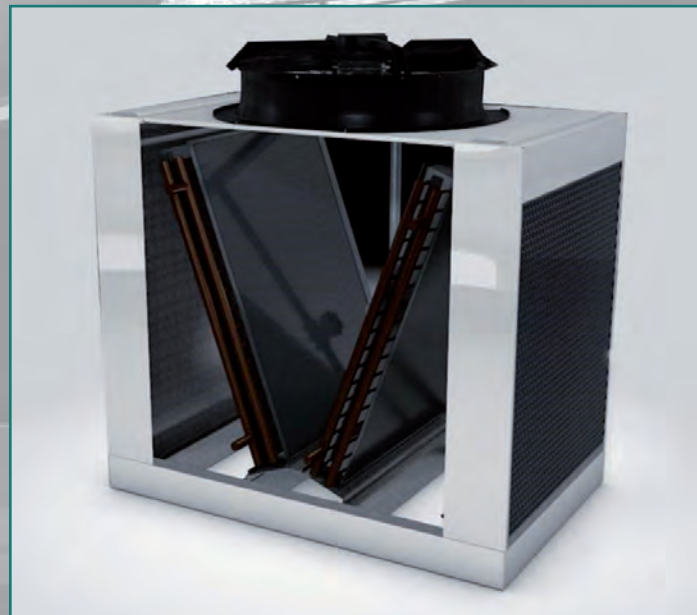




# PAD-V SERIES

Adiabatic Cooler & Condenser



## ADIABATIC COOLING

It is the optimum solution to increase the efficiency of air systems, reducing water consumption and avoiding the risks associated with its management. This is why MITA has expanded its range with an even more innovative, simple and reliable series.

Air cooling systems are based on sensible heat exchange between the fluid flowing

inside the tubes of a battery and the air that brushes against the finned surface of the latter.

To increase efficiency even in the summer, the PAD-V series humidifies the air before it hits the coils' finned surface. So it significantly lowers the temperature and the system gains efficiency even in the hottest period.

Adiabatic coolers and condensers designed for heat rejection capacities of 75 to 1,100 kW (cooling of fluids and condensation of refrigerants). The PAD-V series guarantees above-average **performance, water conservation and energy savings**, thanks to:

- ◆ intelligent Management (PLC) of **wetting cycles** with water recovery;
- ◆ special humidification packs to **maximize adiabatic efficiency**;
- ◆ configuration and arrangement of **V-coils** inside the machine to optimise the heat exchange surface;
- ◆ **EC ventilators** for monitored power consumption.

The PAD-V range of adiabatic coolers includes **4 modular**

**models**, which partly recall the concepts developed in the previous PAD series, but with **greater efficiency and with a compact design**.

**In order to minimise maintenance, stainless steel AISI 304** components (water distribution gutters, water recovery ducts, scroll and impeller of the wetting pump) or plastic material (**PVC** internal pipes) have been adopted.

The **adiabatic humidification packs**, arranged vertically, are **protected from sunlight and pollution** thanks to the PVC protected panels. This configuration also improves the distribution of inlet air on the pack).

## THE NEW PAD-V SERIES



## MAIN ADVANTAGES

*Real water and energy savings*

*No need for water treatment*

*Compact design and easy installation*

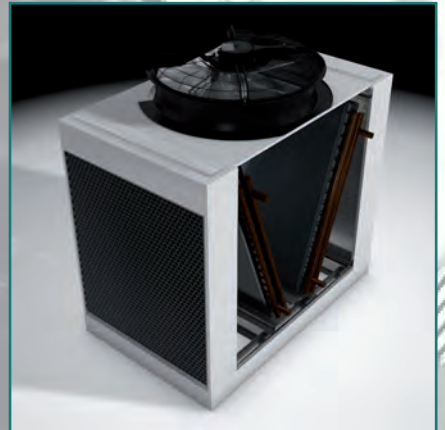
*Rapid payback*

*No risk of Legionella*

*Minimum maintenance (the finned coils are not in contact with the water flow)*

*No contamination of the primary circuit*

*No plume*



## WHERE TO USE PAD-V

*HVAC*

*Data centres*

*Industrial refrigeration*

*Thermal treatments*

*Food & Beverage*

*Generally speaking wherever a fluid needs to be cooled*

## OPERATION

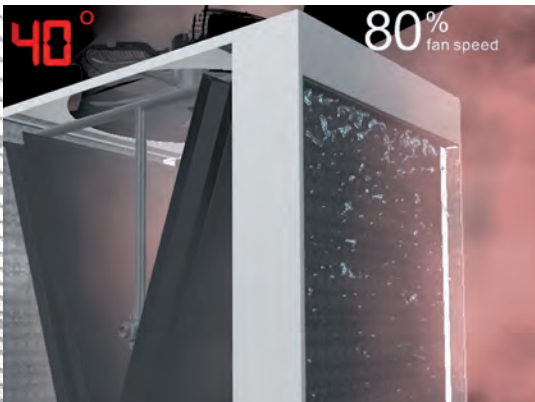
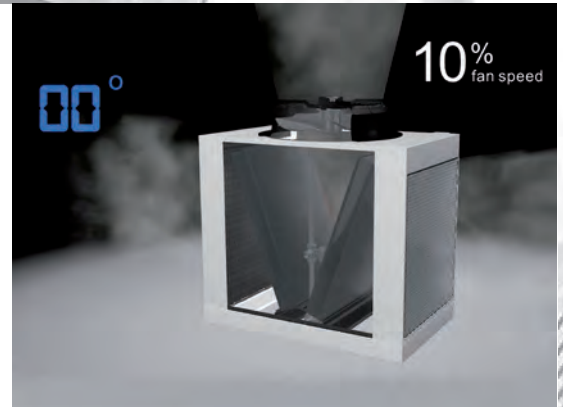
The PAD-V series is **fully automated** and managed by an operator panel equipped with PLC, integrated with the possibility of **remote management**: just set the temperature of the fluid you

wish to obtain and the system will self-adjust throughout the year optimising consumption.

**Dry operation:** provided during the **winter/autumn**. The external air is drawn in and conveyed onto the finned coils.

The humidification process is deactivated, **no water is present**, the humidifier pack is dry and the pump circuit is disconnected.

The **temperature probes**, at the outlet of the cooled fluid and inside the machine, modulate the speed of the fan(s) to **optimise power consumption**.



**Adiabatic operation:** provided during **summer/spring**.

External air is drawn in and passed through the humidifier pack (protected inside the machine) and properly **wet, with very short cycles, with water from the mains** which is previously loaded to activate the adiabatic cooling process.

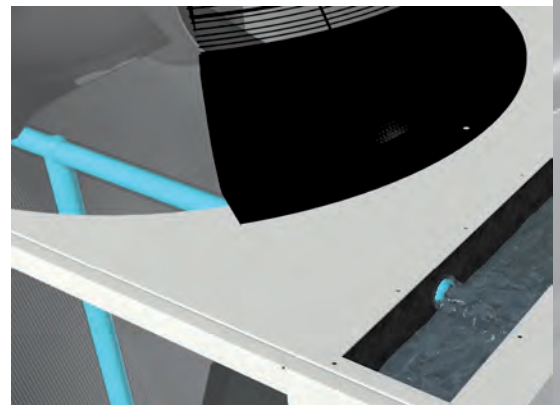
The adiabatically cooled air (therefore at a lower

temperature than the external air) is conveyed to the finned coils **thus increasing the efficiency of the cooler** in the hottest period of the year.

Thanks to special coating applied to adiabatic packs, **designed to retain water** and increase efficiency, **extremely short wetting cycles** can be carried out.

There is no need for continuous wetting cycles, in addition, the excess water is recovered.

The temperature probes, at cooled fluid outlet and downstream from humidification system, **manage the wetting cycles according to need**: this means minimising fan(s) and pump power consumption, as well as minimizing the presence of water in circulation.



**No specific water treatment is required, finned coils are not affected by the wetting**

## SPECIFICATIONS

- ◆ **Support structure** made of press-folded galvanized metal sheets and subsequently protected by a RAL 7032 epoxy paint cycle.
- ◆ **Heat exchange coils** arranged in a V inside the cooler, made of copper pipes and aluminium fins. Angle between coils, diameter of pipes, thickness and pitch of fins are designed to offer the best heat exchange performance with reduced fluid and airflow pressure drops.
- ◆ **Flocked PVC humidifier pack.** The geometric configuration allows the use of untreated water. The particular flocked pack design, as opposed to other types of adiabatic packs, requires spraying only for short periods at

long intervals of time (a few seconds every 15 minutes): this minimizes the power used by the pump and optimises water consumption. At the same time, any dragging or aerosol phenomenon outside the cooler is avoided. The adiabatic pack is easily accessible and removable for cleaning, or storage in a separate place during the winter season.

- ◆ **Temperature probes** PT 100 for measuring external air, humidified air and return temperature.



- ◆ **PVC air Inlet grilles**, for flocked pack protection: avoiding direct penetration of light and water splashes during the wetting cycles. Can be removed to allow adiabatic packs and water collection gutters access.
- ◆ **Axial fan with electronic control** placed centrally in relation to the two V-shaped coils, for optimal air distribution. Its rotation speed decreases automatically during the wetting cycle, to avoid dragging or aerosol. Complies with the energy efficiency requirements of the ErP 2015.
- ◆ **Centrifugal spraying pump**, of closed impeller type in stainless steel AISI 304, complete with IP 55

electric motor and IE3 energy efficiency. Fitted inside the cooler, easily accessible for inspections and maintenance.

- ◆ **Three-way servo-controlled solenoid valve** for the management of the total replacement of the wetting water by emptying the gutters.
- ◆ **Water distribution channel** on the flocked pack in stainless steel AISI 304, without spraying nozzles and gravity distribution, accessible for cleaning.
- ◆ **Connecting and equalizing piping** between the gutters and the pump and between the latter and PVC water distribution channels.

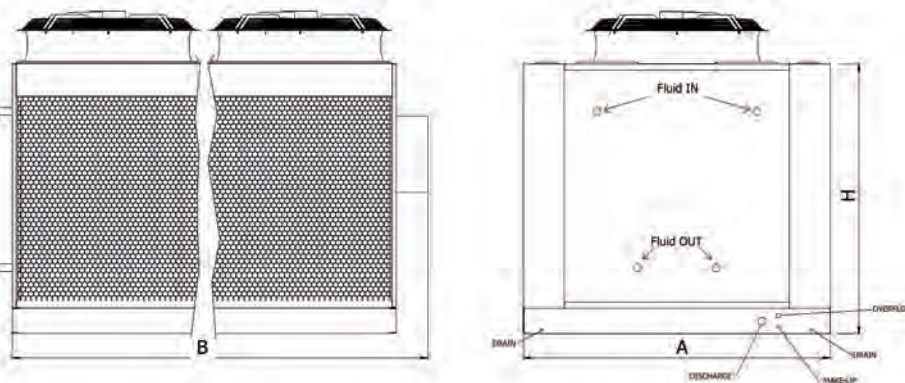
- ◆ **Wetting water collection gutters** in stainless steel AISI 304. Accessible and cleanable, fitted with drainage connection and reintegration.
- ◆ **Capacitive level sensors** for the control and management of the wetting water level in the gutters by means of a solenoid valve as well as pump protection.
- ◆ **Solenoid valve** for the automatic reintegration of the wetting water.
- ◆ **Command and control panel** of the various functions of the cooler, with the possibility of data transmission via Modbus.

# THERMAL POWER, DIMENSIONS AND WEIGHTS

Model	Thermal power (kW)				Dimensions (mm)			Weights (kg)	
	Fluid inlet and outlet temperature (°C)				A	B	H	Empty	Operating
	50/35	40/30	35/30	37/32					
PAD - V 1/4	190	100	75	130	2425	1880	2520	980	1260
PAD - V 1/6	240	130	90	160					
PAD - V 2/4	430	220	170	290	2425	3460	2520	1765	2260
PAD - V 2/6	510	280	200	350					
PAD - V 3/4	650	350	260	450	2425	5040	2520	2646	3387
PAD - V 3/6	800	440	310	550					
PAD - V 4/4	900	470	340	600	2425	6620	2520	3430	4390
PAD - V 4/6	1100	600	420	750					

outdoor air temperature 35°C  
relative humidity 40%

outdoor air temperature 30°C  
relative humidity 40%



Model	EC fans							Wetting pump N. / kW
	Number	Installed power (kW)	Power consumption (kW)	Single fan sound power (dbA)*	Single fan sound pressure 1 m (dbA)*	Single fan sound pressure 10 m (dbA)*	Single fan sound pressure 20 m (dbA)*	
PAD - V 1/4	1	6,0	5,3	85	78	55	48	1 x 1,1
PAD - V 1/6	1	6,0	5,3					
PAD - V 2/4	2	6,0 x 2	5,3 x 2	85	78	55	48	1 x 1,1
PAD - V 2/6	2	6,0 x 2	5,3 x 2					
PAD - V 3/4	3	6,0 x 3	5,3 x 3	85	78	55	48	1 x 1,5
PAD - V 3/6	3	6,0 x 3	5,3 x 3					
PAD - V 4/4	4	6,0 x 4	5,3 x 4	85	78	55	48	1 x 1,5
PAD - V 4/6	4	6,0 x 4	5,3 x 4					

\* Calculated in accordance with ISO 13374

# FANS AND WETTING PUMP

# HYDRAULIC CONNECTIONS

Model	Hydraulic connections				
	In/Out coils	Water load	Water discharge	Drainage	Over-flow
PAD - V 1/4	2"	1/2"	2"	2 x 1/2"	1"
PAD - V 1/6					
PAD - V 2/4	3"	3/4"	2"	2 x 3/4"	1"
PAD - V 2/6					
PAD - V 3/4	4"	1"	2"	2 x 1"	1 1/4"
PAD - V 3/6					
PAD - V 4/4	4"	1 1/4"	2"	2 x 1"	1 1/2"
PAD - V 4/6					

The PAD-V series is perfectly integrated with the wide range of evaporative coolers of



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