

INDUSTRIAL HEAT PUMPS
AND WATER CHILLERS

OILON CHILLHEAT



Optimized heating and
cooling performance

Affordable and environmentally friendly energy with heat pumps

Low-temperature waste heat contains valuable energy

Communities, industry, and energy production generate huge amounts of waste heat, which cannot be directly utilized because of its low temperature. However, this waste heat can be recovered by heat pumps with high efficiency ratio, producing hot air or hot water for heating houses and domestic hot water as well as in industrial processes. It can also be sold and channeled into the district heating network. There really is a multitude of choices.

A worthwhile investment

A heat pump is an investment with short payback period. Annual savings in energy can reach up to eighty per cent – and the same goes for CO₂ emissions as well!

Extensive range and top-notch quality assurance

Our ChillHeat catalogue offers a wide range of optimized solutions to a variety of applications that are presented on the following page. All of our ChillHeat products are designed and manufactured in Finland. Factories are equipped with test benches, so every heat pump can be tested at the desired operating points before it is shipped to the client.

Heating and cooling – made in Finland

Founded in 1961, Oilon is a Finnish family-owned energy and cleantech company. Oilon has over 50 years of experience in generating heat for private residences as well as large residential buildings, district heating networks, and for a variety of industrial processes, and nearly 30 years of experience in high-capacity heat pumps and cooling solutions. Oilon is internationally renowned as a forerunner in the heating and refrigeration fields. Oilon also offers an extensive service network, guaranteeing long and cost-effective life for the products.





Combined heating and cooling

A single ChillHeat heat pump can be used for both heating and cooling at the same time, without any extra machinery involved. Valuable heat is available virtually for free, as it is generated as a by-process of cooling. The typical COP in these applications is between 5 and 6.



Heat recovery at refrigeration plants (ammonia, HFC, CO2)

ChillHeat heat pumps use recovered waste heat at refrigeration plants to generate hot water, thereby substituting valuable primary energy. The COP in these applications is typically between 4 and 6.



Heat recovery from waste water

ChillHeat heat pumps can be used to recover waste heat from municipal or industrial waste waters. The recovered heat can be used for producing hot water, to be used in industrial processes or to be sold and channeled into the district heating network. The COP in these applications is typically between 3 and 5.



Ground source heat

Ground source heat is free solar energy stored in the ground. ChillHeat heat pumps can utilize this energy for heating, replacing expensive off-site heat sources. The COP in these applications is typically between 3 and 4.



Flue gas heat recovery

Flue gases from power plant and central heating plant boilers can be put to good use with ChillHeat heat pumps. The recovered heat can, for example, be channeled into the district heating network, improving the efficiency of the plant and increasing the total heat output. The COP in these applications is typically between 4 and 6.



Heat recovery from industrial processes (evaporators, cooling towers, driers)

In industry, a lot of waste heat is released into the environment due to the difficult heat recovery associated with low temperatures. ChillHeat heat pumps are able to utilize these heat sources and produce valuable heating energy for industrial processes or to be sold out. The COP in these applications is typically between 4 and 6.



Heat extraction from outdoor air

Together with an outdoor cooling unit, ChillHeat products can use outdoor air as a heat source. This free heat source can be put to use for heating spaces and producing hot water, among other things. The COP in these applications is typically between 3 and 4.



Water chiller applications

ChillHeat products are an energy-efficient cooling solution for air conditioning, for cooling computer server rooms, and in industrial processes.



Refrigeration applications

ChillHeat products can provide energy-efficient refrigeration for industrial applications, ice rinks, or supermarkets.



Highest temperature

The highest temperature of the generated heat, throughout the entire capacity range. An optional superheater can use part of the generated heat energy in order to raise the temperature further.

COP= coefficient of performance

COPc= cooling coefficient of performance

Oilon ChillHeat product family

One of the underlying ideas in the design of Oilon’s ChillHeat product family has been to use a single machine both for cooling and heating. As a result, all ChillHeat products are well suited for heating and cooling applications, either as dedicated cooling/heating solutions or as a combined solution.

The product family features optimal products for industrial applications, hotels, office buildings and schools, as well as for various other applications – such as waste heat recovery, ground source heating, air conditioning, or warehouse cooling.

All ChillHeat products are compact, reliable, and easy to use. The ChillHeat brand is a guarantee of high energy-efficiency. We achieve this by using only the highest quality components as well as by having a competent R&D department and a meticulous testing process. It is possible to connect several ChillHeat heat pumps in parallel for an even higher capacity heating or cooling solution. A versatile automation system enables energy-efficient and easy ChillHeat operation.

For more information on our ChillHeat products, please see the following table. With low evaporator temperatures, it is recommended to check the maximum water out temperature in the actual site conditions already at the quotation stage.

ChillHeat	RE	P	S
Heating capacity EN 14511 0/35	210 - 420 kW	30 - 450 kW	180 - 2000 kW
Max. temperature of heat produced *	62 °C	120 °C	85 °C
Min. temperature of cooling produced *	-15 °C	-20 °C	-15 °C
ChillHeat product suitability for various applications			
Combined heating and cooling	● ● ●	● ● ●	● ● ●
Heat recovery at refrigeration plants	●	● ● ●	● ● ●
Heat recovery from waste water	● ●	● ● ●	● ● ●
Ground source heating	● ● ●	● ● ● **	● ●
Heat recovery from flue gases	●	● ● ●	● ● ●
Heat extraction from outdoor air	● ● ●	● ● ●	● ● ●
Heat recovery from industrial processes	●	● ● ●	● ● ●
Water chiller applications	● ● ●	●	● ●
Refrigeration applications	● ●	● ● ●	● ● ●

● ● ● Excellent

● ● Good

● Limited

* The max. temperature of heat produced or the min. temperature of cooling produced depend on the dimensioning conditions.

** In demanding conditions

ChillHeat products and optional equipment

Oilon ChillHeat products are compact, yet easy to service. Standard delivery includes a fixed control panel with ChillHeat automation and a Modbus RTU bus interface. The versatility of the heat pumps can be further extended with optional extra equipment, making them suitable for a wide range of different applications. Having the same design language as the actual heat pump itself, extension modules can be used to equip the heat pump with extra pump and valve groups.

The following options can be specified by the client, or they can be included in our tender at the design phase.

Optional equipment:

High capacity heat exchangers

- Heat exchangers optimized for conditions guarantee good performance cost-effectively.

Subcooler

- Improves the performance of the heat pump in almost every condition.

Economizer

- An option for S-series heat pumps that improves the heat pump's performance.

Additional cooling & liquid injection

- An option for S-series heat pump required in extremely demanding conditions.

Frequency converter

- An optional accessory for S- and P-series heat pumps that enables stepless control.

Energy metering

- Energy metering to measure the heat energy or cooling energy produced by the heat pump.

Electrical measurement

- An optional equipment for measuring the power and energy consumption of the heat pump.

Optional bus interfaces

- In addition to Modbus, bus interface options: Modbus TCP, Profibus, Profinet, Bacnet.

Gas detection

- A gas detector that detects possible refrigerant leaks.



Oilon ChillHeat RE 210 - RE 420



Highest temperature 62 °C



Large residential buildings



Combined cooling and heating



Heat extraction from outdoor air



Water chiller applications



Ground source heating



Oilon ChillHeat RE heat pumps are best suited for heating and cooling large residential buildings and industrial plants.

In our RE line, we use scroll compressors only from the most well-known and reliable compressor manufacturers.

TECHNICAL DATA

		RE 210	RE 330	RE 420
Compressor type, no. of compressors		scroll, 2	scroll, 3	scroll, 4
No. of refrigerant circuits		1	2	2
Dimensions without cover and extra legs	Height mm	2091	2091	2091
	Length mm	1571	2723	2723
	Width mm	911	911	911
Refrigerant		R410A	R410A	R410A
Fuse size *	A, 3/N/PE 400 V 50 Hz	3x200A	3x400A	3x400A
Weight	kg	1600	1800	2000

The performance values of the ChillHeat products under different conditions are calculated using the Oilon Selection Tool selection program.

*) Fuse size dimensioned in the most demanding conditions. Request a review dimensioning from the supplier.

The final specifications are provided by the manufacturer. Oilon reserves the right to change specifications without prior notice.

Oilon ChillHeat

P 30 - P 450



Highest temperature 120 °C



Large residential buildings



Combined cooling and heating



Heat recovery at refrigeration plant
(ammonia, HFC, CO₂)



Heat recovery from industrial processes
(evaporators, cooling towers, driers)



Heat recovery from waste waters



Oilon Chill Heat P-series heat pumps generate hot water up to 120 °C very efficiently even when running at partial capacity.

A culmination of years of research and development work, energy-efficient and reliable piston compressors keep the operating and maintenance costs down.

TECHNICAL DATA

		P 30	P 60	P 100	P 150	P 220
Compressor type, no. of compressors		piston, 1	piston, 2	piston, 2	piston, 2	piston, 3
No. of refrigerant circuits		1	1	1	1	2
Dimensions without cover and extra legs *	Height mm	1300	2091	2091	2091	2091
	Length mm	1080	1571	1571	1571	2723
	Width mm	740	911	911	911	911
Refrigerant		R134a R513A R450A R1234ze	R134a R513A R450A R1234ze	R134a R513A R450A R1234ze	R134a R513A R450A R1234ze	R134a R513A R450A R1234ze
Fuse size **	A, 3/N/PE 400 V 50 Hz	3x63A	3x125A	3x160A	3x200A	3x400A
Weight	kg	530	1000	1200	1600	2300

The performance values of the ChillHeat products under different conditions are calculated using the Oilon Selection Tool selection program.

*) Dimensions without a frequency converter.

**) Fuse size dimensioned in the most demanding conditions. Request a review dimensioning from the supplier.

The final specifications are provided by the manufacturer. Oilon reserves the right to change specifications without prior notice.

TECHNICAL DATA

		P 300	P 380	P 450
Compressor type, no. of compressors		piston, 4	piston, 5	piston, 6
No. of refrigerant circuits		2	2	2
Dimensions without cover and extra legs *	Height mm	2091	2091	2091
	Length mm	2723	3866	3866
	Width mm	911	911	911
Refrigerant		R134a R513A R450A R1234ze	R134a R513A R450A R1234ze	R134a R513A R450A R1234ze
Fuse size **	A, 3/N/PE 400 V 50 Hz	3x630A	3x800A	3x800A
Weight	kg	2600	3100	3700

The performance values of the ChillHeat products under different conditions are calculated using the Oilon Selection Tool selection program.

*) Dimensions without a frequency converter.

**) Fuse size dimensioned in the most demanding conditions. Request a review dimensioning from the supplier.

The final specifications are provided by the manufacturer. Oilon reserves the right to change specifications without prior notice.



Oilon ChillHeat

S 180 – S 490



Highest temperature 85 °C



Large residential buildings



Heat recovery at refrigeration plants
(ammonia, HFC, CO₂)



Flue gas heat recovery



Refrigeration applications



Heat recovery from industrial processes
(evaporators, cooling towers, driers)



Oilon ChillHeat S-series heat pumps generate hot water up to 85 °C very efficiently.

The S series heat pumps come equipped with compact-sized and energy-efficient rotary screw compressors, proven to be reliable.

TECHNICAL DATA

		S 180	S 280	S 380	S 490
Compressor type, no. of compressors		screw, 1	screw 1	screw, 1	screw, 1
No. of refrigerant circuits		1	1	1	1
Dimensions without cover and extra legs*	Height mm	2091	2091	2091	2091
	Length mm	2723	2723	2723	2723
	Width mm	911	911	911	911
Refrigerant		R134a R513A R450A R1234ze	R134a R513A R450A R1234ze	R134a R513A R450A R1234ze	R134a R513A R450A R1234ze
Fuse size **	A, 3/N/PE 400 V 50 Hz	3x250A	3x355A	3x400A	3x500A
Weight	kg	2300	2900	3600	4000

The performance values of the ChillHeat products under different conditions are calculated using the Oilon Selection Tool selection program.

*) Dimensions without a frequency converter.

**) Fuse size dimensioned in the most demanding conditions. Request a review dimensioning from the supplier.

The final specifications are provided by the manufacturer. Oilon reserves the right to change specifications without prior notice.

Oilon ChillHeat S 600 - S 2000



Highest temperature 85 °C



Large residential buildings



Heat recovery at refrigeration plants
(ammonia, HFC, CO₂)



Flue gas heat recovery



Refrigeration applications



Heat recovery from industrial processes
(evaporators, cooling towers, driers)



Oilon ChillHeat S-series heat pumps generate hot water up to 85 °C very efficiently.

The S series heat pumps come equipped with compact-sized and energy-efficient rotary screw compressors, proven to be reliable.

TECHNICAL DATA

		S 600	S 800	S 1000	S 1200	S 1500	S 2000
Compressor type, no. of compressors		screw, 2					
No. of refrigerant circuits		2	2	2	2	2	2
Dimensions without cover and extra legs*	Height mm	1900	1900	2100	2100	2190	2190
	Length mm	4700	4700	4700	4700	5500	5500
	Width mm	1000	1000	1150	1150	1600	1600
Refrigerant		R134a R513A R450A R1234ze	R134a R513A R450A R1234ze	R134a R513A R450A R1234ze	R134a R513A R450A R1234ze	R134a R513A R450A R1234ze	R134a R513A R450A R1234ze
Fuse size **	A, 3/N/PE 400 V 50 Hz	2x3x400A	2x3x400A	2x3x630A	2x3x630A	2x3x800A	2x3x1000A
Weight	kg	3200	4000	4500	5300	6500	7500

The performance values of the ChillHeat products under different conditions are calculated using the Oilon Selection Tool selection program.

*) Dimensions without a frequency converter.

**) Fuse size dimensioned in the most demanding conditions. Request a review dimensioning from the supplier.

The final specifications are provided by the manufacturer. Oilon reserves the right to change specifications without prior notice.

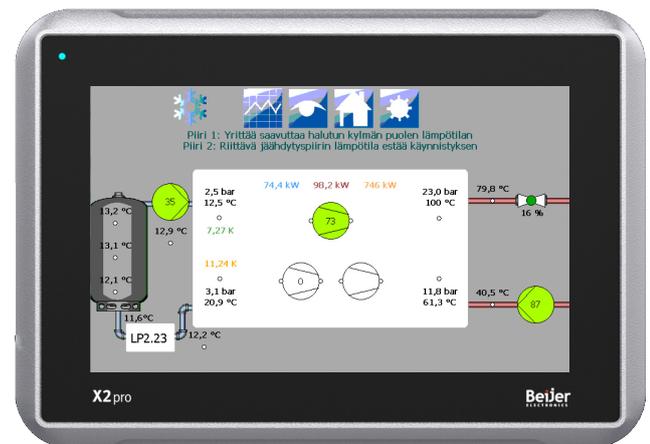
Automation – an important aspect of energy efficiency

A versatile automation system enables the energy-efficient and easy operation of the ChillHeat function, which generates both heating and cooling either separately or concurrently.

The automation system in our ChillHeat products lays the basis for highly efficient operation and excellent usability. Ease of use and high quality combined with an adaptive algorithm guarantee our clients trouble free operation and the full benefit of their investment. Our automation solutions offer versatile options for communication between different automation systems. We support the most common fieldbus protocols, such as Modbus, Profibus, BACnet and Profinet, among others. The ability to monitor and program the equipment remotely ensures trouble free operation and cost-effective service and support as well as easy implementation of future process.

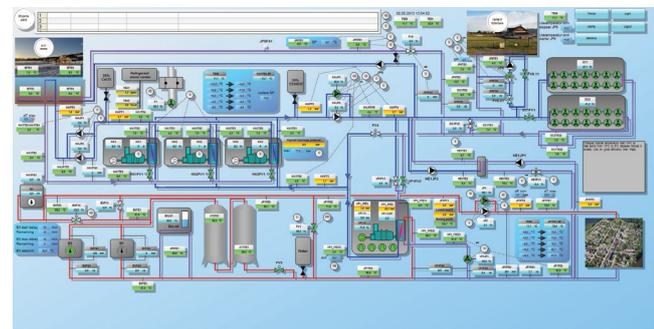
ChillHeat (as standard in ChillHeat units)

- Clear and easy to use graphical user interface that controls one or multiple ChillHeat heat pumps.
 - Control according to the temperature of the cold and/or hot solution produced.
 - In addition, control of the brine circulation pumps on the cold and/or the hot side.
- Modbus RTU bus interface as standard, optionally available Modbus TCP, Profibus, BACnet and Profinet bus interfaces.
- Remote monitoring possibility.



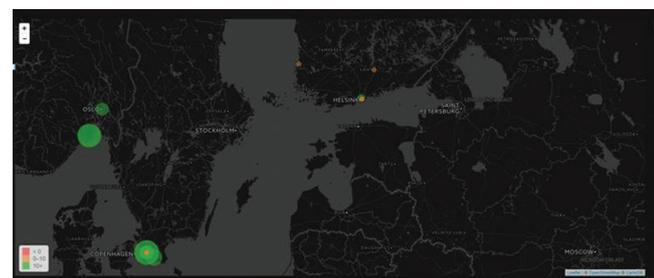
ChillHeat TotalAutomation (to be ordered separately)

- A separate automation cabinet for controlling the whole cold and/or heat production system.
- Customized to meet client needs.
- Modbus interface as standard, optionally available Modbus TCP, Profibus, BACnet and Profinet bus interfaces.
- Remote monitoring and programming option.
- Process event logging enables comprehensive reporting and trend monitoring.



ChillHeat GlobalMonitor (for further information, please contact our sales personnel)

- Remote monitoring of one or several ChillHeat heat pumps or the whole system.
- The client must organize an internet connection with a cable or mobile connection.
- Versatile and visual reporting and comprehensive trend monitoring.
- Operations support and optimization as a remote service to destinations around the world.
- High usability, minimizing maintenance costs and downtime.



Co-operation, research and development

Refrigeration technology has been, and will continue to be, under ongoing pressure to change. New refrigerants are entering the market every year due to ever more stringent environmental legislation, necessitating changes in technical components that are used as well as in the overall design of equipment.

We carry out intense research and development work and actively cooperate with our refrigerant and component suppliers in order to guarantee energy-efficient operation of our equipment under the most demanding conditions, while also taking future environmental legislation demands into account.

At the Kokkola plant and in the renewable energy research center in Lahti, we test different configuration, refrigerant and component options in modern test facilities. We also test different machines of said configurations and hardware in various operating conditions to offer the best products for different needs.

When looking for the best solution for different operating conditions, several important factors need to be taken into consideration

- required capacity
- reliability
- adjustability
- required minimum partial load
- energy efficiency
- space requirements
- noise level
- competitive pricing.

Continuous R&D work, learning and our numerous long-term references ensure that we are able to offer our clients the best possible equipment for different conditions and applications.

Quality assurance and product development

We are renowned for the high quality and operational reliability of our products, as well as the extensive maintenance service that we offer. Before any product is shipped to the client, we run it through a full spectrum of tests in our test bench under the same operational conditions that it will be expected to perform under, thereby ensuring reliable operation and optimal performance in different conditions. Thorough testing also minimizes the time required for installing and setting up the system, giving the client full benefit of the system as quickly as possible.

In the rapidly evolving heat pump business, the test bench is an important tool for R&D work as well. It provides us with a cost-effective, fast means to test computer-simulated solutions and to assess the compatibility of new components in various systems. We are continuously developing ever more energy-efficient, economical, and environmentally friendly solutions for our clients' needs.



oilon[®]

Oilon Oy
 Metsä-Pietilänkatu 1, 15800 Lahti, Finland
 P.O. Box 5, 15801 Lahti, Finland
 Tel. +358 3 85 761, info@oilon.com
 www.oilon.com