

TDV Adiabatic Cooler

TDV is a closed-loop, adiabatic, and dry fluid cooler specifically designed for heat rejection from water-cooled compressors. These innovative cooling systems can be seamlessly installed in front of any water-cooled compressor, ensuring optimal performance and temperature regulation.



Efficient Compressor Cooling

The best alternative to cooling towers for cooling down your air compressor



Minimal Water Consumption

No process water consumption
No water spray in the air stream
No water stagnation
No water spray on coils



Outdoor Installation

Suitable for outdoor installation without risk of corrosion

TDV is an adiabatic cooler using the ambient air to cool the cooling water circuit of the water-cooled equipment.

If we take advantage of the evaporation of water resulting from the use of the adiabatic pads, we get an inlet air temperature to the exchange coils which is much lower than the ambient one. This process allows the TDV to cool the water at the desired temperature with no contamination or consumption of water of the compressor.

The Atlas Copco TDV fluid coolers can be recommended based on the specific project installation conditions. The design allows internal pump/s on board, installations with new Atlas Copco TPC cooling fluid circulation systems or existing cooling fluid circulation systems.



Smart Cooling

TDV coolers dynamically adapt their cooling capacity based on the surrounding ambient air temperature. By intelligently adjusting their operation, TDVs optimize performance while minimizing operational costs. Let's explore how these adaptable coolers enhance efficiency in various environments.

Environment and Energy Savings

Manufacturers of cooling equipment are increasingly focused on reducing energy consumption and minimizing CO2 emissions. Our company addresses this challenge with its TDV product line, which combines the energy-saving benefits of dry fluid coolers with the thermal efficiency of adiabatic systems. TDV is suitable to cool down a single or multiple water-cooled equipment.

In the past, industrial cooling relied on two systems: standard chillers with refrigerant compressors and cooling towers. Chillers regulate process temperatures but consume significant energy. Cooling towers, while more energy-efficient, have environmental drawbacks such as water treatment requirements, the risk of legionella and performances limited by the ambient air wet bulb temperature. TDVs offer a promising solution by optimizing performance while considering environmental impact.

Dry and Wet Bulb

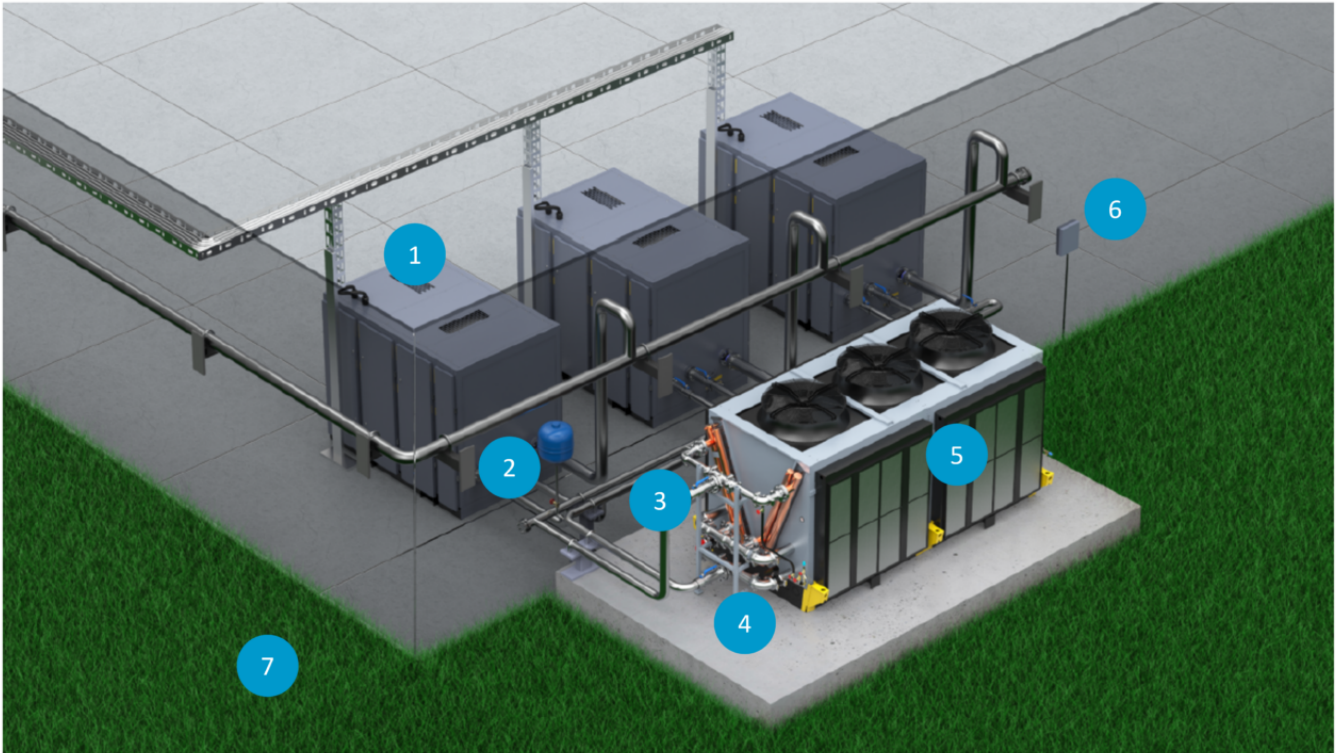
- **Dry Bulb Temperature:** This refers to the ambient air temperature, measured without considering humidity or moisture. It represents the actual temperature in the environment.
- **Wet Bulb Temperature:** Obtained by allowing water to come into contact with the air, the wet bulb temperature accounts for evaporative cooling. As water evaporates, it removes heat from the air, resulting in a lower temperature. Wet bulb temperature is inversely proportional to air humidity.

In the operation of TDV fluid coolers, the adiabatic system leverages wet bulb principles. When enabled, the process water provided by the TDV unit remains consistently colder (by several degrees) than the surrounding ambient air.



Compressor cooling

TDV is an adiabatic cooler using the ambient air to cool the cooling water circuit of the water-cooled equipment.



1 Compressor

TDV units can be installed upfront any water-cooled compressor.

2 Expansion vessel

The expansion vessel protects the hydraulic line from excessive pressure.

3 Hydraulic circuit and shut-off valves

Hydraulic circuit (piping) lines from/to compressor(s) and shut-off valves disconnect the cooler from the hydraulic circuit for easier operations.

4 Manifolds support

The manifolds support ensures robustness.

5 Air filters

Air filters are mounted on adiabatic pads to filter air from dust contamination.

6 RemCop

RemCop is Atlas Copco's solution to remotely control the unit. Connected with signal cable to the unit.

7 Outdoor installation

Minimal footprint and maximum space optimization in your compressor room with outdoor installation.

TDV AD 02



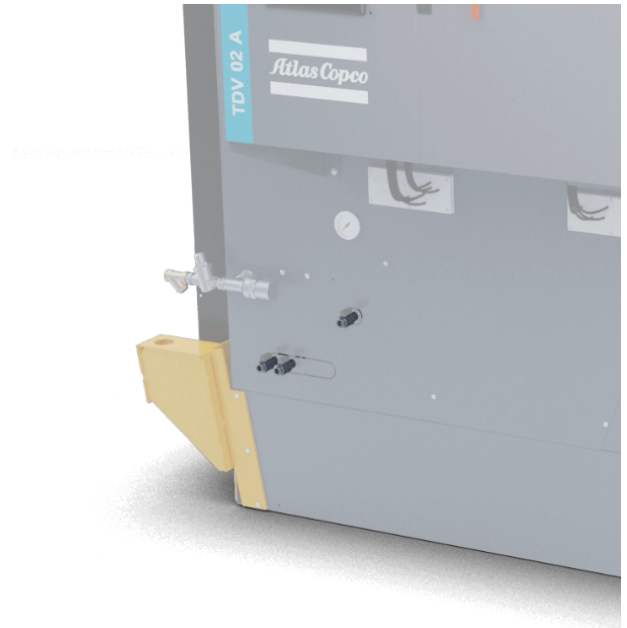
1 Axial fans

Possibility to reduce fan speed with controller enabling optimal temperature control for lower ambient temperatures.



4 Drainage system

The adiabatic hydraulic system can be drained using discharge valves at the end of each season, and the base is equipped with drainage holes to allow rainwater to flow to the ground.



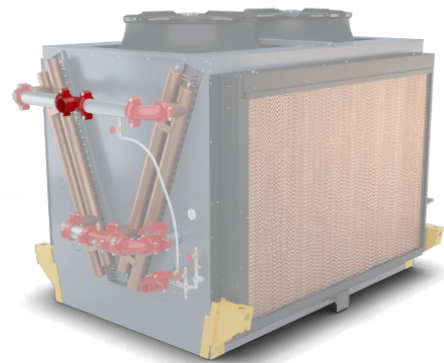
2 Atlas Copco Elektronikon® MkV S Touch

Atlas Copco's standard solution with a touch interface specifically designed for coolers, 4G connectivity for Smartlink™, and the option of a Modbus Gateway. This solution effectively integrates into existing systems, provides a user-friendly interface for easy startup, allows effective control of cooler parameters, enables remote monitoring via the Internet, and seamlessly integrates into factory control systems.



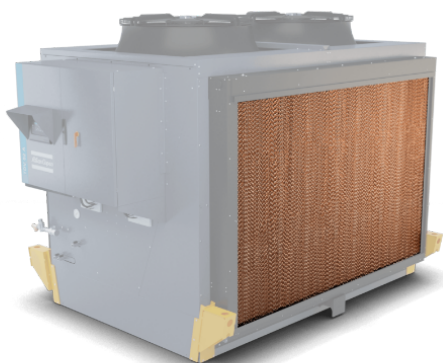
5 Inlet/Outlet

Simplified installation for the client with one inlet and one outlet.



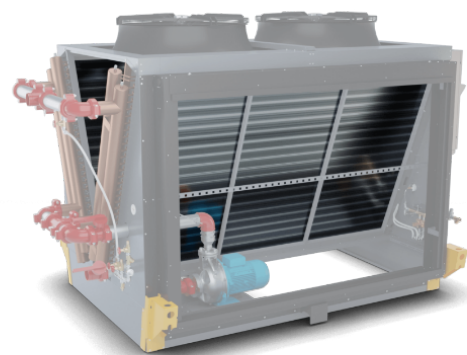
3 Adiabatic pads

These humidifying pads are made from corrugated cellulose sheets impregnated with additives and resins. They enhance humidification efficiency, have low pressure drops, high mechanical strength, and a long service life (5-7 years). Additionally, they are self-supporting, lightweight, and made from recyclable materials.



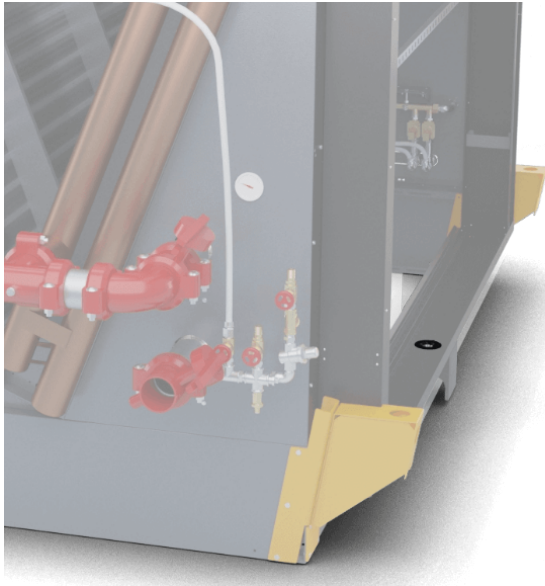
6 Heat Exchangers

Finned pack heat exchangers provide high efficiency thanks to the extended heat exchange surface.



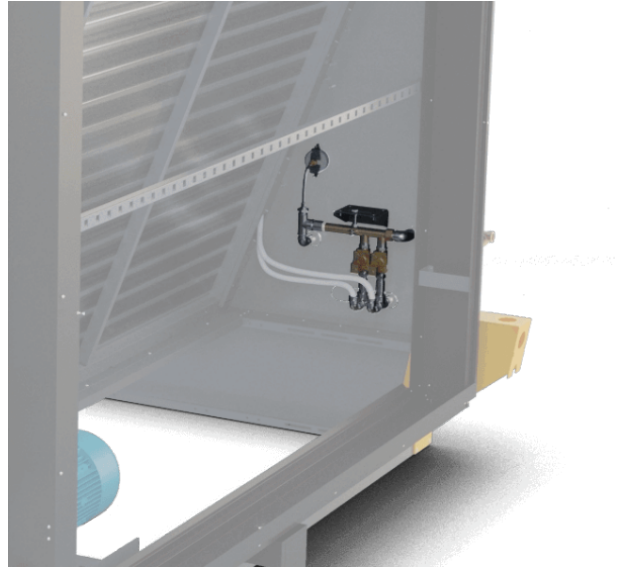
7 Drainage

Below the adiabatic pads, there is a drainage hole equipped with a patented capacity controller to regulate water consumption during adiabatic operation.



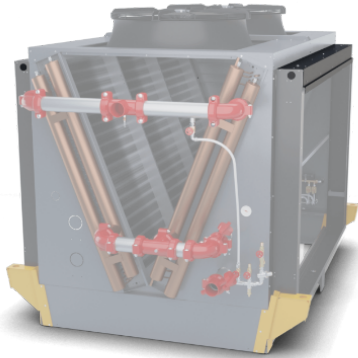
9 Adiabatic solenoid valves

Each module is equipped with a solenoid valve controlled by MK5 providing the correct amount of water to the distribution pipes.



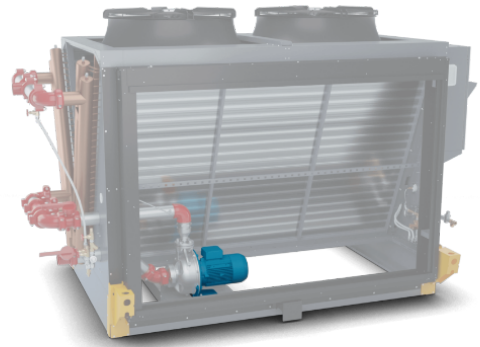
8 Irrigation System

The irrigation system features stainless steel pipes and aluminum bottom paneling.



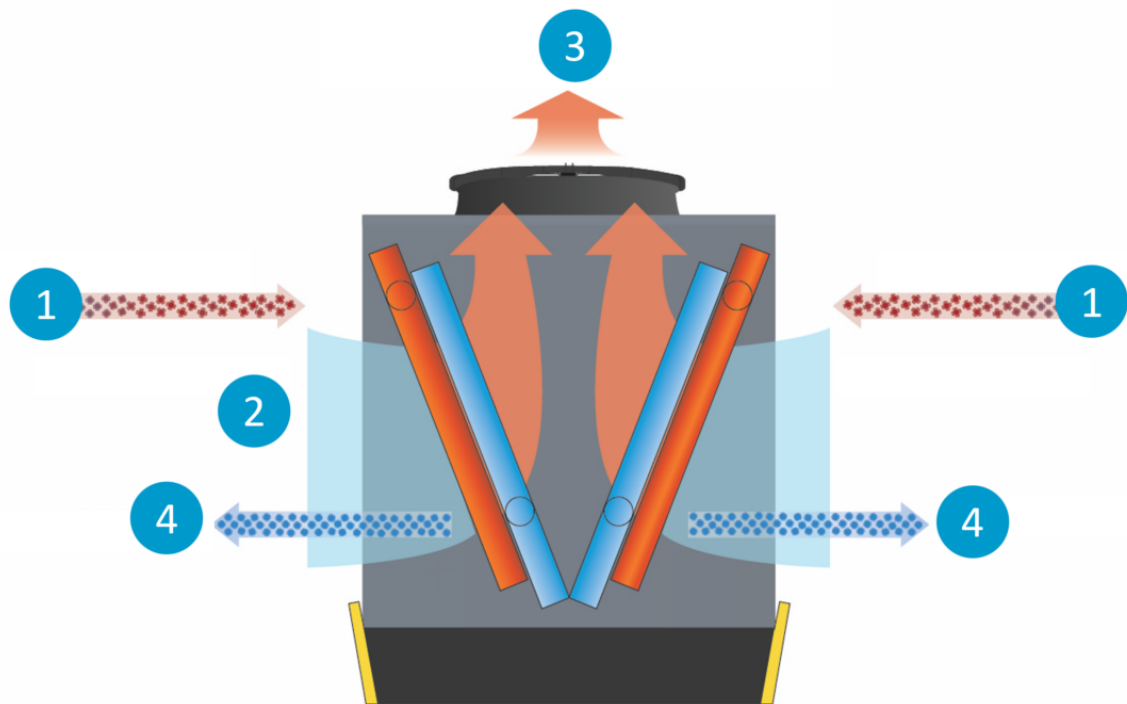
10 Pump

The centrifugal pump features 316L stainless steel housing and impellers, four pressure options (up to 6bar) across sizes A to D, an IE3 efficient motor for higher reliability, and meets installation requirements while achieving improved efficiency.



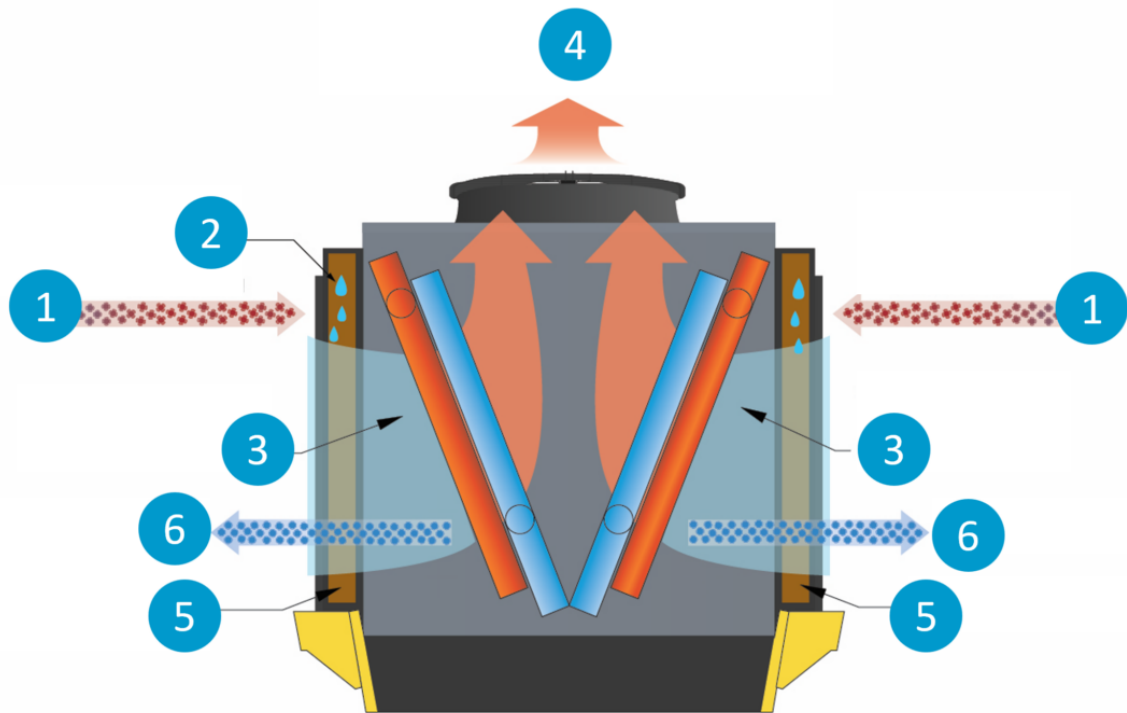
TDV Cooler working principle

Dry version



- 1. Hot fluid in
- 2. Ambient air
- 3. Hot air discharge
- 4. Cold fluid out

Adiabatic version



1. Hot fluid in
2. Adiabatic water
3. Cooled air after pads
4. Hot discharge air
5. Adiabatic pad
6. Cold fluid out

Monitoring and control

Intelligence is part of the package, with Mk5 Elektronikon® and SMARTLINK technology ensure optimal control and monitoring of your TDV cooler.



The Mk5 Elektronikon®

The Elektronikon® unit controller is specially designed to maximize the performance of your cooler under a variety of conditions. Built-in set of safety options like phase sequence relay provides ultimate protection and reduced risk of malfunction.

Our solutions provide you with key benefits such as increased energy efficiency, lower energy consumption, reduced maintenance times and less stress... less stress for both you and your entire system.

SMARTLINK

Monitor your chiller with SMARTLINK

Knowing the status of your equipment at all times is the surest way to achieve optimal efficiency and maximum availability.

Go for energy efficiency

Customized reports on the energy efficiency of your equipment.

Increase uptime

All components are replaced on time, ensuring maximum uptime.

Save money

Early warnings avoid breakdowns and production loss.



Cover all bases with a service plan

Industrial cooling is vital to your production process. Selecting the right service level will keep your production running efficiently while keeping operational costs under control.



Custom service expertise and logistics

By tailoring service to your needs and priorities, we help you make the most of your investment and manage your resources effectively. Whatever the service level you choose, our expertise makes it easier for you to time service correctly and source the right parts quickly and hassle-free.

Covering all service bases

Our service experts are well-trained and experienced. They perform service more quickly, optimizing the availability of your equipment. They spot and fix potential problems early, preventing efficiency loss and breakdowns. They cover all bases, servicing all your industrial chillers and coolers, including machines not delivered by us.



Focus on your business

Maximum care means we provide uninterrupted flow of cooling power, while you can focus on your core activities. Let us worry about parts inventory, equipment monitoring, service interventions and repairs. Get unrivalled uptime and efficiency, reduce overhead costs and achieve your business goals.



TDV Features

FEATURES		TDV 01	TDV 02	TDV 03	TDV 04	TDV 05	TDV 06
General	IP grade				IP54		
Cooler Version	Dry cooler				V		
	Adiabatic cooler				V		
Air filter screens	Aluminium Air filter				opt		
Installation	Lifting with ropes + spreader beam				●		
Electrical	400V/3ph 50Hz IEC				V		
	460V/3ph 60Hz UL 508A				V		
	Energy meter				opt		
Control	Controller type				Electronikon Mk5S		
	4,3" touchscreen				●		
	Text on display in local language (english, italiano, deutsch, slovensko, espanol, francais)				●		
	Day and week scheduler				●		
	Service timer				●		
	Dynamic set-point				●		
Safety	Thermal-magnetic circuit breakers protection on fans and pumps				●		
	Flow switch				opt		
	Winter protection: auto-ON of the pump with low ambient temperature (software function)				●		
	Remote temperature sensor				opt		
System integration	Remote ON-OFF				●		
	Single free contact for warning & shut down alarm				●		
	Remote setpoint + Temperature transmission (4..20mA)				opt		
	Modbus RTU – RS485				accessory		
	CANbus				accessory		
	Profibus				accessory		
	Profinet				accessory		
	TCP				accessory		
	Ethernet IP				accessory		
Remote control panel				accessory			
Connectivity	Smartlink connectivity incl modem (4G), incl 'service' license				●		
	Smartlink UPTIME license				opt		
Hydronics	No Pump				●		
	Circulation Pump stainless steel (cooling water manifold included)				V		
	Standby Circulation Pump stainless steel (cooling water manifold included)				V		
	Cooling water manifold				opt		
	Manual filling system and drain				●		
	Automatic filling with: city water line filter, pressure reducer				opt		
	Expansion vessels 24l				opt		
	Expansion vessels 80l				opt		
	Water pressure gauge (only if pump is included)				●		
	Grooved water connections: 3"		●			-	
	Grooved water connections: 4"		-			●	
	Flanged connection: UNI flanges					opt	
	Flanged connection: ANSI flanges					opt	

		TDV 01	TDV 02	TDV 03	TDV 04	TDV 05	TDV 06
	Counterflanges						opt
	External manual by-pass (only if manifold is included)						●
Adiabatic system	Descaling Filter						opt
Fan	AC fans						●
	Variable speed control for fans – phase cut controller						V
	Variable speed control for fans – VFD (mounted inside cabinet)			V			–
	Variable speed control for fans – VFD (mounted outside cabinet with metal protection)			–			V
Heat exchanger	Aluminum fins/copper tube coil						●
Packaging	Plastic wrap protection						●
	Wooden base						opt
	Wooden case (close box)						opt
●	Standard						
V	Version: select the correct equipment material number						
opt	Optional accessory						
–	Not available						

TDV Technical Data

Model		TDV 01 A	TDV 02 A	TDV 03 A	TDV 04 A	TDV 05 A	TDV 06 A
Cooler version		Dry	Dry	Dry	Dry	Dry	Dry
Cooling capacity ⁽¹⁾ [kW]		64	127	221	304	368	461
Nominal water flow ⁽¹⁾ [m³/h]		6.0	12.0	20.8	28.6	34.0	42.6
Water pressure drop [bar]		0.2	0.2	0.2	0.4	0.2	1.3
Total air flow [m³/h]		24,780	48,330	75,340	100,830	126,330	149,110
Dimensions [mm]	L⁽³⁾[5] [mm]	2150 (1975)	3056 (2881)	4206 (4031)	5690 (5432)	6850 (6582)	8076 (7750)
	L⁽⁴⁾[5] [mm]	2445 (2270)	3595 (3420)	4715 (4431)	5940 (5756)	7090 (6906)	8254 (8064)
	W [mm]	1715					
	H [mm]	2133					
Model		TDV 01 AD	TDV 02 AD	TDV 03 AD	TDV 04 AD	TDV 05 AD	TDV 06 AD
Cooler version		Adiabatic	Adiabatic	Adiabatic	Adiabatic	Adiabatic	Adiabatic
Cooling capacity ⁽¹⁾ [kW]		112	221	365	494	611	737
Nominal water flow ⁽¹⁾ [m³/h]		11.0	21.0	34.0	46.3	57.0	63.5
Water pressure drop [bar]		0.6	0.5	0.5	1.0	0.5	2.7
Total air flow [m³/h]		22,000	44,000	66,000	88,000	110,000	132,000
Dimensions [mm]	L⁽³⁾[5] [mm]	2150 (1975)	3056 (2881)	4206 (4031)	5690 (5432)	6850 (6582)	8076 (7750)
	L⁽⁴⁾[5] [mm]	2445 (2270)	3595 (3420)	4715 (4431)	5940 (5756)	7090 (6906)	8254 (8064)
	W [mm]	2115					
	H [mm]	2133					
Total installed power ⁽²⁾ [kW]		2.30	4.30	6.30	8.30	10.30	12.30
Maximum absorbed current ⁽²⁾ [A]		4.20	8.40	12.60	16.80	21.00	25.20
Axial Fans Qty./Diam. [No./mm]		1/900	2/900	3/900	4/900	5/900	6/900
Water content [l]		64	94	209	258	316	359
Hydraulic connection - in/out		3"		4			
Fan control		Phase cut or VSD					
Controller		Elektronikon™ MK5S + SMARTLINK					
Power supply [V/Ph/Hz]		400/3+PE/50					
Auxiliary voltage		24Vdc					
Electrical approval		IEC/cULus					
Pressure vessel approval		PED 2014/68/UE					

(1) Reference condition: Ambient Air 35°C with RH=40%; Water in 50°C / out 40°C with/without pump; % Glycol=25%; Elevation above sea level=0

(2) Value specified for machine with "no pump"

(3) Overall dimensions without manifold

(4) Overall dimensions with manifold

(5) Value between brackets are referred to phase cut version variants



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