dry coolers
JAEGGI hybrid coolers can be operated like conventional dry coolers without wetting of the heat exchangers. In this case the energy is released into the ambient air by thermal convection.

During high ambient air temperatures or high cooling loads, the wetting of the heat exchangers will double or even triple the performance of hybrid coolers as compared to dry operating: In this case, the installation will be cooled due to convection and evaporation effects.

With both operating methods, the cooling performance is highly efficient, requires a small installation space and the operating expenses are low.
The cooling limit, i.e. the theoretically attainable return temperature for the hybrid dry cooler, is the wet-bulb temperature of the ambient air plus 4 Kelvin.

JAEGGI hybrid dry coolers
JAEGGI is the original. Not only did JAEGGI invent hybrid dry coolers, they are also the leader of the market as well as the technology.

Innovative, technological details show: JAEGGI consistently develops intelligent technologies. As a specialist in hybrid cooling with high system competence, JAEGGI provides premium quality and excellent service.

JAEGGI – the original

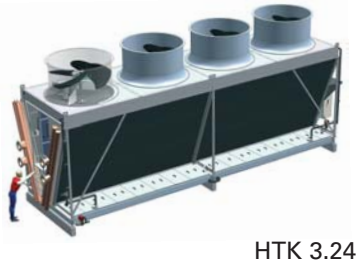
Cooler series	HTK 1.2	HTK 1.8	HTK 2.4	HTK 3.24
Block height	1.2 m	1.8 m	2.4 m	3.24 m
Block length	2.4 to 10.9 m		3.0 to 10.9 m	4.8 to 10.9 m
Operating weight	2100 to 7200 kg	3000 to 9700 kg	4600 to 12500 kg	9300 to 17000 kg
Operating range single cooler (34/28°C; T_f=21°C)	140 to 900 kW	220 to 1300 kW	400 to 1800 kW	600 to 2700 kW
Operating range single cooler (38/30°C; T_f=21°C)	200 to 1600 kW	300 to 2400 kW	600 to 3300 kW	800 to 4000 kW
Construction of heat exchanger	Fin heat exchangers with tube and fin pressed as a block, widened			
Corrosion protection of heat exchanger	KTL dip coating/stoved enamel coating in block			
Tube material	Copper (optional stainless steel)			
Fin material	Aluminium (0.3 mm hard rolled), optional copper fins (0.2 mm) possible (20% higher cooler operating weight)			
Energy source	Water or water/glycol mixture (others on request)			
Alignment of heat exchanger	one-sided or V-shaped	V-shaped		
Supporting construction	Galvanised steel construction (optional stainless steel)		Galvanised steel construction	
Fan types	– SLNF / Super Low Noise Fans: Low-noise fans with very low acoustic emission – LNF / Low Noise Fans: Industrial fans with reduced acoustic emission – SF / Standard Fans: Standard fans with EC technology			
Fan drive	– Separate high-efficiency fan drive motor corresponding to IE2 – Regulation of high efficiency EC fans by GMM (Güntner Motor Management)		– Separate high-efficiency fan drive motor corresponding to IE2	
Fan diameter	0.6 to 1.6 m		1.6 to 2.0 m	
Wetting pumps	Submersible pump(s) made of stainless steel and with protection category IP68			
Number of wetting pumps	1 to 2 pumps according to cooler length			2 pumps
Wetting technology	Innovative, pressureless water feeding			
Wetting basin	Wetting basin made of stainless steel sheet including removable basin cover			
Control	HybriMatic single-cooler control (Rockwell, Siemens) optionally with superior HybriMaster control (Rockwell, Siemens) for multicompressor refrigeration systems			
Control connection	Bus connection on (building control system) GLT Profibus, Modbus, BACnet, Lonworks, DeviceNet, Ethernet IP ... others on request			
Optional equipment	– Protective mesh screen to prevent large quantities of organic matter in the cooler – Fan silencer to minimise the acoustic emission of the fans – Construction adaptations to on-site conditions are possible – External water tank for the feeding of wetting water – UV lamps in the wetting basin to prevent biological growth – Extended fan ducts to connect the ambient enclosure – Roll-up doors or multileaf dampers on suction and pressure side to minimise the heat loss during shutdown for coolers without anti-freeze filling – Heat insulation of collectors to minimise the heat loss during shutdown for coolers without anti-freeze filling – Winter curtains to prevent contamination for coolers which will periodically be taken out of operation			
Certifications	– Quality management ISO 9001:2000 – Hygiene certificate – Independent verification that no water droplets or aerosols are emitted from the fans – Performance verification has been made for a HTK 3.24/10.9-2S by the DMT test division of TUV Authority			
Transport / Delivery	appliance completely mounted and wired delivery on a lowbed trailer / for heat exchangers longer than 6 m, a lifting beam for the unloading will be provided depending on the weather, the cooler will be delivered in a plastic packaging			Fans will be mounted on site

Series Overview

HTK 1.2

HTK 1.8

HTK 2.4



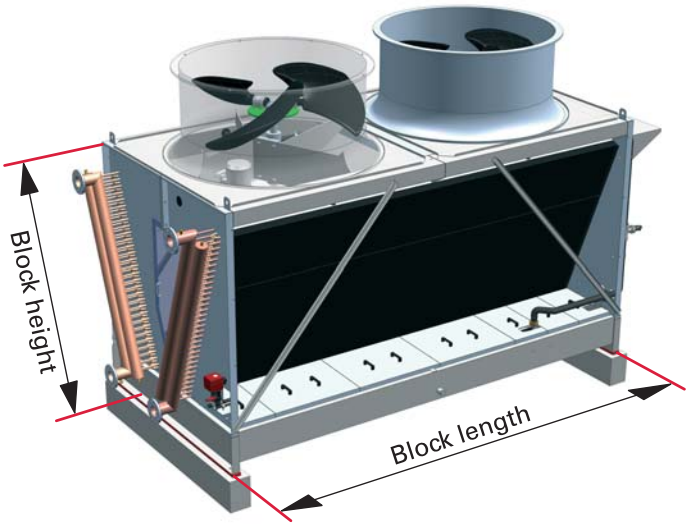
HTK 3.24

Type designation

HTK 2.4/5.2-2S-P6-CU-SLNF

1 2 3 4 5 6 7

1) Type (HTK hybrid dry cooler, HTV hybrid dry condenser)
2) Height of the heat exchanger element in meters
3) Length of the heat exchanger element in meters
4) Number of the heat exchanger sides (1S one-sided, 2S double-sided)
5) Number of tubeside passes
6) Tube material
7) Fan type (SF Standard Fan, LNF Low Noise Fan, SLNF Super Low Noise Fan)



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