HIGH TEMPERATURE Heat Pumps

The Combitherm Concept

Combitherm GmbH has been renowned since 1972 for innovation and reliability in refrigeration and heating technology. Our product portfolio is broad, with one of the core competencies being our range of heat pumps. By continuously developing our products, we strive to offer our customers the optimal system solution that will suit their needs perfectly.

High temperature

To be one step ahead of the rapid changes in the field of resource utilization we are in a continuous process of product development. At the same time, we want to maintain our proven quality standards. An important step is the widening of the performance spectrum to generate media temperatures at a high level. To meet the related challenging requirements, we offer a wide range of scroll, reciprocating and screw compressors embedded in systems with further favorable components. Adjusted to future standards our systems are based on low GWP solutions like HFCs, HFOs and natural refrigerants.

Large performance

The Combitherm systems are available as single or multi-circuit units. Plants equipped with one scroll or piston compressor for small capacity like in the commercial sector as well as up to 3 screw compressors appointed for large industrial processes are part of the product portfolio.
The wide application and temperature range complemented by our proven heat pump technology with over 40 years of experience can be our customized input for your system.

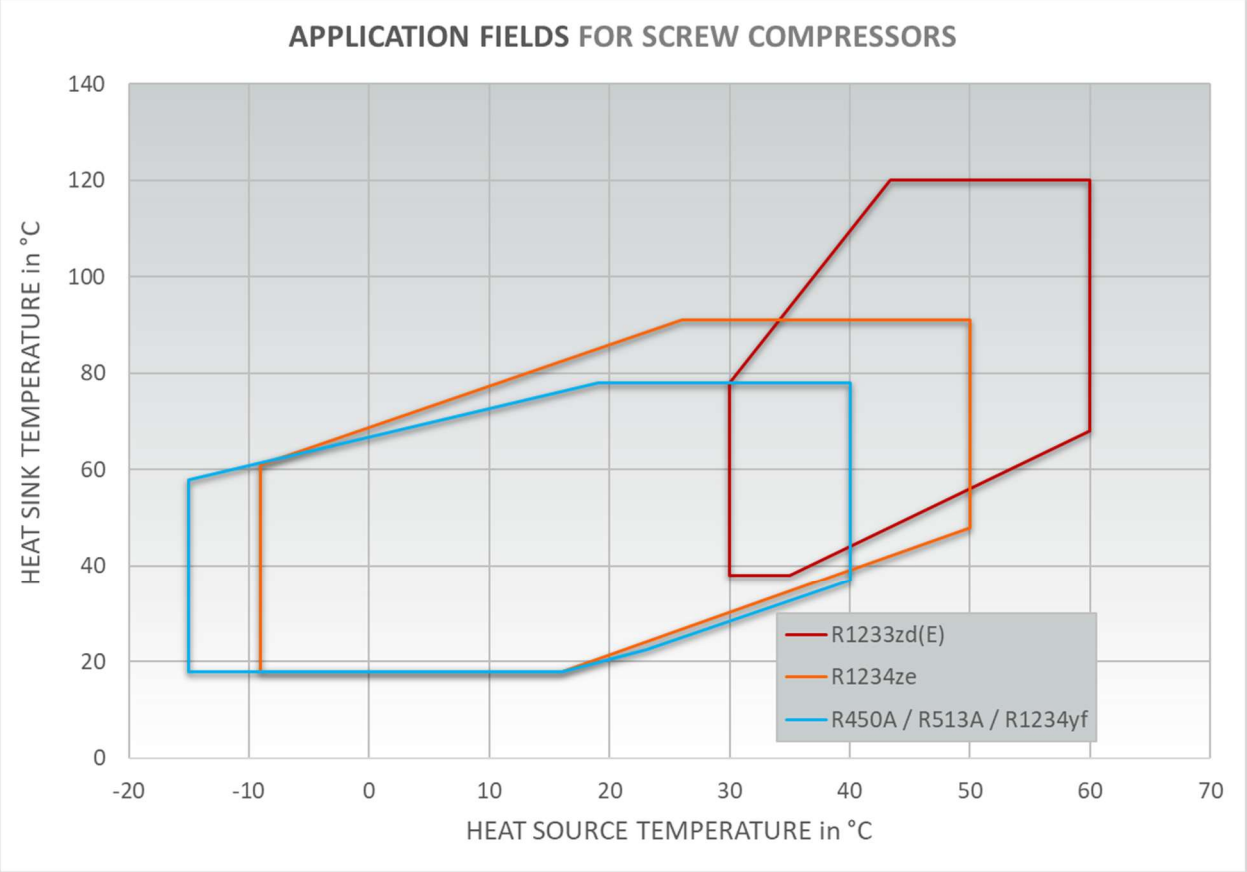
Application Range

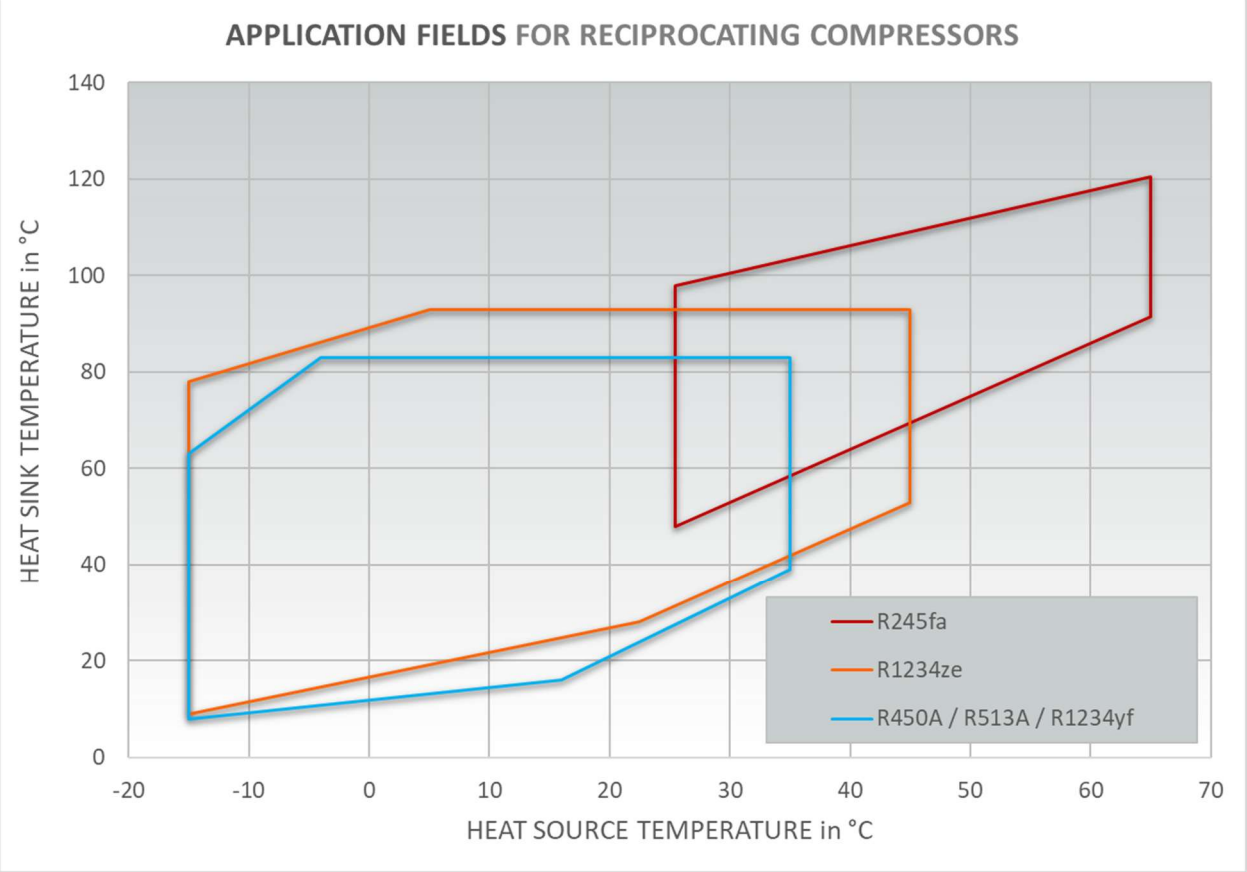
The Combitherm heat pumps provide the opportunity to process energy in a further way. In numerous industrial processes, waste heat is generated that can be used efficiently, and therefore does not need to be released into the environment.
Our proved R513A/R1234yf machines can be employed for a temperature range of up to 75 °C. Various compressors are available and different types of heat exchanger can be adapted to the respective need. In addition, with R450A/R1234ze, you are provided with an optimal extension. For highest demand up to 110 °C the refrigerants R245fa or R1233zd(E) are suitable solutions which combine low pressure characteristic, environmentally friendly properties, and valuable thermodynamic capability. And with all system we can rely on proven standard components.
An additional scope of application is the fusion of different technologies. For high temperature differences between heat sink and heat source, multi-stages systems can be realized. The heat pumps are available in fine graduations across the entire performance range and as single- or multiple-circuit versions.

HFO-Ready

It is a great goal for us to push forward with regard to ecological aspects as well as technical innovations. Especially the integration of new refrigerants into the product portfolio plays a major role. In addition to our reliable products the focus is strongly on the development in the field of Hydrofluoroolefins. With an extensive temperature range, we can meet numerous requirements in the field of heating technology. The low Global Warming Potential is a new dimension regarding the reduction of the greenhouse effect so we can offer systems with the highest level of environmental friendliness.

Application fields





The Combitherm benefits

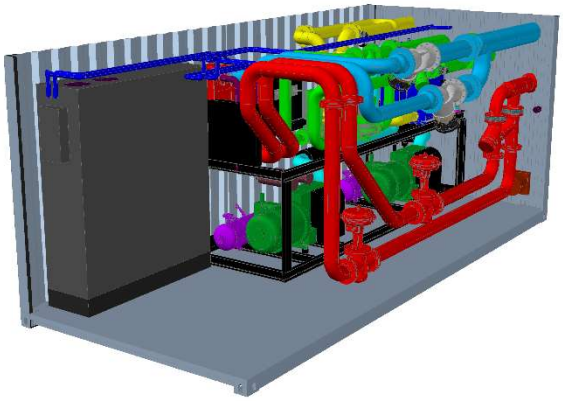
Variability // Engineering

- Custom made heat pumps, chillers, special applications
- Special heat exchanger materials for various mediums
- Position and execution of connections to customer requirement
- CAD construction and CFD simulation
- Adapted design for replacement or special insertion

Outdoor installation

Extensiveness // Accessories

- Additional equipment like pumps, valves, sensors, buffer vessels
- Integrated on the machine or supplied separately
- Adaption of the frame size to special conditions
- Sound isolating and weather proofed housing
- Container installation or truck mounted aggregates



Container solution

Precision // Electric Design

- Electrical cabinet attuned to all components and accessories
- Control by Programmable Logic Controller
- Data input and output via touch panel
- Extensive visualization of refrigeration circuit and periphery
- All common communication protocols like Modbus, Profibus, Profinet and BACNet

Hydraulic extension

The Components

- Compressor: Semi-hermetic reciprocating compressors as single or tandem version, with stepped or continuously variable power control.
  Semi-hermetic compact screw compressors, stepped or continuously variable capacity control.
  All Compressors with special refrigerant oil and comprehensive oil management (oil separator, oil level monitoring, and oil heater), check valve, integrated protection device, shut-off valves, vibration dampers, start unloading.

- Heat exchanger: Plate heat exchanger for small refrigerant filling quantity and low temperature difference for efficient operation.
  Tube and shell heat exchanger for high capacity, multiple refrigerant circuits in one device, inspection opening for cleaning.

- Pump: Electronic inline pumps with integrated frequency converter, with piping and all necessary attachments such as flow monitor, strainer, stop valve, check valve and sensors.

- Expansion valve: Electromagnetic expansion valve for optimal refrigerant injection.

- Controller: PLC regulation with touch panel for visualization of refrigeration cycle, duty point, limitations of use, temperatures, pressures, and clear text fault messages in case of malfunctions. Periphery control. Communication protocol and remote control on demand.

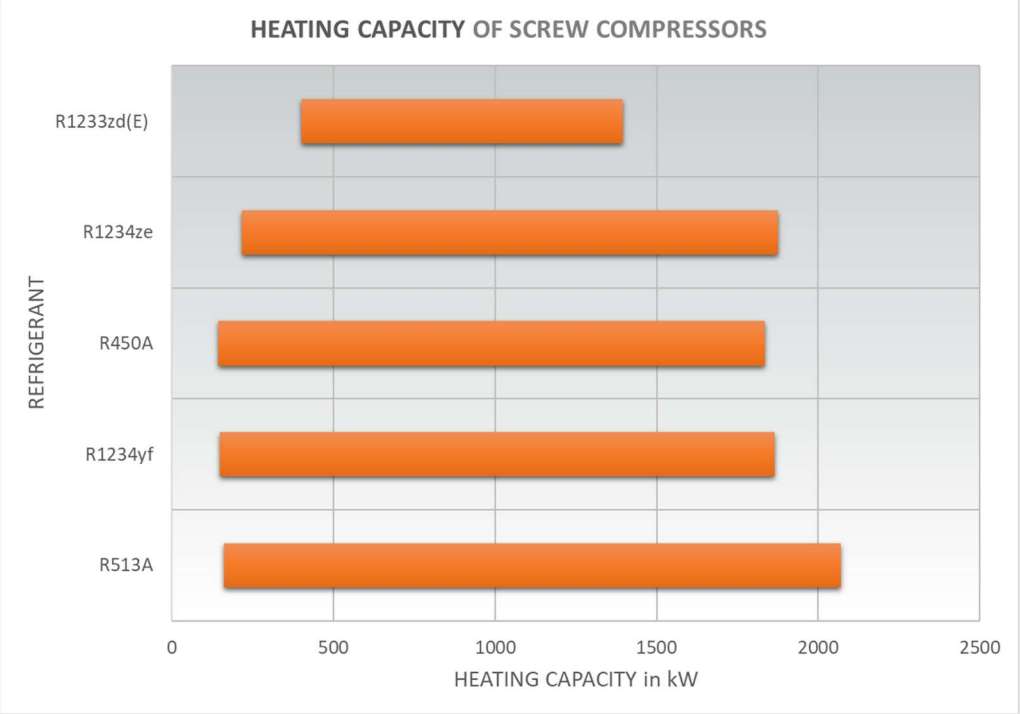
- Electrical control cabinet: Panels according to industrial standards, including all switches and safety components as well as wiring.

- Refrigeration accessories: Pressure switches, subcooler, refrigeration piping within the unit including refrigeration accessories such as filter dryer, inspection glass, refrigerant collector with inspection glass and shut-off valve, refrigerant filling.

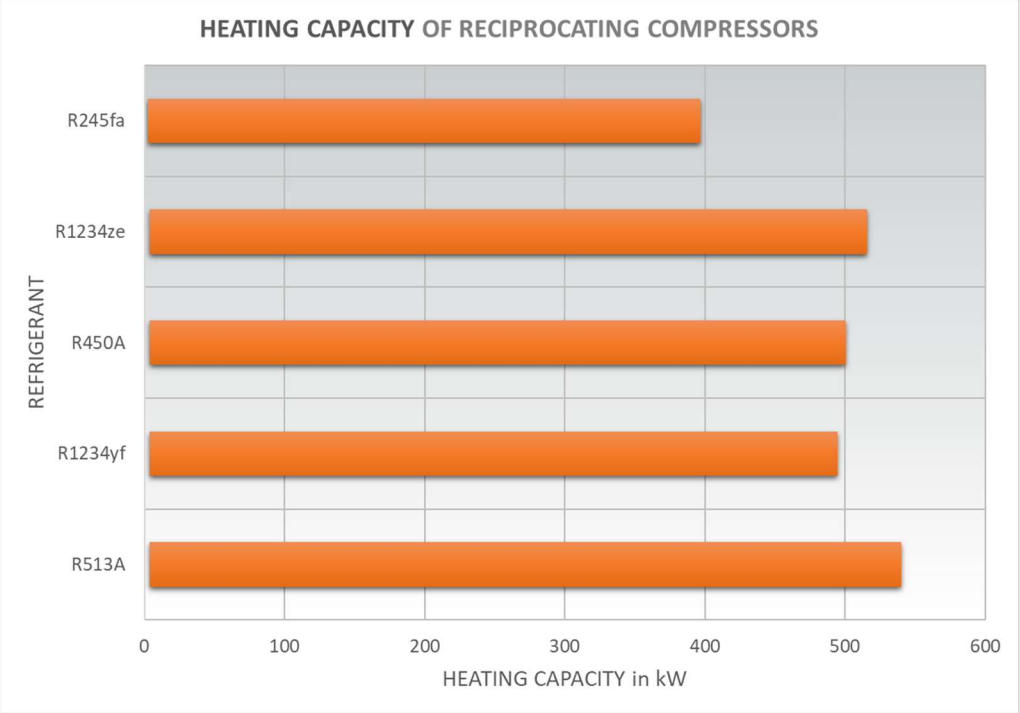
- Frame: All units are built on stable profile frame with vibration dampers.

- Attachment: Sound-absorbing and weather proofed housing, capacity control by frequency converter, additional compressor cooling, individual coat of lacquer, collection tray.

Performance



Data valid for:
R450A, R513A, R1234yf - Hot Water 73°C, Heat Source 40°C
R1234ze - Hot Water 85°C, Heat Source 50°C
R1233zd€ - Hot Water 100°C, Heat Source 50°C



Data valid for:
R450A, R513A, R1234yf - Hot Water 78°C, Heat Source 35°C
R1234ze - Hot Water 88°C, Heat Source 45°C
R245fa - Hot Water 115°C, Heat Source 65°C

HWW series with screw compressor

Heat Pump	Heating Capacity in kW				
Type	R450A	R513A	R1234yf	R1234ze	R1233zd(E)
HWW 6553	159	176	159	-	-
HWW 6563	198	219	197	-	-
HWW 7553	229	253	228	229	-
HWW 7563	264	292	263	264	-
HWW 7573	300	332	299	300	-
HWW 7583	343	379	342	343	-
HWW 8553	367	405	365	367	-
HWW 8563	418	462	416	418	-
HWW 8573	477	527	475	477	-
HWW 8593	623	688	620	623	-
HWW 9553	623	688	620	623	-
HWW 9563	716	791	713	716	-
HWW 9573	815	900	811	815	402
HWW 9583	937	1035	933	937	462
HWW 2/6553	319	352	317	-	-
HWW 2/6563	396	437	394	-	-
HWW 2/7553	459	507	456	459	-
HWW 2/7563	528	584	526	528	-
HWW 2/7573	601	664	598	601	-
HWW 2/7583	687	759	684	687	-
HWW 2/8553	733	810	730	733	-
HWW 2/8563	836	924	832	836	-
HWW 2/8573	954	1055	950	954	-
HWW 2/8593	1245	1376	1240	1245	-
HWW 2/9553	1245	1376	1240	1245	-
HWW 2/9563	1432	1582	1425	1432	-
HWW 2/9573	1630	1801	1622	1630	809
HWW 2/9583	1874	2071	1865	1874	930

Data valid for:
R450A, R513A, R1234yf - Hot Water 73°C, Heat Source 40°C
R1234ze - Hot Water 85°C, Heat Source 50°C
R1233zd(E) - Hot Water 100°C, Heat Source 50°C

Multi-Circuit units and special applications can be designed on request.

HWW series with reciprocating compressor

Heat Pump	Heating Capacity in kW				
Type	R450A	R513A	R1234yf	R1234ze	R245fa
HWW 50	15	16	15	15	12
HWW 60	19	20	19	19	15
HWW 70	22	24	22	23	18
HWW 90	27	29	26	28	21
HWW 100	29	31	28	30	23
HWW 120	34	37	34	35	27
HWW 150	40	43	40	41	32
HWW 200	46	50	46	48	37
HWW 220	52	57	52	54	42
HWW 250	61	66	60	63	48
HWW 300	70	75	69	72	55
HWW 330	79	85	78	81	62
HWW 350	91	98	90	94	72
HWW 400	105	113	103	108	83
HWW 500	125	135	124	129	99
HWW 2/50	30	32	29	31	24
HWW 2/60	38	41	37	39	30
HWW 2/70	44	48	44	46	35
HWW 2/90	54	58	53	55	42
HWW 2/100	57	62	57	59	45
HWW 2/120	68	74	67	70	54
HWW 2/150	80	86	79	82	63
HWW 2/200	93	100	92	96	74
HWW 2/220	105	113	104	108	83
HWW 2/250	122	131	120	125	96
HWW 2/300	139	151	138	144	111
HWW 2/330	157	170	155	162	125
HWW 2/350	182	197	180	188	145
HWW 2/400	209	226	207	216	166
HWW 2/500	250	270	247	258	198

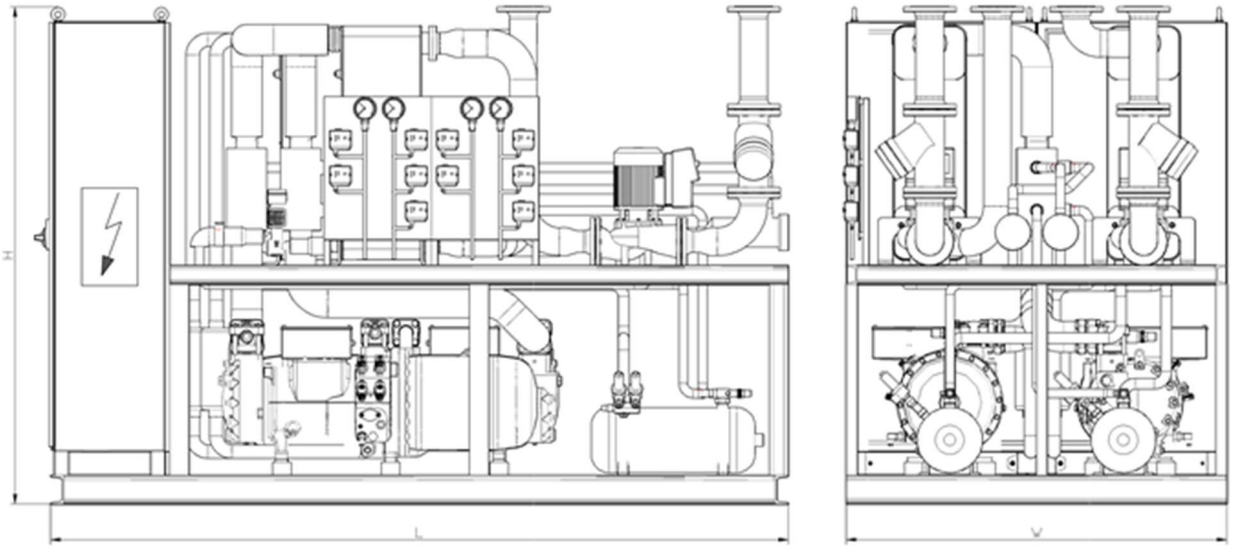
Data valid for:
R450A, R513A, R1234yf - Hot Water 78°C, Heat Source 35°C
R1234ze - Hot Water 88°C, Heat Source 45°C
R245fa - Hot Water 115°C, Heat Source 65°C

Multi-Circuit units and special applications can be designed on request.

Dimensions

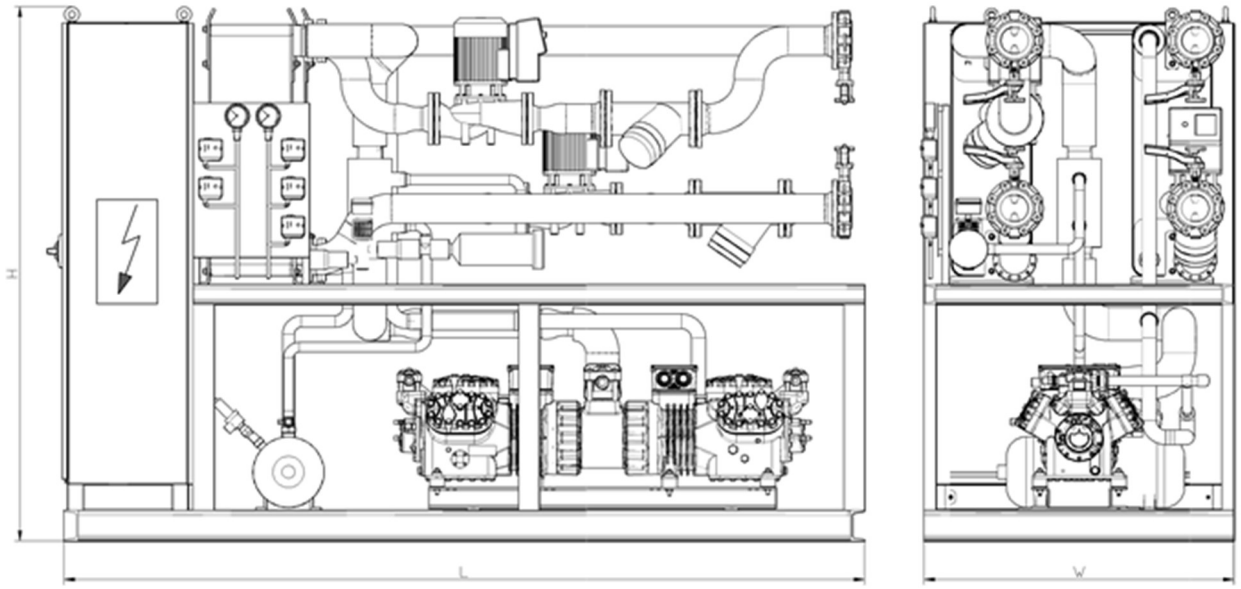
HWW series with screw compressor

Heat Pump Type	Length mm	Width mm	Height mm	Weight kg	Heat Pump Type	Length mm	Width mm	Height mm	Weight kg
HWW 6553	3000	1200	2000	1500	HWW 2/6553	3000	1600	2000	2400
HWW 6563	3100	1200	2000	1600	HWW 2/6563	3100	1600	2000	2400
HWW 7553	3100	1200	2100	1900	HWW 2/7553	3100	1600	2100	3000
HWW 7563	3200	1200	2100	1900	HWW 2/7563	3200	1600	2100	3200
HWW 7573	3200	1200	2100	2000	HWW 2/7573	4200	2000	2100	4000
HWW 7583	3200	1200	2100	2200	HWW 2/7583	4200	2000	2100	4200
HWW 8553	3300	1200	2100	2500	HWW 2/8553	4200	2000	2100	4800
HWW 8563	3300	1200	2100	2600	HWW 2/8563	4300	2000	2100	5100
HWW 8573	3400	1200	2100	2800	HWW 2/8573	4500	2000	2100	5300
HWW 8593	4000	2000	2100	3600	HWW 2/8593	4900	2000	2100	6300
HWW 9553	4000	2000	2200	4000	HWW 2/9553	4900	2000	2200	7200
HWW 9563	4000	2000	2200	4200	HWW 2/9563	4900	2000	2200	7400
HWW 9573	4100	2000	2200	4500	HWW 2/9573	4900	2000	2200	7800
HWW 9583	4100	2000	2200	4800	HWW 2/9583	4900	2000	2200	8500



HWW series with reciprocating compressor

Heat Pump Type	Length mm	Width mm	Height mm	Weight kg	Heat Pump Type	Length mm	Width mm	Height mm	Weight kg
HWW 50	2400	1000	2000	800	HWW 2/50	2400	1200	2000	1100
HWW 60	2400	1000	2000	900	HWW 2/60	2400	1200	2000	1100
HWW 70	2400	1000	2000	900	HWW 2/70	2400	1200	2000	1100
HWW 90	2400	1000	2000	900	HWW 2/90	2400	1200	2000	1200
HWW 100	2400	1200	2000	1000	HWW 2/100	2400	1200	2000	1300
HWW 120	2600	1200	2100	1000	HWW 2/120	2600	1200	2100	1400
HWW 150	2600	1200	2100	1000	HWW 2/150	2600	1200	2100	1500
HWW 200	2600	1200	2100	1100	HWW 2/200	2600	1200	2100	1500
HWW 220	2600	1200	2100	1200	HWW 2/220	2600	1200	2100	1500
HWW 250	2600	1200	2100	1200	HWW 2/250	2600	1400	2100	1700
HWW 300	2800	1200	2200	1300	HWW 2/300	2800	1400	2200	1800
HWW 330	2800	1200	2200	1300	HWW 2/330	2800	1400	2200	1900
HWW 350	2800	1200	2200	1400	HWW 2/350	2800	1400	2200	1900
HWW 400	2800	1200	2200	1400	HWW 2/400	2800	1400	2200	2000
HWW 500	2800	1200	2200	1500	HWW 2/500	2800	1400	2200	2100



Data may vary depending on execution.

Your application solutions

All heat pumps made by Combitherm GmbH and constructed specifically for a project and according to customer desires. Thus, a wide variety of applications can be implemented and integrated into new or existing designs.

- Brewery and malt house
  - Wort preparation
  - Drum and bottle cleaning
  - Malt drying
- Dairy
  - Container sterilization
- Sugar production
  - Boiling process for making syrups
  - Thickening
- Food manufacture
  - Boiling processes
  - Grain and fodder drying
- Paper production
  - Pulp drying
- Textile processing
  - Finishing polyester
- Processing technology
  - Reclaiming of cleaning solutions
- Metal processing
  - Electroplating
  - Immersion bath
- Glass, ceramics, and stone industry
  - Brick and Ceramic drying
- Energy
  - Geothermal energy
  - Long-distance heating
  - Combined heat and power plants
- Residential, hotel, and gastronomy
  - Hot and cold water preparation

Hotel and Residential

Geothermal Energy

Electroplating

Combitherm
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