ilmed IMPIANTI

Since 1981

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO

ADIABATIC COOLER



ADIABATIC COOLER

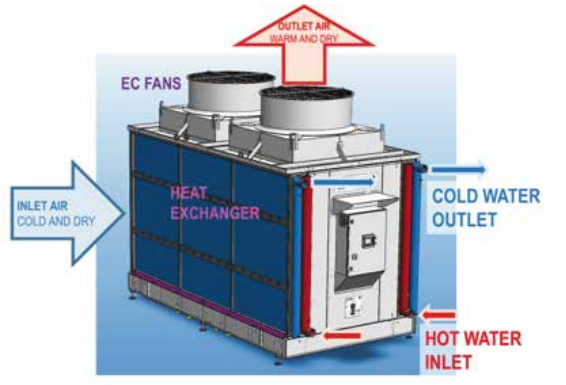
> INTRODUCTION

Ilmed Impianti I-DAC Series coolers are designed to cool a process fluid (water or water and glycol) with reduced or no water consumption, using energy-efficient fan units.

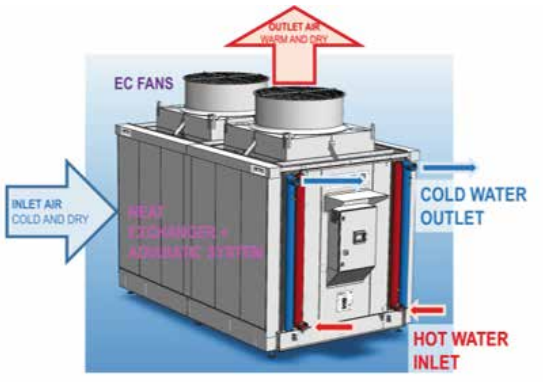
The main components are finned coils (through which the process fluid flows), axial fans, EC motors with IE5 efficiency and treated cellulose humidifying pads. Technical and practical features have also been incorporated to simplify routine and extraordinary maintenance and allow a quick restart in the event of a malfunction.

Depending on the selected configuration and customer requirements, the process fluid can be cooled in dry or adiabatic mode:

- ✓ Dry cooling: ambient air is drawn through the finned coils by the fan units
- ✓ Adiabatic cooling: ambient air passes through humidification panels before reaching the finned coils. This system humidifies and cools the inlet air, improving cooler performance while using only a limited amount of water during the summer



Dry Cooling (Dry Cooler)



Adiabatic Cooling (Adiabatic Cooler)

All models are designed by Ilmed Impianti with dimensions suitable for transport by truck or sea. Three size ranges are available:

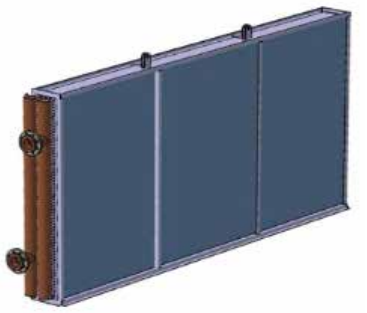
- ✓ **I-DAC P (Small),** 2200 mm wide models suitable for transport in a 40 ft HC container
- ✓ **I-DAC M (Medium)**, 2400 mm wide models suitable for transport on a standard truck
- ✓ **I-DAC (Large)**, 2970 mm wide models suitable for transport on a unescorted oversized truck

> MANUFACTURING FEATURES

STEEL STRUCTURE

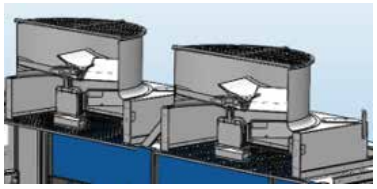
The structural components are made of low-carbon DX51D steel in accordance with EN 10346, protected by continuous hot-dip galvanizing (Sendzimir process) with various zinc coating weights (Z275, Z450, etc.).
The cooler interior can be accessed through a door on the side opposite the finned-coil nozzles.

FINNED COILS



Finned-coil heat exchangers with copper tubes, aluminum fins and galvanized steel frames. For adiabatic operation, the aluminum fins have a hydrophilic coating to prevent water accumulation and corrosion. AISI 304 or AISI 316 stainless steel tubes are available on request. The coils comply with major international codes, including PED and ASME VIII.

FAN GROUPS



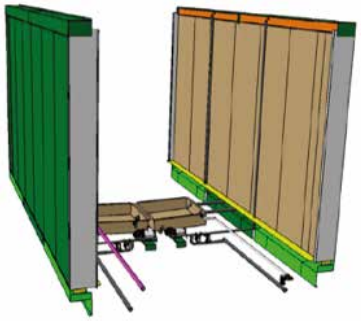
The cooler uses induced draft, with the fans installed at the top. The electric motors are EC permanent-magnet synchronous motors with IE5 efficiency. Each fan is mounted directly on the motor shaft, and the entire unit is housed in an assembly that can easily be removed from inside the cooler.
The fan blades have a high-efficiency airfoil profile. A metallic safety guard protects the fan outlet.

ELECTRICAL CONTROL PANEL



Each cooler has an electrical panel that controls the fan motors and the electrical components of the adiabatic system. The panel is supplied installed on the cooler wall beneath a protective canopy.
The front of the panel has an HMI, a main switch and two indicator lights (alarm and power on). The cabinet houses the PLC, a VPN router/gateway with SIM card, fuses, protective relays and cooling fans.

ADIABATIC SYSTEM



The adiabatic system that humidifies and cools the ambient air consists of the following main components:

- ✓ Treated cellulose humidification panels
- ✓ Diaphragm pumps
- ✓ Water make-up and drain solenoid valves
- ✓ Minimum and maximum level sensors in the water collection trays
- ✓ Water distribution system for wetting the pads (pipes, channels and water collection trays)

MEASUREMENT AND PLC CONTROL

The coolers have sensors connected to the PLC inside the electrical panel to measure temperature and pressure on the fluid and air sides.
The controller uses these measurements to adjust the speed of the EC motors, and thus the fans, to deliver the required thermal performance with the lowest possible energy consumption. Air-side and fluid-side pressure measurements also help detect blockages and fouling inside the cooler so that prompt action can restore optimal operating conditions.
Where an adiabatic system is provided, the cooler is configured to control the pumps and solenoid valves.

REMOTE DATA ACQUISITION AND CONTROL

The PLC in the electrical panel is connected to a router/gateway that allows an operator to communicate remotely with the cooler using a computer. Measurements from sensors installed on the cooler can be acquired and stored, and the PLC firmware can be updated to continuously monitor proper operation.



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YOUR COLD WATER

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