PAD

Adiabatic cooling

PAD Series

Intelligent cooling

Saving water and energy

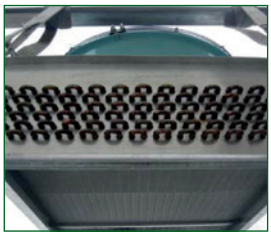
Fast “payback”

No risk for Legionella

No water treatment

MITA®

Adiabatic cooling



Coils with different configuration / characteristics. The coil is not directly wetted.

Version with EC fans

Access to the key components

Version with external water tank

Starting from 1960 Mita focused its business in civil and industrial water-cooling.
MITA offers several solutions with cooling towers (open, closed and hybrid type), evaporative condensers, adiabatic coolers and condensers to propose the most suitable and efficient solution to every project.

General information about adiabatic cooling

"Adiabatic cooling" is a thermodynamic phenomenon by which air temperature is decreased through its humidification.
The temperature that can be reached is called "adiabatic saturation temperature" and, depending on the humidification system's efficiency, it can be much lower than the "dry" air temperature.
MITA adiabatic cooler exploits this principle to improve the finned coil's efficiency, and it can be used to cool water / glycol mixtures or to condensate refrigerants.

MITA PAD: Structural and operating characteristics (patented system)

MITA adiabatic cooler has been designed to reduce water consumption, minimize power consumption and totally prevent aerosol emissions into the atmosphere.
The high saturation efficiency - ensured by the special humidifier pack - enables the use of a single finned coil with several rows to obtain the same performance as traditional systems with a double 2-rows coil.
In MITA adiabatic cooler the air humidification is obtained by short wetting cycles of the humidifier pack, happening at intervals of several minutes, in comparison with traditional systems in which the humidifier pack must be continuously wetted, or water must be constantly sprayed in the air flow.
In MITA solution the humidity required to saturate the air flow is released constantly over time by the pack until the next wetting cycle (in average conditions, 4 to 6 wetting cycles/hour, lasting only a few seconds, are sufficient). It is not necessary to treat the water; the excess water for the wetting is recovered.

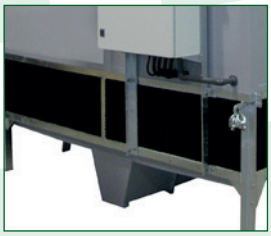
System main advantages:

- **Real saving of energy and water**
- **Fast payback**
- **No risk of legionella**
- **No water treatments required**
- **Low maintenance**
- **No contamination of the primary circuit**
- **No plume effect.**

Adiabatic pack in flocked PVC with high water absorption properties. "In line" and protected adiabatic section (patented system)

Version with high efficiency motor - fan group

Technical control cabinet



Version with water collecting tank

Fields of application:

- **HVAC**
- **Data Center cooling**
- **Industrial refrigeration**
- **Thermal treatments**
- **Food & Beverage**

Metal manufacturing process

Plastic manufacturing

Industrial refrigeration

Commercial refrigeration

Power plant

Cooler operation and control logic

The cooler operation is automatically controlled by an electrical board provided with factory-programmed PLC according to the logic explained below.

The electrical board can be operated either "automatically" or in "stand-by" (the latter mode can be used in case of emergency or for short maintenance works).

Two types of operation are programmed in "automatic" mode:

- **dry operation**: in the winter season, when the air is not humidified (the adiabatic circuit is empty). In this case, the air enters the cooler from the top (dampers open, if provided), or crosses the dry humidifier pack (pump circuit off).
- **adiabatic operation**: in the summer season, when the air undergoes an adiabatic cooling process, the air enters the cooler from the lower part and crosses the humidifier pack (dumpers closed and pump circuit on).

MITA ADIABATIC COOLER vs TRADITIONAL ADIABATIC COOLER

PAD	Traditional adiabatic cooler	MITA advantages
Humidifier pack		
• Considerable water retaining capacity • Large channels, "in-line" positioning, with wetting system and heat exchanging coil • Not exposed to sunlight • Flocked PVC material	• Narrow air channels • Transverse positioning to the air flow • Direct contact with sunlight • Material: cellulose soaked with resin	• Homogeneous wetting and air saturation • Low pressure drops, as air flow does not change direction • Long life, as not in contact with sunlight • Non-rotting • Low fouling factor
Finned coil		
• Several types of coil • Arrangement "in line" with the humidifier pack • Single 4 or 6-rows coil	• Copper tubes with aluminum fins • Finning with reduced spacing • "V" positioning • Double 2-rows coil	• One single high-efficiency coil • Reduced fouling factor • Low pressure drops, less power consumption
Water consumption (in summer conditions)		
• 4-6 wetting cycles/hour (10 seconds each) • Water collecting tank	• Continuous wetting • Water treatment required with consequent increase of costs	• Reduced total water consumption • No water treatment necessary
Control system		
• Wetting cycles with fans not running • All factory-preset parameters are managed automatically, also in the version equipped with bypass dampers	• Wetting with fans running • Bypass dampers not available on any models	• Low water consumption • Low energy costs • Low cleaning and maintenance costs • No aerosol

Technical Data Sheet and Dimensions

PAD Series

Available version:

- **With or without air bypass dampers**
- **High efficiency motors, directly coupled with the fans (pre-assembled motor-fan groups)**
- **Electronic fans (EC)**
- **Water collecting tank**
- **External water storage tank.**

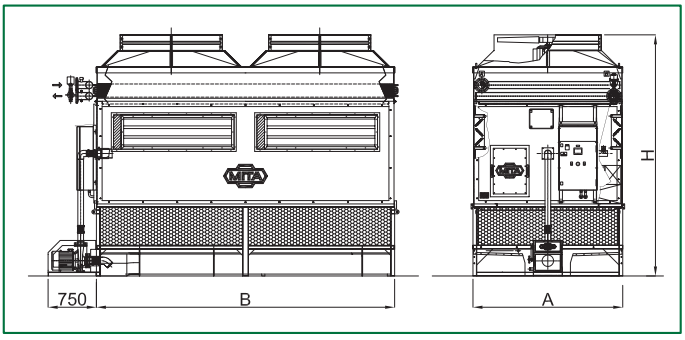
PAD Models	Finned coils rows N°	Dimensions (version with assembled motor-fan group) mm			Weight mm*		Motor installed power kW**	Wetting pump installed power kW***	Thermal capacity kW**	Water consumption for humidification max (l/h)**
		A	B	Pump compartment	Version without bypass air dampers	Version with bypass air dampers				
4/4	4	2360	2360	750	3300	3800	5,5	1,5	235	280
4/6	6						7,5	1,5	285	265
6/4	4	2360	3625	750	3300	3800	11	2,2	360	430
6/6	6						15	2,2	440	410
8/4	4	2360	4720	750	3300	3800	5,5 x 2	4	480	575
8/6	6						7,5 x 2	4	590	545
10/4	4	2360	5740	750	3300	3800	7,5 x 2	4	610	720
10/6	6						11 x 2	4	740	680
12/4	4	2360	7020	750	3300	3800	5,5 x 3	4	750	870
12/6	6						7,5 x 3	4	900	820

* Height referred to the version with water collection tank and pre-assembled motor - fan groups (for the version with external water storage tank - 300mm; for the version with EC fans: - 200mm)

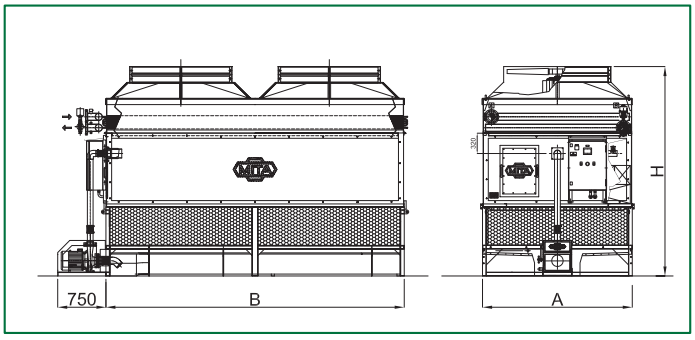
** Maximum installed electric power (with 6-rows coil), thermal duty and water consumption referred to the conditions described below

*** Power / hour absorbed by the pump equal to 2% of installed power (from 4 to 6 wetting cycles / hour of 10 seconds each).
Considered working conditions: T.in 50°C, T.out 35°C, T.dry 35°C, R.H. 40%.

PAD 8-10 series (2 fans) with air bypass dampers and with water collecting tank



PAD 8-10 series (2 fans) without air bypass dampers and with water collecting tank



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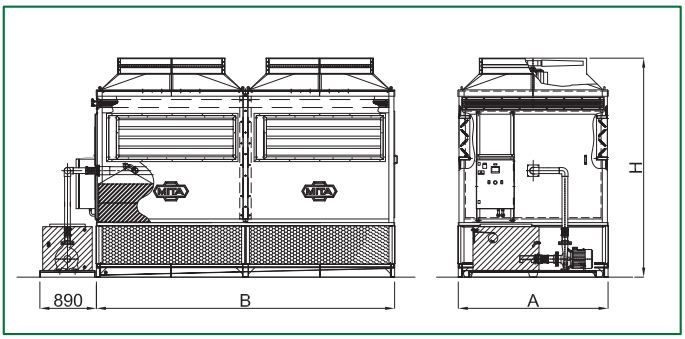

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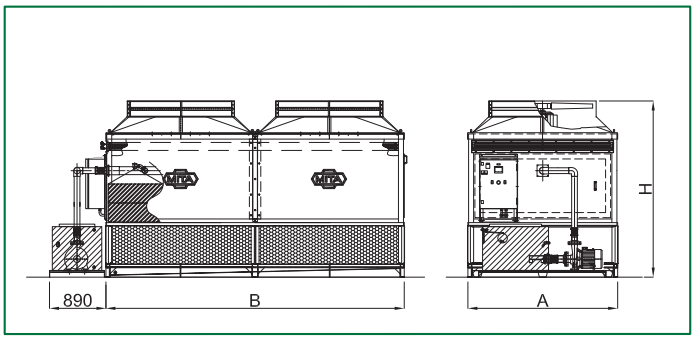

Technical data not binding. Please contact MITA technical department for further details

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