The most visionary CO_2 chiller systems in the world

C-RANGE

Natural Refrigerants ONLY

APPLICATIONS

- Food industry
- Industrial processes
- Data centres
- Logistics centres
- Offices and hospitals
- HVAC in general

FENAGY®
FUTURE ENERGY SOLUTIONS

C-RANGE - chillers

The chillers in the Fenagy C-range are CO_2 DX chillers, which reach cooling capacities from 500 kW to 2,600 kW per rack. The chillers are equipped with plate heat exchanger evaporators on the compressor frame, and they are designed to deliver optimal performance in accordance with customer-specific operation needs.

The entire C-range is available with both water- and air-cooled gas coolers. The chillers use the natural refrigerant CO_2, which is ideal for applications such as the food industry, industrial processes, data centres, logistics centres, offices, hospitals and HVAC in general.

C-1200

CAPACITY: 1,200 kW PU **DIMENSIONS:** 2.5/8.0/1.3m

C-1800

CAPACITY: 1,800 kW PU **DIMENSIONS:** 2.5/10.0/1.3m

C-2600

CAPACITY: 2,600 kW PU **DIMENSIONS:** 2.8/12.0/1.3m

Easy installation with enclosure

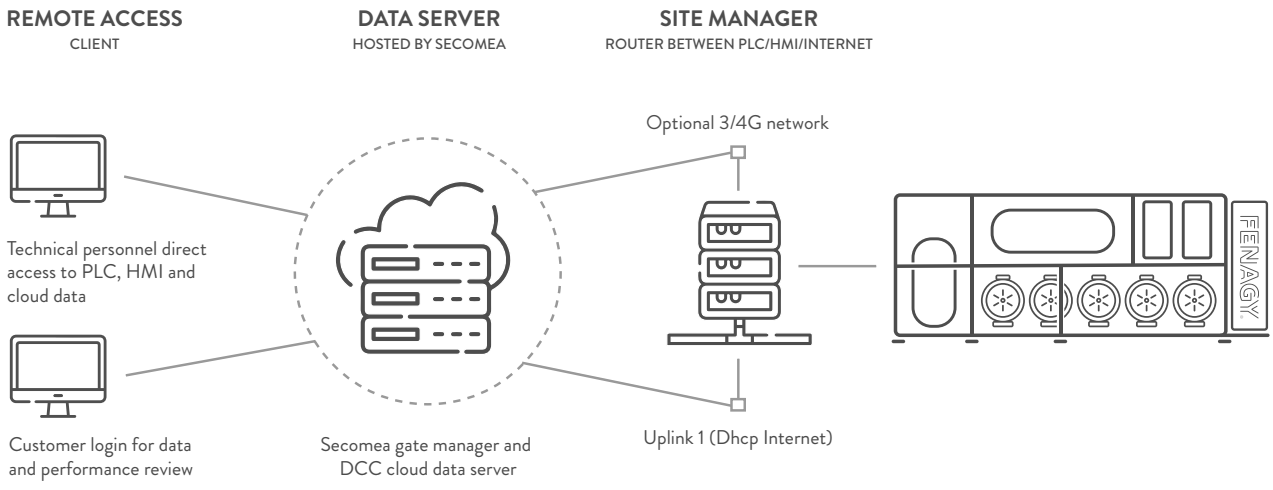
All the chillers in the C-range can be delivered in an industrial walk-in enclosure, which is a fully approved machine room with lighting, ventilation, CO_2 alarm and sound dampening panels. The enclosure is available in any colour and with extra space for installation of an electrical supply panel, pumps, valves on the water circuit, etc.

Enclosures are usually delivered with a self-supporting concrete foundation, so only a levelled sand pad is needed on site for the installation.

Control systems

The complete range uses a standard Siemens PLC controller, and Fenagy has developed its own PLC algorithms for the most essential functions to ensure optimal control and monitoring. Our PLC solutions can communicate with most of the platforms the customer will need to communicate with. The onboard HMI panel offers direct monitoring of the system and its operating conditions. Furthermore, our PLC solutions support several communication protocols and can integrate with the overall SCADA system.

For all systems, Fenagy aspires to minimise start-up and shutdown times, enabling the system to help balance the electrical grid in a future with an increasing demand for such functions. Last, but not least, the system can deliver high supply temperatures, and Fenagy is continuously pushing the boundaries with new functions and features in the PLC development.



Technical specifications

C-RANGE		C-1200	C-1800	C-2600
Compressors	qty	4-8	6	8
Capacity control	-	VSD/cyl. unloader	Cyl. unloader	Cyl. unloader
Receiver size	L	500	750	1,000
Refrigerant charge	kg	350	500	700
Electrical supply	-	3~400V 50 Hz	3~400V 50 Hz/3~690V 50 Hz	
Cooling capacity range	kW	1,200	1,800	2,600
COP range	-	2.5 - 3.5		
Dimensions (H/L/W)	m	2.4/8.0/1.4	2.4/11.0/1.4	2.4/12.0/1.6
Weight	kg	7,500	12,000	16,000
Est. sound power level (LpA)	dB(A)	101	102	105
Design pressure HP/LP	bar	130/80		
Controller type	-	Siemens PLC		
Communication protocol	-	MODBUS / PROFINET		
INTEGRATED EVAPORATORS				
Type	-	Plate heat exchanger (80 bar)		
Expansion device	-	Electronic expansion valves		
Connections	-	DN Flanged or welding		
Controller	-	Integrated in Siemens PLC		

Key features

- DX plate heat exchanger evaporator (chiller)
- Patented ejector technology for optimisation of capacity and COP
- Fast start and stop of the system
- Air-cooled gas cooler
- Heat recovery with plate heat exchanger
- Industrial design with stainless steel piping
- PLC control of the entire system
- Water pump, energy meter and various valves can be integrated on the rack

We only work with natural refrigerants

R744 - CO_2 **APPLICATIONS** District heating, heat networks, industrial processes, food industry, green houses, data centres, logistics centres, offices, hospitals and HVAC in general

- Natural refrigerant with a wide temperature range
- Non-toxic and non-flammable
- Excellent choice for air-sourced heat pumps for direct use in the energy collectors and with high delta T on the heat sink side
- Optimal for medium-temperature water-sourced heat pumps, chillers and combined heating and cooling applications
- Medium-high temperature level on heat sink (up to 85°C supply temp) with high delta T on the heat sink (dT: 30-40K)

R600a - Isobutane **APPLICATIONS** Heat networks, biogas, PtX, geothermal, carbon capture, CO_2 heat pump sub-cooler, industrial processes and the food industry

- High-temperature natural refrigerant
- Suitable for water-sourced heat pumps and chillers
- Can be used in a wide temperature range on both the heat source and heat sink sides
- Robust operation under various operating conditions
- Use of efficient screw compressors and high COP of the cycle
- High temperature level on heat source (up to 40°C evap. temp)
- High temperature level on heat sink (up to 95°C supply temp) and ideal with low delta T on heat sink - serial coupling on water side at higher delta T

R290 - Propane **APPLICATIONS** Heat networks, industrial processes, food industry, data centres, offices, hospitals and HVAC in general

- Low-temperature natural refrigerant
- Suitable for lower temperature water-sourced heat pumps and chillers
- Low temperature level on heat source (down to -30°C evap. temp)
- Medium temperature level on heat sink (up to 75°C supply temp)
- Ideal with low delta T on sink and heat source
- High refrigeration capacity ensures compact solutions with small footprint
- Can be combined with isobutane in serial hydraulic couplings

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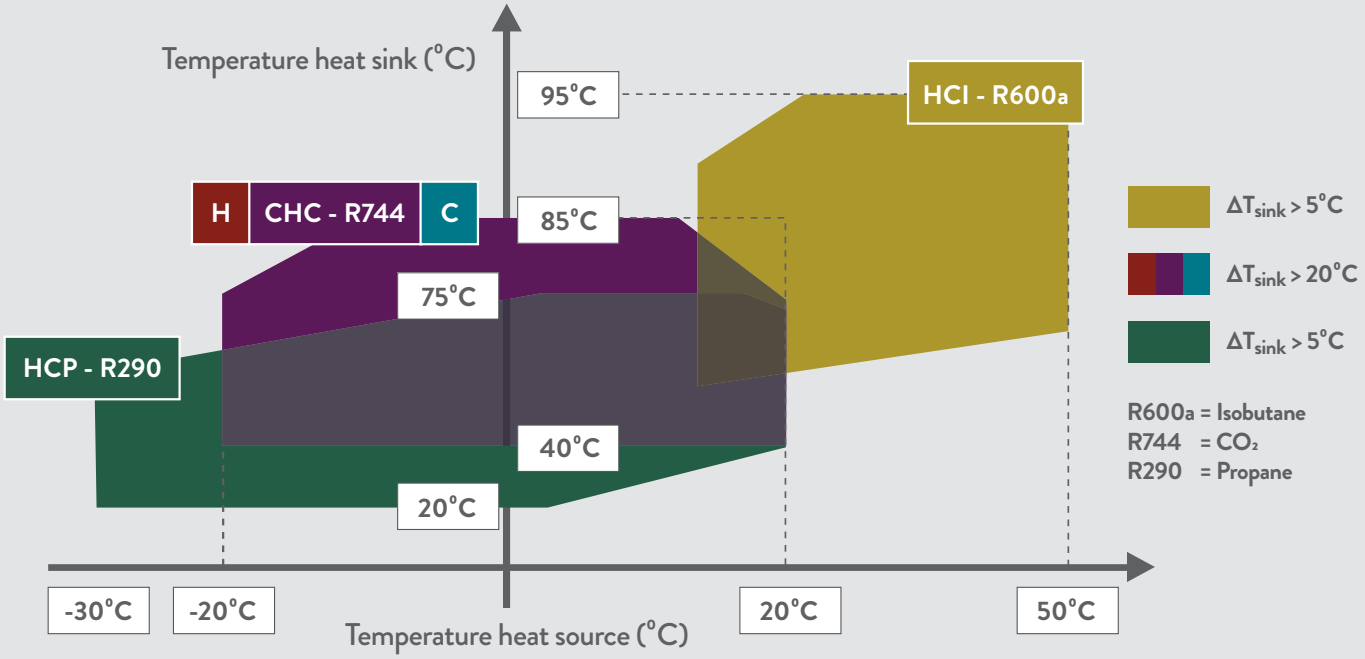

C-RANGE

Developing and manufacturing future energy solutions

Fenagy develops and manufactures refrigeration and heat pump systems based on the natural refrigerants CO_2 and hydrocarbons. We always use natural refrigerants because they are efficient and have no harmful effects on the environment and climate - unlike all alternative synthetic refrigerants. Natural refrigerants are the refrigerants of the future, not just in Denmark.

We are constantly developing new solutions and services that play an active role in future energy systems, based on power from renewable energy sources, such as solar and wind. This puts great demands on the power grid and thus also on electricity-consuming devices, which must be able to react fast – and this is exactly what Fenagy machines can.

We are also looking into a future where it will be legally required or a social norm not to release valuable waste heat into the environment if it can be utilised. But what about waste cooling? At Fenagy, we aim to utilise both the cooling and heating capabilities of our solutions, either separately or in combination.

Fenagy is an OEM, but also a project-oriented company that secures professional and close cooperation with our partners, from quotation to final handover of our systems to the customers.

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