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HCВ-F

 HiRef

Innovators above  
the standards

SERVICES

DATA CENTER

INDUSTRY



**Air conditioned chillers**

**HCВ-F**

**with inverter driven screw compressors - Free-Cooling version**

Range: 299.8-1199.4 kW

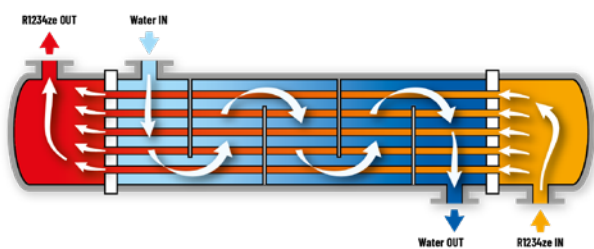


HCB ChillBatic sets a new standard for air cooled chillers, designed to ensure that processes are both energy-efficient and environment-friendly. Low environmental impact has been achieved by using **new HFO refrigerants** with low GWP (Global Warming Potential), while **higher efficiency/ footprint ratios** are reached thanks to the special V-configuration of the heat exchange coils and their sizing, the largest among the chillers currently available on the market. The Free-Cooling version - where heat exchange surface areas are double the market average - ensure outstanding performance. The high thermodynamic efficiency low Total Equivalent Warming Impact (TEWI) is combined with a special focus on maintainability and **easy accessibility of the compressors contained in the removable HiRail module** which reduces noise emissions.

## Main advantages

### New refrigerant R1234ze

HCB range air condensed chillers use the **new HFO refrigerant with low GWP** (GWPR1234ze=6) as part of a wider Green Technology approach. (Also available in a version with R134a refrigerant).



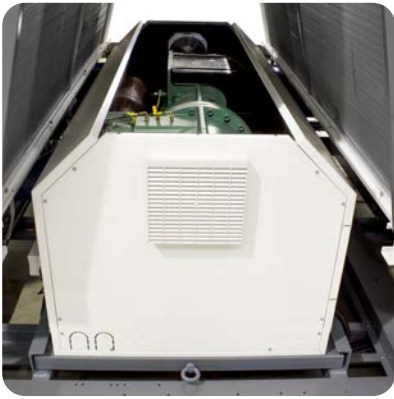
### New concept of heat exchange: spray flooded shell and tube heat exchanger

A spray flooded shell and tube construction guarantees **effectiveness and efficiency** thanks to the minimal approach temperature between refrigerant and water. It requires about **30% less refrigerant charge** compared to traditional flooded shell and tube configurations: a solution that **benefits the environment** and results in **costs savings**, in terms of both CapEx and OpEx.

### Modular and efficient

The configuration with very deep 'V' modular coils **provides an extensive heat exchange surface area and therefore excellent thermal efficiency in relation to the unit footprint**. The Free-Cooling version features heat exchangers sized in such a way as to allow a Total Free-Cooling Temperature (TFT) of 10°C (Data Center conditions with chilled water to 19/25 °C).





**Low noise and accessibility: HI-RAIL**

The compressor hoods **dramatically reduce noise** thanks to the use of special sound-absorbing materials. On request, sliding rails allow them to be removed effortlessly, **making all maintenance tasks much easier**. The compressors can also be removed by hooking from above and lifting with a crane.

**Inverter screw compressors**

Inverter equipped with screw compressors combine the possibility of moving large volumes of refrigerant with **the guarantee of constant power modulation and high energy efficiency even at partial loads**.



## Technological components



### 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.



### Screw compressors

Screw compressors are suitable for handling large volumes of refrigerant and are therefore suitable for use with low density and pressure refrigerants, while still producing a remarkable cooling effect. The internal double screw construction allows work in all conditions with less vibration and greater stability compared to single screw compressors. On request, it is possible to install compressors equipped with inverters - ensuring constant power modulation and high energy efficiency even at partial loads.



### 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.



### Axial fans

In axial fans air moves in a parallel direction to the rotation axis and allows large air flows to be processed. Thanks to their low head compared to radial fans, they are used on remote condensers and on components with free outlet into the atmosphere, where there are no high pressure drops due, for example, to ducting.



### 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.



### Class A

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



### Inverter driven compressors

Inverter-driven compressors allow compressor rotations speed and efficiency to be controlled, by modulating the frequency and the supply voltage of the motor. They are driven by electronically commutated (EC) brushless permanent-magnet (BLDC) synchronous motors. The use of these motors reduces unit consumption, noise and footprint, improves the efficiency and life cycle of the system through accurate control of speed and acceleration, resulting in less heat dissipation. In addition, inrush currents and sparks are eliminated.



### Low GWP refrigerant

The Global Warming Potential (GWP) index is a numerical indicator that identifies the environmental impact of a substance. It measures the extent to which a gas contributes to the greenhouse effect, in relation to carbon dioxide (CO<sub>2</sub>) whose baseline value is equal to 1. This parameter is used to determine the amount in kilograms of CO<sub>2</sub> corresponding to the environmental impact of the release of a refrigerant gas into the atmosphere. The use of low GWP refrigerants, such as R513A, R454B, R1234ze, CO<sub>2</sub>, allows the environmental impact of air conditioning systems to be significantly reduced.



### Spray flooded shell and tube

A spray flooded shell and tube construction guarantees effectiveness and efficiency thanks to the minimal approach temperature between refrigerant and water. It requires about 30% less refrigerant charge compared to traditional flooded shell and tube configurations: a solution that benefits the environment and results in costs savings, in terms of both CapEx and OpEx.

## Available versions



COOLING ONLY



FREE-COOLING

## Types of system



AIR/WATER

## Additional benefits

- Refrigerant R1234ze and R515B
- Also available with R134a refrigerant
- Also available in Low-Noise silenced set-up with internal compartment lined with sound-absorbing material
- Capacity modulation: with slide valve or with inverters on both compressors or on one compressor only
- EC Fans
- Electronically controlled expansion valve
- HiNode Supervision
- Monitoring and limitation of the maximum absorbed power

# Technical table

HCБ-F	0311F	0331F	0361F	0381F	0421F	0451F	0481F	0531F	0581F	0621F	0661F	0721F	
<b>User water temperature 12/7°C 20% ethylene glycol, outside air 35°C, 40% R.H.</b>													
Cooling capacity	kW	299.8	316	342	362.1	402	423.7	445.4	478.7	517.8	553.6	589.1	654.1
Total power input	kW	78.7	84.2	91	97.6	106.6	112.9	119.2	127.8	135.8	146	160.5	172.8
EER		3.81	3.75	3.76	3.71	3.77	3.75	3.74	3.75	3.81	3.79	3.67	3.79
Water consumption	l	2666	2666	3554	3554	4443	4443	4443	5332	5332	6220	6220	6220
Sound power level	dB(A)	93	93	94	94	95	95	95	97	98	98	98	98
Sound power level [Low noise]	dB(A)	88	88	89	89	90	90	90	92	93	93	93	93

HCБ-F	0311F	0331F	0361F	0381F	0421F	0451F	0481F	0531F	0581F	0621F	0661F	0721F	
<b>Utility water temperature 12/7°C, ethylene glycol 20%</b>													
Full Free-Cooling temperature	°C	-0.8	-1.1	0	-0.3	0.3	0.1	-0.2	0.4	0	0.4	0.1	0.4
Sound power level	dB(A)	93	93	94	94	95	95	95	97	98	98	98	98
Sound power level [Low noise]	dB(A)	88	88	89	89	90	90	90	92	93	93	93	93

HCБ-F	0381C	0401C	0421C	0451C	0481C	0531C	0581C	0621C	0661C	0721C	0801C	0831C	0901C	0971C	1041C	1101C	1161C	1231C	
<b>User water values 12/7°C, 35°C outside air, 40% U.R.</b>																			
Cooling capacity	kW	369.7	398.5	417.3	442.2	477.9	519.2	565.1	614.8	652.2	705.6	773.6	815.5	880.5	938.5	1019.2	1067.7	1123.6	1199.4
Total power input	kW	98.5	107.4	114.7	120.4	129.7	137.8	152.1	164.7	177.3	193.6	205.8	221	238	251.9	272.1	288.8	306	327.3
EER		3.75	3.71	3.64	3.67	3.68	3.77	3.72	3.73	3.68	3.65	3.76	3.69	3.7	3.73	3.75	3.7	3.67	3.66
Water consumption	l	2868	2868	2868	2812	2812	3824	3749	3749	3749	4780	4687	4687	5737	5624	5624	5624	6693	6561
Sound power level	dB(A)	93	93	93	96	97	97	96	97	97	97	98	98	98	98	99	99	100	100
Sound power level [Low noise]	dB(A)	88	88	88	91	92	92	91	92	92	92	93	93	93	93	94	94	95	95
Dimensions [LxHxD]	mm	5755x2652x2256					7405x2650x2256			8855x2650x2256			10700x2652x2256			13000x2652x2256			

Also available with 60 Hz power supply

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