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CDA-F

# HiRef

Innovators above  
the standards

SERVICES

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INDUSTRY



## Chillers with natural refrigerant R744 (CO<sub>2</sub>)

# CDA-F

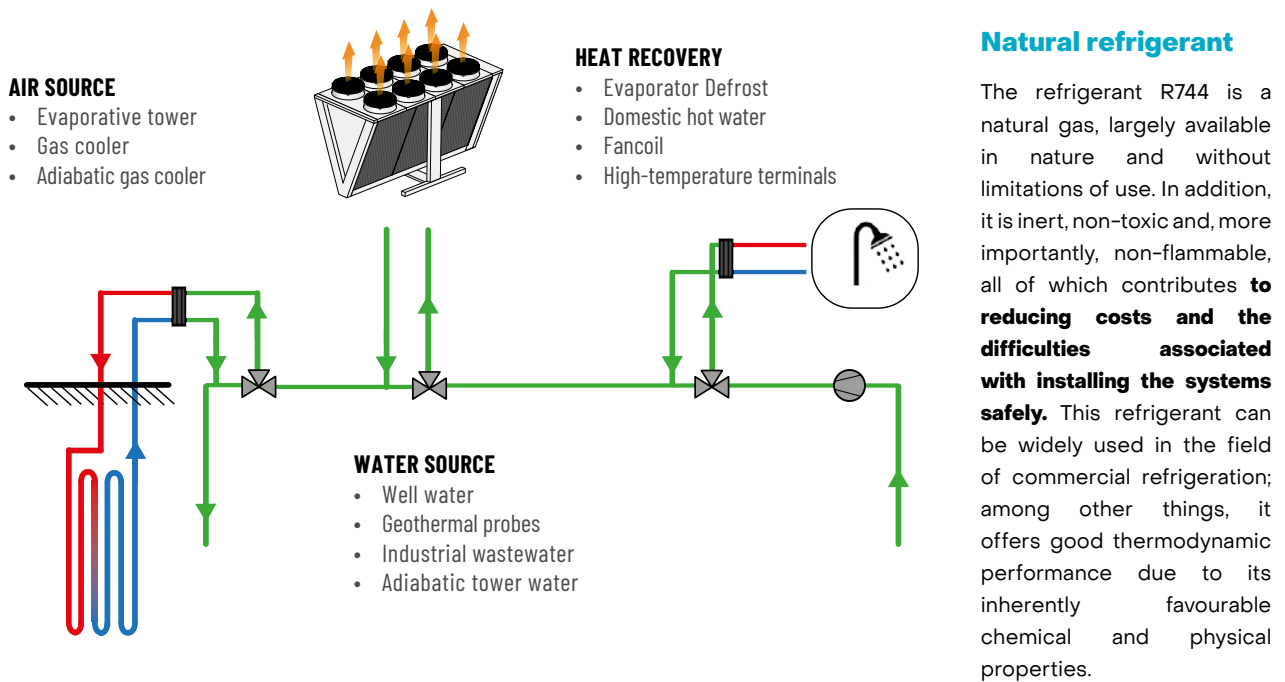
air cooled and with modulating compressors - Free-Cooling version

Range: 96-492 kW



CDA is the new range of water chillers designed by HiRef for applications that require **energy efficiency and environment-friendliness**. Low environmental impact is guaranteed by the use of CO<sub>2</sub> as a refrigerant fluid (R744) which is characterised by a unit GWP (Global Warming Potential) value equal to 1. High efficiency/footprint ratios are achieved thanks to the use of inverter-driven compressors and finned pack exchangers with a large exchange surface installed in a “V” configuration.

## Main advantages



### Very high temperature and multi-source heat recovery

CO<sub>2</sub> in the transcritical system allows several exchangers to be placed in series on the dissipation side. A typical configuration includes:

- **a partial or total heat recovery exchanger** that recovers the dissipated heat and produces instantaneous hot water at very high temperatures (over 90°C), without altering the operation of the unit. A typical application is the production of instantaneous hot water;
- **an exchanger with air dissipation;**
- **an exchanger with dissipation in water using well water or geothermal probes**, to further cool the CO<sub>2</sub> and guarantee greater efficiency and cooling performance during the most critical periods of operation.

The compressors and pumping kit are housed in a box lined internally with soundproofing material.

### Higher efficiency potential

Ejector technology (available as an option) makes it possible to flood the evaporator and **increase the unit's performance by 8%**.

## Modular and efficient

The configuration with very deep modular 'V' coils provides an extensive heat exchange surface area and therefore **excellent thermal efficiency levels in relation to the unit footprint**. Another special feature is the material of the coil tubes (alloy of copper and steel) which ensures mechanical **strength to high pressures (up to 130 bar) and heat transfer coefficients greater than those of stainless steel-only tubes**. By connecting in parallel each CDA unit via special kits (on request) a modular configuration can be obtained capable of meeting high cooling capacity requirements and guaranteeing **high redundancy**, with full system management via the on-board electronics.

## Maximum efficiency at partial loads

The choice of adopting a single refrigerant circuit configuration with an inverter-driven compressor, the use of EC electronic switching fans (supplied as standard) and management of the variable flow rate through circulation pumps: **these main features maximize the efficiency of the CDA range at partial loads**.

## Componenti tecnologici



### Refrigerant R744 (CO<sub>2</sub>)

On some units it is possible to use, as an alternative to the traditional refrigerants, R744, commonly known as CO<sub>2</sub>, a natural gas, widely available in nature, non-toxic and above all non-flammable (GWP = 1). In the field of commercial refrigeration it is an already widely used refrigerant, also thanks to its excellent thermodynamic efficiency which makes it suitable for the production of water at temperatures above 80°C.



### Class A

Internal high-tech components suitably chosen and sized allow the units to operate with outstanding levels of efficiency.



### Fast restart

The fast restart function (on request) allows the unit to restart quickly after a mains power outage. This optional feature is available with dual power to minimise restart times.



### Multi-protocol communication interface

HiRef units can be integrated with the customer's external supervision Building Management System (BMS), using the most popular communication protocols, including Modbus RTU, Modbus/IP, BacNet, LonWorks, SNMP.



### Corrosion resistant material

The HiRef outdoor units are protected by a metal structure resistant to corrosion and weathering. They are also made of galvanised steel sheet, with epoxy-polyester powder coating, oven-polymerised at 180°C, to offer a C3 degree of protection. On request, it is possible to order specific paint finishing treatments or a metalwork structure built entirely in stainless steel, to obtain a higher degree of protection from high impact adverse weather events.



### Piston compressors

Piston compressors are suitable for applications characterised by high pressure ratios (e.g. water heat pumps for the production of high temperature water, or uses with carbon dioxide as a refrigerant). They can work with different types of refrigerant, both low density (R515B, R1234ze) and high density (CO<sub>2</sub>).

## Available versions



COOLING ONLY



FREE-COOLING

REVERSIBLE HEAT  
PUMP

## Types of system



AIR/WATER

## Additional benefits

- EC fans as standard (as AC option)
- Available in versions: Liquid chiller and Free-Cooling chiller (Free-Cooling version not available with adiabatic saturation system).
- Aisi 316L stainless steel refrigeration circuit
- Low pressure side PS: 85 bar

## Technical table

CDA-F		095CS	190CS	285CS
<b>User water values 12/7°C, 35°C outside air, 40% U.R.</b>				
Cooling capacity	kW	96	192	288
Total power input	kW	29	58	87
EER		3.33	3.33	3.33
<b>User water values 12/7°C, 10/80°C source water side</b>				
Cooling capacity	kW	131	262	393
Thermal power	kW	164	328	492
Total power input	kW	33.5	67	100.5
COP TOTAL		8.81	8.81	8.81
Sound power level	dB(A)	86	89	91
Dimensions [LxHxD]	mm	2255x2655x1600	2255x2655x3200	2255x2655x4800

Also available with 60 Hz power supply

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