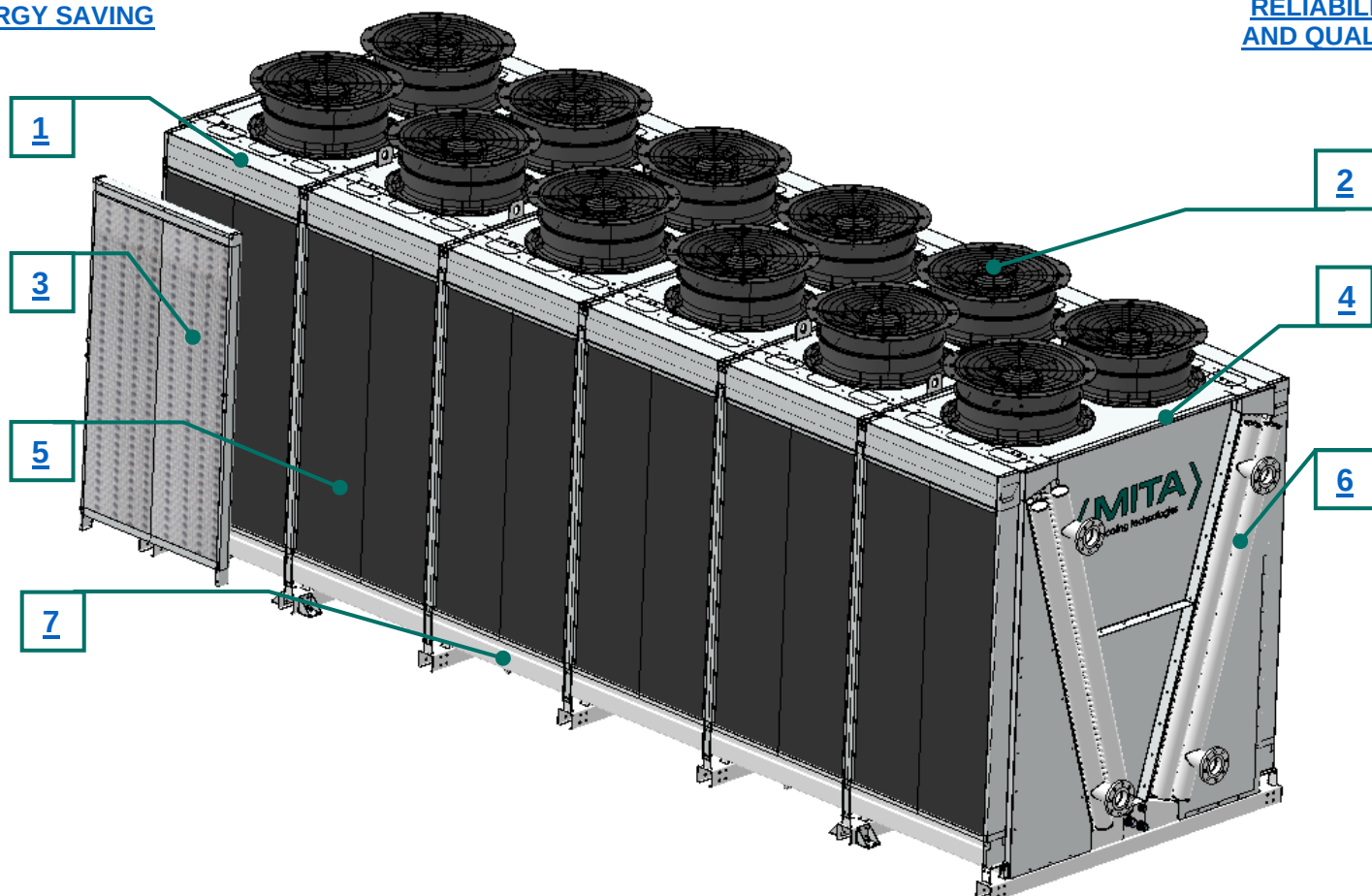




ENERGY SAVING



**RELIABILITY
AND QUALITY**



Axial Fan Adiabatic Cooler

Factory Assembled - Modular V-configuration Design

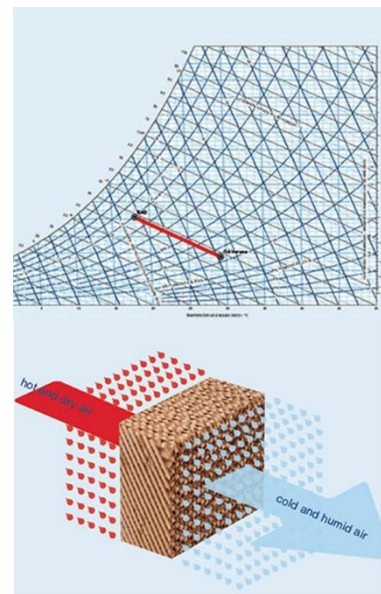
1	Gravity water distribution
2	EC Axial Motor-fan
3	PVC air inlet louvers (optional)
4	Support structure Heat exchange coils
5	Humidifier pack (adiabatic section)
6	Heat exchange coils
7	Water collection basin and recirculation circuit
8	Control Panel

THEORY AND OPERATION OF ADIABATIC COOLING

The **adiabatic process** is a thermodynamic transformation that occurs with no heat exchange between bodies or fluids.

The cooling capacity of an adiabatic system lies in sensible heat exchange between a pre-cooled air flow and the fluid inside coils. Adiabatic cooling mechanism is based on **mass transfer**, between water stored in the adiabatic pack and the air flow. Relative humidity of air increases and its temperature correspondently decreases, because of latent heat absorbed by water during evaporation.

The heat exchange itself occurs between adiabatically cooled air and a process fluid, flowing inside the heat exchange coils.



REGULATION STRATEGY AND ACCURATE SIZING

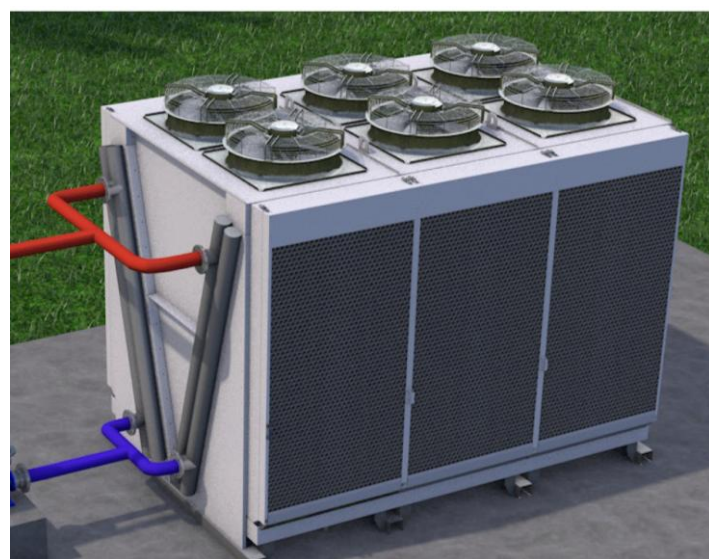
A sophisticated regulation strategy is the core feature of PAD-XL adiabatic cooler, with automatic and tuneable switch between two operating modes:

Dry operation: provided during cold periods. External air is drawn in and conveyed into the finned coils. The humidification process is deactivated, the system operates as a dry cooler, with no water consumption.

Adiabatic operation: provided during hot periods. External air is drawn in and forced through the humidifier pack, where it decreases its temperature. Short wetting cycles, with homogeneous distribution of water over the pack, ensures optimal air humidification.

The adiabatically cooled air is subsequently conveyed to the finned coils. The adiabatic mode significantly increases heat exchange efficiency in the hottest period of the year. Wetting cycles consist of water falling on the humidifier pack. Excess water is recovered by means of a recirculation circuit, to minimize water consumption.

The **switch between the operating modes is automatic and customizable**, as operating conditions are constantly controlled. Probes also measure **process water temperature and regulate fan RPM** to ensure reduced operating costs.



PRODUCT RANGE & NOMENCLATURE

Length: Up to 11,6 m

Versions: Cooler and condenser

Coil type: Cu/Al, Cu/ AlMg / AISI/Al

Fin spacing 1,6 – 2,0 – 2,5 mm.

Fan type: EC axial Ø710 mm

Number of fans: 4 - 20

Dimensional specifications				Coil features			
PAD - XL - 06 D	6	Q	W - K1				
Product line	Body type	Number of fans	Type of fans	Number of rows	Geometry	Fluid type	Options
		04	D 4,2 kW	4	Q	R	K0
		06	Ø 710		40-16	Refrigerant	Without recirculation kit
		08		5			
		10	E 1,85 kW	6	T	W	K1
		12	Ø 710		30-12	Water	With recirculation kit
		14					
		16					
		18					
		20					

1. GRAVITY WATER DISTRIBUTION

Water distribution channel running on top of the adiabatic pads is manufactured in stainless steel AISI 304. The wetting cycles are not operated with spraying nozzles but by means of gravity distribution, with easy access for cleaning.

Connecting and equalizing piping in PVC.



2. EC AXIAL FAN

EC Axial fan

Electronic commutation (EC) motor with sickle bladed fan placed in two rows, for homogeneous air distribution. Rotation speed decreases automatically during the wetting cycle, to avoid dragging or aerosol.

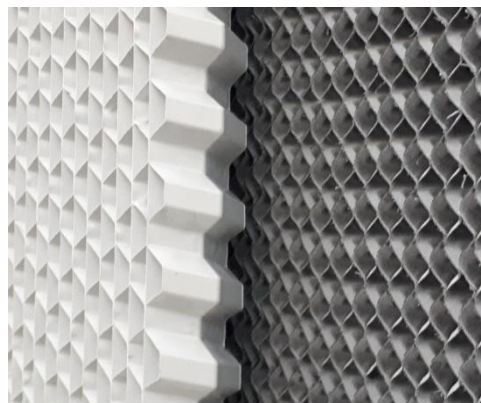
- **IP55** Degree of protection
- Moisture and hot climate protection
- Integrated active temperature management
- Multi voltage **3~ 380-480V 50/60Hz**
- **IE5** exceeding Super Premium Efficiency class
- **ErP 202x** energy efficiency compliant.



3. PVC AIR INLET LOUVERS (optional)

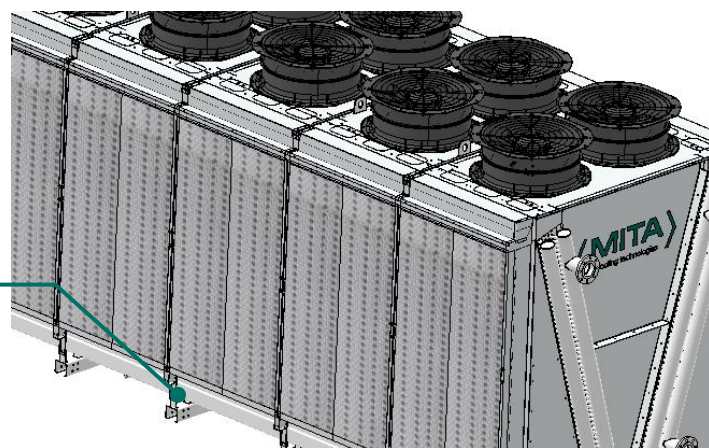
PVC air Inlet louvers, for adiabatic section protection: this element avoids direct exposure to sunlight and penetration of impurities.

Supplied as a separate kit, easy to install and remove to access the adiabatic packs and water collection gutters.



4. SUPPORT STRUCTURE

Support structure made of press-folded galvanized metal sheets and subsequently protected by a RAL 7035 paint cycle. Structure designed to support the heat exchange coils and provide anchoring to the ground or an underlying frame.



5. HUMIDIFIER PACK (ADIABATIC SECTION)

The humidifier pack (adiabatic section) is essential for efficiency, this is a surface which is humidified during the hottest hours of the year with water (simple tap water), so that air, the cooling element, humidifying itself reduces its temperature, only when needed.

This section is composed of removable adiabatic pads in **cellulose or flocked PVC** (synthetic material) as an option.

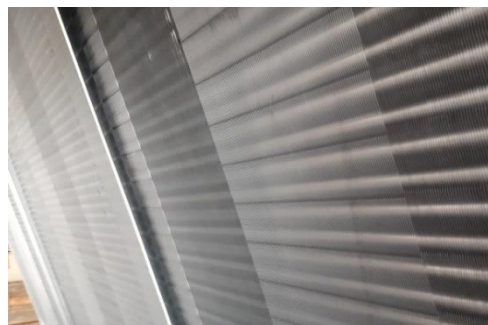
Thanks to the operating logic, **short wetting cycles** interspersed with long periods (a few seconds every 15 minutes) are sufficient. Water consumption is reduced to a minimum, no drag or aerosol phenomena occurs.

The adiabatic pack is easily accessible and removable for cleaning and maintenance operations.



6. HEAT EXCHANGE COILS

Heat exchange coils arranged in a V layout inside the cooler are made of copper pipes and aluminum fins. Angle between coils, diameter of pipes, thickness and pitch of fins are designed to ensure the best heat exchange performance with suitable fluid and airflow pressure drops.



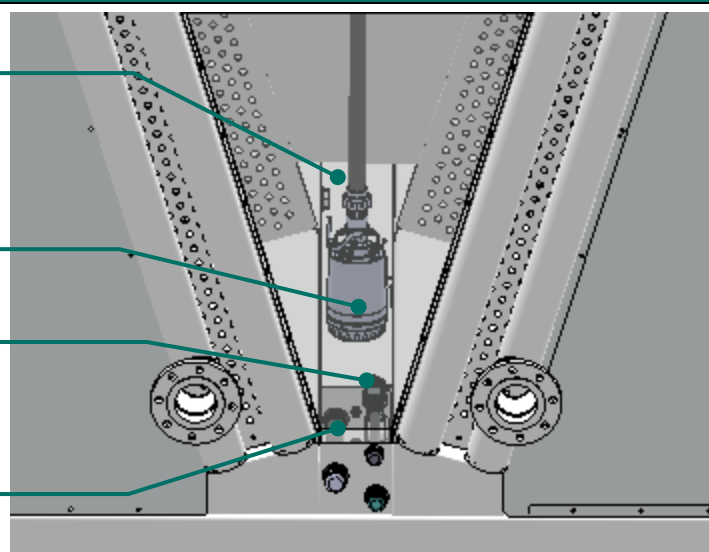
7. WATER COLLECTION GUTTERS AND WATER MAKE UP

Water collection gutters made of stainless steel AISI 304. Water flows from the collection gutters to a **central tank**, where submersible pump and hydraulic connections (makeup, blowdown, overflow, drain plug) are positioned.

Submersible pump for humidifying water recirculation, providing significant water savings.

Capacitive level sensors are adopted to control water level in the gutters. When water drops below minimum limit level, the solenoid valve opens to prevent pump cavitation.

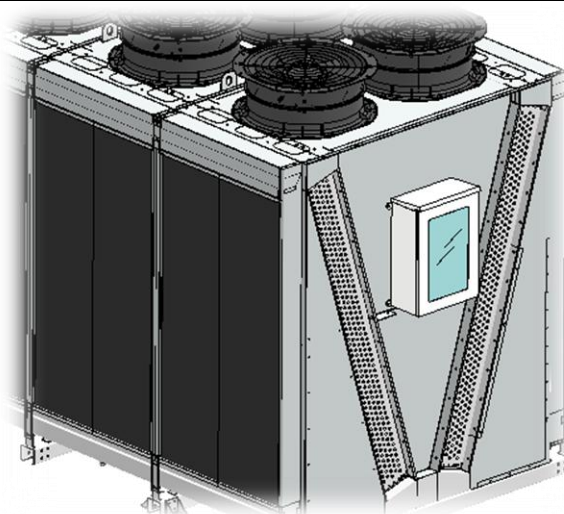
Solenoid valve for the automatic water makeup and blowdown.



8. CONTROL PANEL

Control Panel connected to an HMI to allow simple oversight and setting of cooler's parameters. Communication with other devices is possible via **Modbus protocol**.

MITA IoT tool for remote supervision and management powered by Advanced Analytics technologies available (optional).



The supply of the cooler is limited to the parts listed above. Building and electrical works, pumps, collectors external to the cooler, valves, hoisting gear and any scaffolding and labor are therefore excluded. Accessories and/or constructional variants are available on request. MITA Cooling Technologies S.r.l. may carry out constructional improvements without notice. Images for illustration purposes only.