

DATA CENTER

INDUSTRIAL

SERVICES

CDA

CHILLERS WITH NATURAL REFRIGERANT R744 (CO₂) AIR COOLED AND WITH MODULATING COMPRESSORS - COOLING ONLY VERSION

96-492 kW



 REFRIGERANT R744 (CO ₂)	 ADIABATIC COOLING
 MULTI-PROTOCOL COMMUNICATION INTERFACE	 PISTON COMPRESSORS
 CLASS A	 FAST RESTART
 CORROSION RESISTANT MATERIAL	

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 CO₂ 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. The adiabatic saturation technology also allows **the highest efficiency rates to be reached both at partial and at nominal loads**, thanks to the lower temperature of the air entering the coils.

- EC fans as standard (as AC option)
- Aisi 316L stainless steel refrigeration circuit
- Low pressure side PS: 85 bar

Higher efficiency potential

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

Natural refrigerant

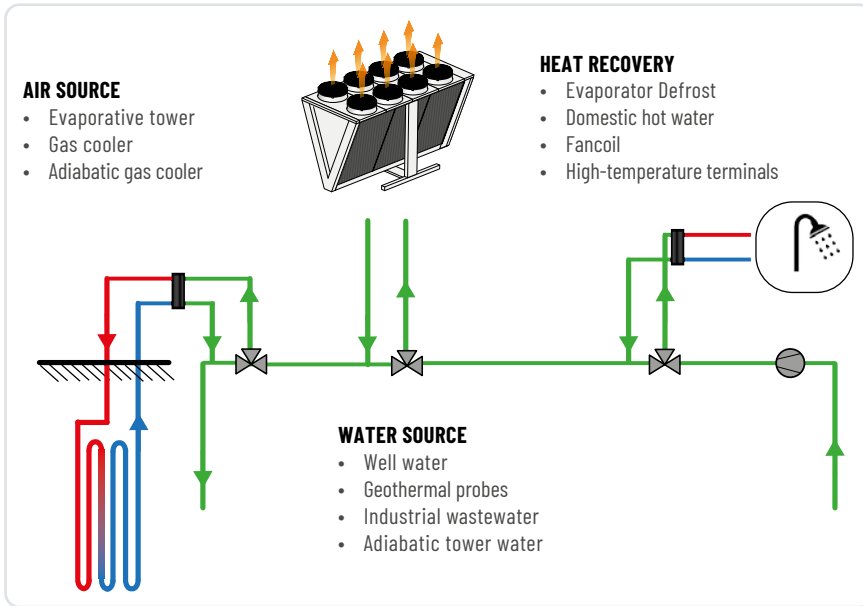
The refrigerant R744 is a natural gas, largely available in nature and without limitations of use. In addition, it is inert, non-toxic and, more importantly, non-flammable, all of which contributes **to reducing costs and the difficulties associated with installing the systems safely**. This refrigerant can be widely used in the field of commercial refrigeration; among other things, it offers good thermodynamic performance due to its inherently favourable chemical and physical properties.

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**.



Very high temperature and multi-source heat recovery

CO₂ 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 CO₂ 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.

Adiabatic saturation system

The adiabatic humidification system consists of a set of humidification panels placed in front of the finned pack heat exchangers and kept evenly wet. With this system the hot air flows through the wet panels, comes into contact with the contained water and transforms it into water vapour: the outgoing air is therefore colder and passes through the finned pack heat exchangers at a lower temperature, **increasing the efficiency of the thermodynamic cycle and the refrigeration capacity.** Taking average climatic conditions as a reference, energy savings on an annual basis exceed 35% compared to a traditional chiller of the same size,



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

Also available with 60 Hz power supply