

DR-Z

**ADIABATIC DRY COOLERS WITH
PADS FOR OUTDOOR INSTALLATION
FROM 250 TO 1250 kW**



DR-Z

THE ADIABATIC TECHNOLOGY DEVOTED TO HIGH ENERGY EFFICIENCY



Adiabatic dry coolers with pads for outdoor installation from 250 to 1250 kW

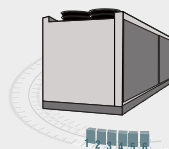
DR-Z is the new dry cooler series with an adiabatic system designed to enhance free-cooling operation. The built-in water recirculation system, oval tube heat exchanger and EC fans maximize the benefits coming from the adiabatic cooling achieving the highest EER and extended operation in free-cooling mode.

Thanks to a dedicated design and premium level technologies, the new adiabatic dry cooler DR-Z provides:

- ▶ Low water consumption
- ▶ No risk of water on the coils
- ▶ High temperature reduction
- ▶ No time limit for operation
- ▶ Legionella protection

IT COOLING APPLICATIONS

- ✓ Data centers and server rooms
- ✓ Technological hubs
- ✓ Telecommunication installations
- ✓ Laboratories and technical rooms



▶ 6 models

▶ From 4 to 14 fans

TWO DIFFERENT OPERATING MODES

DRY cooling operation

The water is cooled using ambient air. Dry cooling operation is limited by a maximum temperature of the air entering the coils, up to approximately 3°C lower than the inlet temperature of the water to be cooled.

WET cooling operation

The air entering the finned coils is brought to its “adiabatic saturation” condition and thus pre-cooled. This extends the temperature range where it is possible to dissipate the thermal load without using mechanical cooling.

Adiabatic system and free-cooling technology: the perfect synergy for IT Cooling applications

ADIABATIC COOLING



The cooling effect is achieved by water evaporation. The adiabatic cooling system of DR-Z units lowers the air temperature that passes through the heat exchanger coils, increasing the efficiency of the machine without increasing.

WIDEST USE OF FREE-COOLING



The innovative adiabatic cooling system of DR-Z dry coolers maximizes the free-cooling operation in chilled water cooling plants with dry coolers in series or in parallel with conventional chillers. The benefits are greater in climatic zones with low relative humidity.

HIGH CORROSION RESISTANCE



High corrosion resistance both for the aluminium casing and the coils. DR-Z remote condensers are therefore the ideal solution for harsh climates.

- ▶ Industrial areas with high humidity and aggressive atmosphere (C5-I)
- ▶ Production plants, chemical plants and buildings with high pollution (C4, C5-I, C5-M)
- ▶ Coastal areas with high levels of salt in the air.

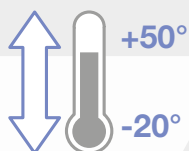
PREMIUM EFFICIENCY



Decreased energy consumption and the use of innovative technologies as much help obtain maximum annual energy savings.

- ▶ Power input reduction by 15%
- ▶ Air flow increase up to 9%
- ▶ Thermal exchange increase up to 8%

WIDE OPERATING RANGE



The units work with outdoor air temperatures from -20°C up to +50°C.

NOISE REDUCTION



The Axial EC fans (ErP2020 compliant) of the DR-Z dry cooler has been accurately designed to ensure a noise reduction up to 3 db(A).

TECHNOLOGICAL CHOICES

CONTROL SYSTEM

Control and monitoring buttons on the unit's front panel.

- ▶ EC fans rotation speed regulator with a graphic interface
- ▶ Serial port MODBUS RTU RS 485
- ▶ Adiabatic system control (System Manager)
- ▶ "By-pass" function. In case of a

malfunction, it excludes the EC fans rotation speed regulator from the control system.

- ▶ Drying system of adiabatic panels. This stops the adiabatic system for two hours per day.

EC FANS

High efficiency axial fans (Erp 2020 compliant) with EC motor for low noise levels. Maximum air flow and efficiency thanks to:

- ▶ Aluminum blades with bionic design
- ▶ Air flow conveyor in composite material
- ▶ Integrated diffuser with dynamic energy recovery system.

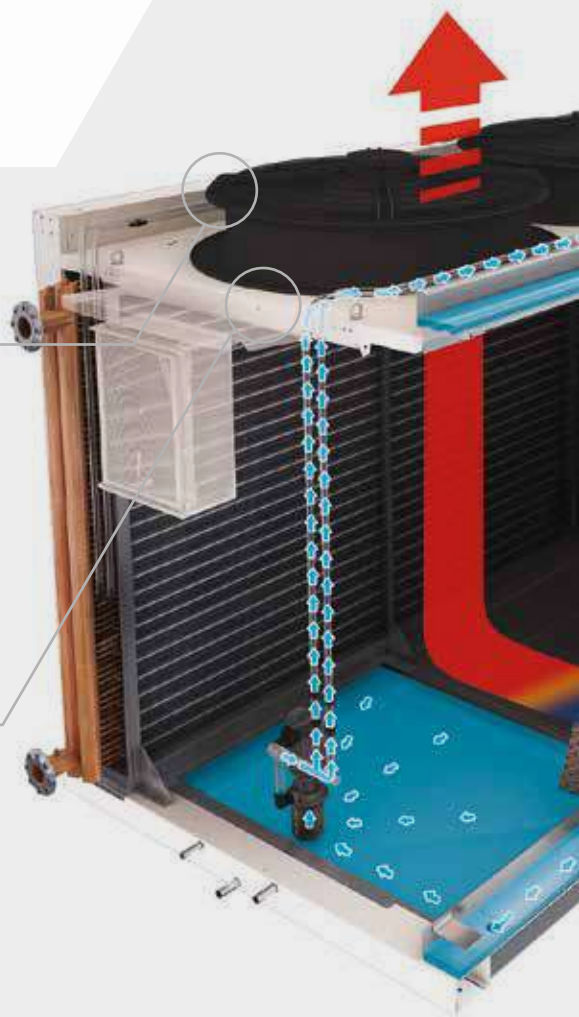


CASING

Structure in hot galvanized steel with epoxidy powder finish. This material offers:

- ▶ High mechanical resistance
- ▶ Good surface sturdiness
- ▶ High corrosion resistance

Adiabatic DR-Z dry coolers are compatible with all kinds of climates. The standard version has epoxy finish on the casing and the fins are pre-painted. This allows the DR-Z to be installed in C3 medium classified areas. Optional surface treatment for the casing and exchangers are available to operate in C5-M classified environments.



OPTIONS

ADDITIONAL TREATMENTS FOR FINS

ElectroFin ®: for high corrosion protection (marine environments); corrosion resistance ASTM B117: 6000h.

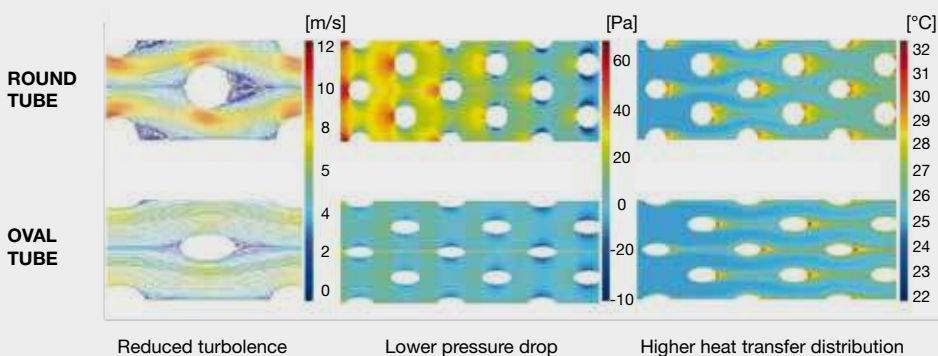


Blygold®: for medium corrosion protection; corrosion resistance ASTM B117: 4000h



COOLING SECTION

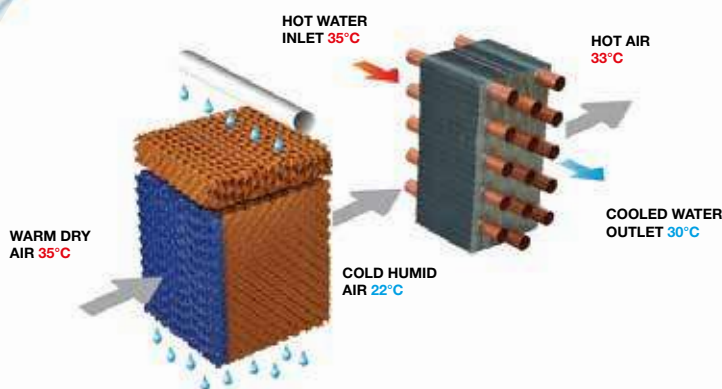
Finned tube type with oval section copper tubes and aluminium alloy pre-painted fins. The oval section represents a step forward in heat exchanger design; compared to the traditional solution with round tubes. DR-Z's cooling section increases performances up to 15% and reduces air side pressure drops by 40% providing quieter and more efficient operation.



EVAPORATIVE COOLING PADS

The adiabatic panels are made of pure cellulose which have been saturated with biocidal and antibacterial agents which provide:

- ▶ High absorbing capability
- ▶ Proper resistance to mechanical stress and to deterioration due to UV rays, fungi, bacteria, algae, etc.



UV LAMP

The UV lamp provides water sterilization within the adiabatic system. Each time the water recirculation system is active, the lamp is activated which sterilizes the water using ultraviolet light. The water is treated continuously while it passes through the system. The UV light kills all pathogens (including legionella bacteria).



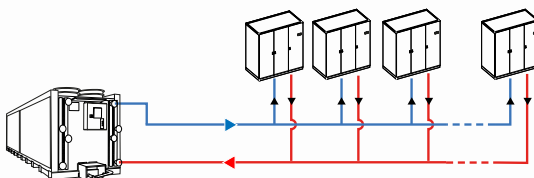
INSTALLATION CHOICES

DR-Z can be easily inserted in any type of IT Cooling system. Depending on the specific installation requirements, it is possible to install one or more units with different redundancy and operating logics.

When the ambient air conditions allow the complete dissipation of the plant thermal load by adiabatic dry cooler, the system operates exclusively in “free-cooling” mode. The chiller or direct expansion system only activates when the adiabatic cooler by its self, is not enough to satisfy the full cooling demand.

STAND ALONE

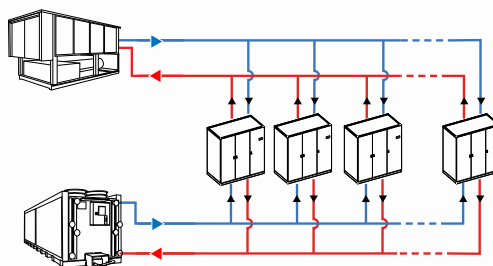
Adiabatic Dry
Cooler DR-Z



IN PARALLEL WITH AIR COOLED CHILLER

Air cooled liquid
chiller
IN PARALLEL

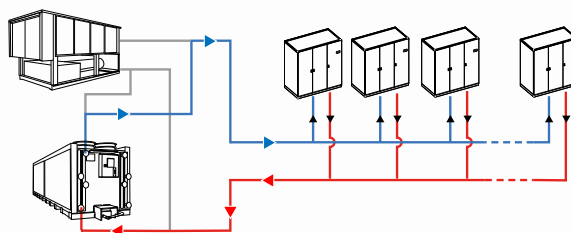
Adiabatic Dry
Cooler DR-Z



IN SERIES WITH AIR COOLED CHILLER

Air cooled liquid
chiller
IN SERIES

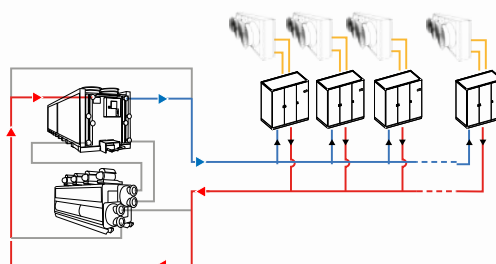
Adiabatic Dry
Cooler DR-Z



WITH WATER COOLED CHILLER

Adiabatic Dry
Cooler DR-Z

Water cooled
liquid chiller





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Adiabatic Dry Coolers with pads for outdoor installation.
From 250 to 1250 kW



AXIAL-EC



ADIABATIC

INDIRECT
FREE COOLING

DR-Z

MODEL			250	350	550	750	1000	1250
CAPACITY	(1)	kW	223	316	547	723	877	1047
"EC" SUPPLY FANS		n.	4	6	8	10	12	14
Air flow		m³/h	94564	112133	184673	230842	273725	319346
Fans power input	(1)	kW	9,6	8,22	19,4	24,3	29,4	34,3
COOLING COILS		n.	2	2	2	2	2	2
Water flow rate	(1)	m³/h	26	36,8	63,6	84,1	102	122
dP coil	(1)	kPa	34,4	25,2	13,6	20,8	19	27,2
Water volume		l	93,7	185,4	311,1	388,8	558,3	652
ADIABATIC SYSTEM								
Water consumption	(1)(2)	m³/h	0,27	0,32	0,52	0,65	0,78	0,90
Power input	(1)	kW	0,7	0,7	1,2	1,2	1,2	1,2
Water volume		l	253,2	286,8	320,4	354	387,6	421,2
POWER SUPPLY		V/Ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
ENERGY EFFICIENCY INDEX	(1)							
EER Energy Efficiency Ratio		kW/kW	21,8	35,4	26,5	28,3	28,7	29,5
SOUND LEVEL	(3)							
Sound power level [Lw] ISO 9614-2		dB(A)	90	86	93	94	95	95
Average sound pressure level [Lpm] ISO 3744								
At 1m		dB(A)	70	65	72	72	73	73
At 5m		dB(A)	62	58	65	66	66	66
At 10m		dB(A)	58	54	60	61	62	62
DIMENSIONS								
A - Length		mm	3222	4422	5622	6822	8022	9222
B - Width		mm	2550	2550	2550	2550	2550	2550
H - Height		mm	2905	2905	2905	2905	2905	2905
NET WEIGHT		kg	1523	2367	3075	3506	4319	5157
WEIGHT IN OPERATION	(4)	kg	2048	3017	3884	4426	5442	6407

Notes:

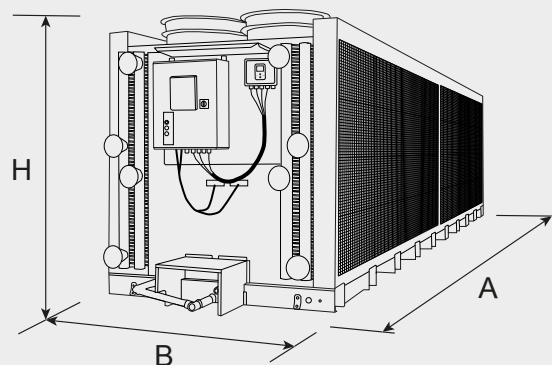
THE COOLING CAPACITY DOES NOT CONSIDER THE SUPPLY FAN MOTOR THERMAL LOAD

1 Referred to ambient air 18°C-50 %UR (12,15 °C Wb) with solution temperature 28/20°C with 30% ethylene glycol.

2 Refer to ELCA WORLD for the calculation of the water consumption of adiabatic system in the desired reference condition.

3 Acoustic data of the standard machine at full load working conditions

4 Weight in operation does not consider the eventual presence of glycol in the circuit of the finned coil heat exchanger.





for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



mitsubishi electric HYDRONICS & IT COOLING SYSTEMS S.p.A.

Head Office: Via Roma 5 - 27010 Valle Salimbene (PV) - Italy

Tel +39 (0) 382 433 811 - Fax +39 (0) 382 587 148

www.rcitcooling.com

www.melcohit.com