

The most visionary  
hydrocarbon systems in the world

HCI-RANGE



## APPLICATIONS

- High-temperature heat pumps
- Heat pumps for the energy sector (PtX, geothermal, biogas, CCSU)
- Industrial processes
- Food industry

**FENAGY**<sup>®</sup>  
FUTURE ENERGY SOLUTIONS

# HCI-RANGE

## - heat pumps, chillers and combined systems

The Fenagy HCI-range reaches capacities from 500 kW to 3,000 kW heat per system. The systems can be used for heat pump, chiller and combined water-water operation. The entire range is designed to deliver optimal performance in accordance with customer-specific operation needs. The HCI-range is only available as water-to-water systems, thereby ensuring a small refrigerant charge.

The HCI-range uses the natural refrigerant isobutane and can reach supply temperatures up to 95°C, regardless of the return temperature.

The HCI-range is typically used for high-temperature heat pump applications, heat pumps for the energy sector (PtX, geothermal, biogas, CCSU), industrial processes and the food industry. The systems can also be used as water-sourced heat pumps for district heating or heat networks and for normal water-cooled chiller applications.

### HCI-1000



**CAPACITY:** 500-1,000 kW PU

**DIMENSIONS:** 2.8/3.5/1.6m

**REFRIGERANT:** R600a

Several units can be connected in series or parallel

### HCI-3000



**CAPACITY:** 1,500-3,000 kW PU

**DIMENSIONS:** 3.0/4.6/3.2m

**REFRIGERANT:** R600a

Several units can be connected in series or parallel

## Easy installation with enclosure

The HCI-range systems are always delivered in a reach-in enclosure, which is suitable for both in- and outdoor installation. The enclosure is constantly ventilated with an EX-fan, which ensures negative pressure and maintains the right temperature in the cabinet. The enclosure has insulated walls with sound dampening panels.



Enclosure HCI-1000 - seen from the back



Enclosure HCI-1000 - seen from the end



Enclosure HCI-1000 - seen from the front



Enclosure HCI-1000 - seen from the top



## 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.

### REMOTE ACCESS CLIENT



Technical personnel direct access to PLC, HMI and cloud data



Customer login for data and performance review

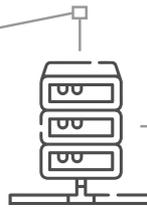
### DATA SERVER HOSTED BY SECOMEA



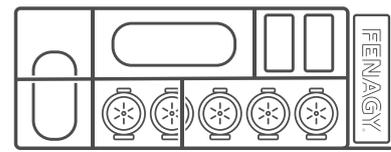
Secomea gate manager and DCC cloud data server

### SITE MANAGER ROUTER BETWEEN PLC/HMI/INTERNET

Optional 3/4G network



Uplink 1 (Dhcp Internet)



# Technical specifications

HCI-RANGE		HCI-1000	HCI-3000
Compressor type	-	Screw	Screw
Compressors	qty	1	3
Capacity control	-	3 steps (50, 75, 100%)	Steps from 16-100%
Refrigerant charge	kg	50	3x50
Electrical supply	-	3~400V 50 Hz/3~690V 50 Hz	
Heating capacity range	kW	500-1,000	1,500-3,000
COP range	-	3.0-6.0	3.5-6.5
Dimensions (H/L/W)	m	2.8/3.5/1.6	3.0/4.6/3.2
Weight	kg	3,500	10,000
Est. sound power level (LpA)	dB(A)	?	?
Connection, hot water	DN	100	150
Connection, cold water	DN	100	150
Controller type	-	Siemens PLC	
Communication protocol	-	MODBUS / PROFINET	
Heat source/sink	-	Water/water	
Refrigerant	-	R600a	
Enclosure	-	Standard for both indoor and outdoor installation	

## Key features

- High-capacity screw compressor technology
- Unique for applications with high temperature on the heat source
- Available for heat pump and chiller applications
- Fast start and stop for balancing the electrical grid
- Industrial design with stainless steel piping
- PLC control of the entire system





# We only work with natural refrigerants

## R744 - CO<sub>2</sub>

### 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<sub>2</sub> heat pump sub-cooler, industrial processes and the food industry

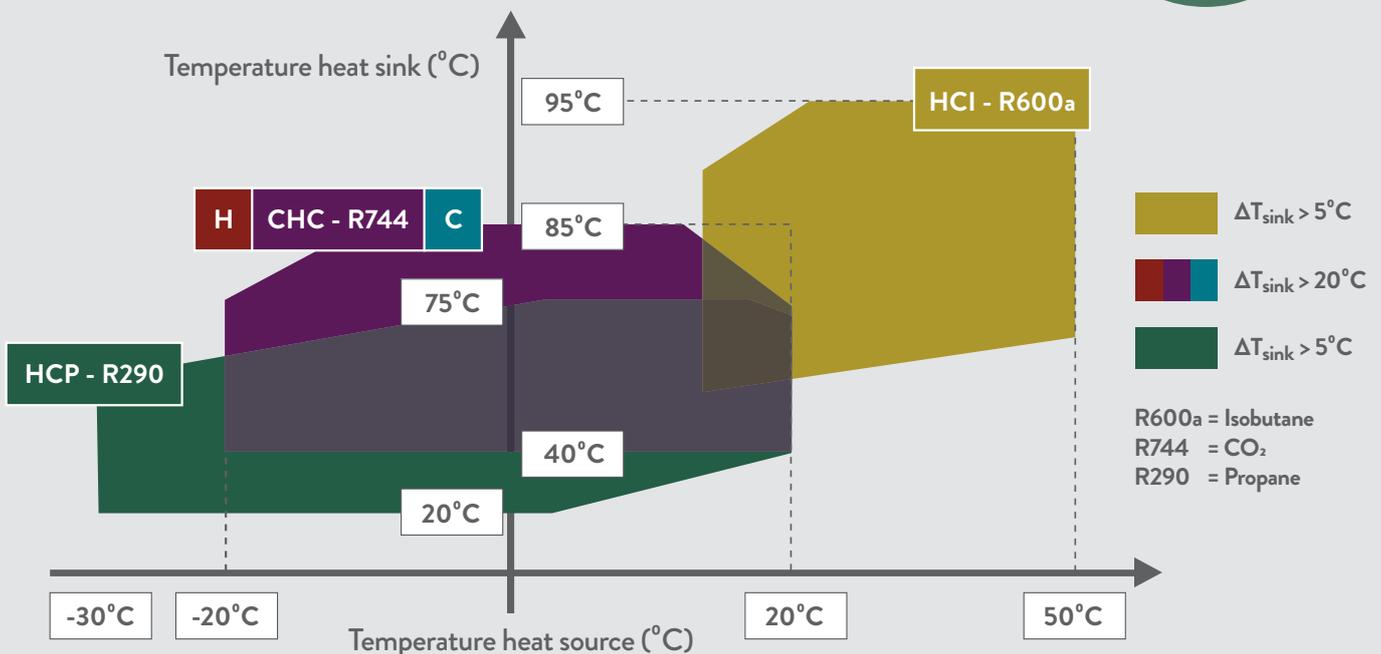
- High-temperature natural refrigerant
- Suitable for water-sourced heat pumps and chillers
- Can be used in a wide temperature range on both the heat source and heat sink sides
- Robust operation under various operating conditions
- Use of efficient screw compressors and high COP of the cycle
- High 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



# Developing and manufacturing future energy solutions



Fenagy develops and manufactures refrigeration and heat pump systems based on the natural refrigerants CO<sub>2</sub> 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.