

combiChiller

SERIES (S/M/L)

combiChiller comply with
eco-design directive 2009/125/EG

The **combiChiller** consists of a complete refrigeration cycle and is the basis for our plant concepts. Each chiller has an extremely small refrigerant charge of 0,5 up to 2,4 kg Propane/Propene/Butane depending on required cooling capacity.

To the machines of our **combiChiller** series with cooling capacities from 5 to 80 kW, more **combiChiller** can be added to get a higher total capacity.

The refrigerant circuit is inside a closed housing (ventilated enclosure). The capacities are transferred via a heat exchanger to a cold and warm water (brine) pipes. The external lines are connected with a simple coupling system to provide a quick and easy assembly.

Each chiller is electrically controlled by a separate control box. Chiller and control are connected by cable sets, which are equipped with plugs. Therefore no electrical work is necessary during the assembly on site. The size of the chiller allows an uncomplicated installation indoors. The closed skids on the underside of the chiller make it suitable for transport on a forklift or lift truck.

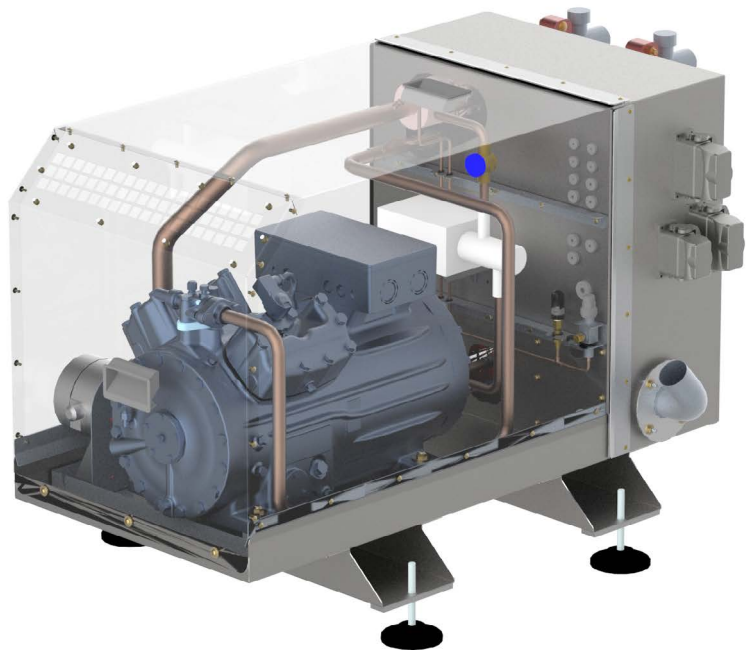
PLUG'N'PLAY

- ✓ Victaulic connections
- ✓ Plug system for electrical cabling and control box
- ✓ Safety suction with connection for a flexible exhaust hose

It doesn't get any simpler than this!

- Connection Plug'n'Play
- Indoor installation
- Maintenance-free refrigeration circuit
- Small filling quantities
- Simple installation
- Easy to expand
- High power
- No technician for installation required

The heat generator: The **combiChiller** can also be used as a heat pump and work in a heating network via the hydraulic connection.



combiChiller – The Allrounder: from -10°C to +10°C

Technical Details – combiChiller – Series S

Application areas					
Temperature (return flow cold)	°C	-7/-2°C	-5/0°C	0/+5°C	+7/+12°C
Temperature (return flow warm)	°C	+30/+35°C	+40/+45°C	+40/+45°C	+40/+45°C
combiChiller S					
Compressor cooling capacity	kW	8,3	7,81	9,77	13,1
Condensing capacity (heating capacity)	kW	10,4	10,3	12,3	15,6
Power consumption	kW	2,91	3,34	3,66	4,04
E.E.R.		2,85	2,34	2,67	3,22
Current consumption, nominal	A	6,8	7,25	7,61	8,04
Max. current consumption	A	10,5	10,5	10,5	10,5
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m ³ /h	1,6	1,5	1,8	2,5
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m ³ /h	2	1,9	2,3	2,9
Pressure drop warm side	kPa	< 40	< 40	< 40	< 40
combiChiller S					
Compressor cooling capacity	kW	9,9	9,4	11,7	15,4
Condensing capacity (heating capacity)	kW	12,3	12,2	14,6	18,4
Power consumption	kW	3,45	3,97	4,35	4,78
E.E.R.		2,87	2,36	2,68	3,22
Current consumption, nominal	A	7,36	7,96	8,4	8,93
Max. current consumption	A	12,2	12,2	12,2	12,2
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m ³ /h	1,9	1,8	2,2	2,9
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m ³ /h	2,3	2,3	2,8	3,5
Pressure drop warm side	kPa	< 40	< 40	< 40	< 40
combiChiller S					
Compressor cooling capacity	kW	12,4	11,8	14,6	19,2
Condensing capacity (heating capacity)	kW	15,4	15,3	18,2	22,8
Power consumption	kW	4,3	4,94	5,37	5,86
E.E.R.		2,88	2,37	2,71	3,27
Current consumption, nominal	A	8,35	9,14	9,7	10,4
Max. current consumption	A	14,7	14,7	14,7	14,7
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m ³ /h	2,3	2,2	2,8	3,6
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m ³ /h	2,9	2,9	3,4	4,3
Pressure drop warm side	kPa	< 40	< 40	< 40	< 40
combiChiller S					
Compressor cooling capacity	kW	15,4	14,8	18,2	23,9
Condensing capacity (heating capacity)	kW	19,1	19,1	22,7	28,4
Power consumption	kW	5,32	6,15	6,69	7,28
E.E.R.		2,88	2,39	2,72	3,27
Current consumption, nominal	A	9,6	10,8	11,5	12,4
Max. current consumption	A	18	18	18	18
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m ³ /h	2,9	2,8	3,4	4,5
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m ³ /h	3,6	3,6	4,3	5,3
Pressure drop warm side	kPa	< 40	< 40	< 40	< 40
Refrigerant/ Compressor					
Refrigerant	R290				
Refrigerant charge	< 1.200 g				
Expansion valve	Electronic				
Compressor type	Semi-hermetic piston (GEA Bock)				
Number of compressors	1				
Capacity steps	2				
Connections					
Return / flow cold fluid	Victaulic 42,4				
Return / flow warm fluid	Victaulic 42,4				
Power supply connection	Machine connector Phoenix HC-B				
Connection control	Machine connector Phoenix HC-B				
Connection sensors / gas warning system	Machine connector Phoenix HC-B				
Exhaust safety device	Pipe DN50				
Sound pressure level					
sound pressure level LpA in 5m	dB(A)				
Sound measurement according to DIN 45635 Part 1	44				
Dimensions					
Length	mm				
Width	mm				
Height	mm				
Transport weight approx.	kg				

combiChiller – The Allrounder: from -10 °C to +10°C

Technical Details – combiChiller – Series M

Application areas					
Temperature (return flow cold)	°C	-7/-2°C	-5/0°C	0/+5°C	+7/+12°C
Temperature (return flow warm)	°C	+30/+35°C	+40/+45°C	+40/+45°C	+40/+45°C
combiChiller M					
Compressor cooling capacity	kW	18,9	17,8	22,1	29,2
Condensing capacity (heating capacity)	kW	23,2	22,8	27,2	34,3
Power consumption	kW	6,35	7,22	7,79	8,43
E.E.R.		2,96	2,46	2,83	3,46
Current consumption, nominal	A	14,1	15	15,7	16,4
Max. current consumption	A	23	23	23	23
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m³/h	3,6	3,4	4,2	5,5
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m³/h	4,4	4,3	5,1	6,5
Pressure drop warm side	kPa	< 40	< 40	< 40	< 40
combiChiller M					
Compressor cooling capacity	kW	21,7	20,5	25,6	34,0
Condensing capacity (heating capacity)	kW	26,8	26,4	31,6	39,9
Power consumption	kW	7,39	8,36	9,08	9,89
E.E.R.		2,94	2,46	2,82	3,43
Current consumption, nominal	A	15,9	16,9	17,7	18,7
Max. current consumption	A	26	26	26	26
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m³/h	4,1	3,9	4,8	6,4
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m³/h	5	5	5,9	7,5
Pressure drop warm side	kPa	< 40	< 40	< 40	< 40
combiChiller M					
Compressor cooling capacity	kW	25,9	24,5	30,4	40,2
Condensing capacity (heating capacity)	kW	31,9	31,5	37,6	47,2
Power consumption	kW	8,77	9,96	10,7	11,7
E.E.R.		2,95	2,46	2,82	3,43
Current consumption, nominal	A	17,4	18,8	19,7	20,9
Max. current consumption	A	30,0	30,0	30,0	30,0
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m³/h	4,9	4,6	5,7	7,6
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m³/h	6	5,9	7,1	8,9
Pressure drop warm side	kPa	< 40	< 40	< 40	< 40
combiChiller M					
Compressor cooling capacity	kW	30,3	28,7	35,6	47,1
Condensing capacity (heating capacity)	kW	37,2	36,8	43,9	55,3
Power consumption	kW	10,1	11,5	12,5	13,6
E.E.R.		2,97	2,48	2,84	3,46
Current consumption, nominal	A	19,0	20,7	22,0	23,5
Max. current consumption	A	35	35	35	35
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m³/h	5,7	5,4	6,7	8,9
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m³/h	7	6,9	8,3	10,4
Pressure drop warm side	kPa	< 40	< 40	< 40	< 40
Refrigerant/Compressor					
Refrigerant		R290			
Refrigerant charge		< 1900 g			
Expansion valve		Electronic			
Compressor type		Semi-hermetic piston (GEA Bock)			
Number of compressors		1			
Capacity steps		2			
Connections					
Return/flow cold fluid		Victaulic 42,4			
Return/flow warm fluid		Victaulic 42,4			
Power supply connection		Machine connector Phoenix HC-B			
Connection control		Machine connector Phoenix HC-B			
Connection sensors/gas warning system		Machine connector Phoenix HC-B			
Exhaust safety device		Pipe DN50			
Sound pressure level					
sound pressure level LpA in 5m	dB(A)	45			
Sound measurement according to DIN 45635 Part 1					
Dimensions					
Length	mm	1093			
Width	mm	750			
Height	mm	700			
Transport weight approx.	kg	350			

combiChiller – The Allrounder: from -10 °C to +10°C

Technical Details – combiChiller – Series L

Application areas					
Temperature (return flow cold)	°C	-7/-2°C	-5/0°C	0/+5°C	+7/+12°C
Temperature (return flow warm)	°C	+30/+35°C	+40/+45°C	+40/+45°C	+40/+45°C
combiChiller L		combiChiller MCL 73-8 E	combiChiller MCL 73-8 E	combiChiller MCL 73-8 E	combiChiller MCL 73-10 E
Compressor cooling capacity	kW	33,9	32,3	40	52,8
Condensing capacity (heating capacity)	kW	41,7	41,5	49,4	62,0
Power consumption	kW	11,4	13,0	14,0	15,2
E.E.R.		2,96	2,47	2,84	3,47
Current consumption, nominal	A	22,6	24,6	25,9	27,4
Max. current consumption	A	39,4	39,4	39,4	39,4
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m³/h	6,4	6,1	7,6	10
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m³/h	7,9	7,8	9,3	11,7
Pressure drop warm side	kPa	< 60	< 60	< 60	< 60
combiChiller L		combiChiller MCL 86-10 E	combiChiller MCL 86-10 E	combiChiller MCL 86-10 E	combiChiller MCL 86-12 E
Compressor cooling capacity	kW	40,3	38,5	47,5	62,4
Condensing capacity (heating capacity)	kW	49,5	49,3	58,5	73,2
Power consumption	kW	13,4	15,4	16,6	18,0
E.E.R.		2,99	2,49	2,85	3,47
Current consumption, nominal	A	27,1	29,4	30,9	32,6
Max. current consumption	A	46,4	46,4	46,4	46,4
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m³/h	7,6	7,3	9	11,8
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m³/h	9,3	9,3	11	13,8
Pressure drop warm side	kPa	< 40	< 40	< 40	< 40
combiChiller L		combiChiller MCL 100-10 E	combiChiller MCL 100-10 E	combiChiller MCL 100-12 E	combiChiller MCL 100-12 E
Compressor cooling capacity	kW	45,2	42,6	53,1	70,5
Condensing capacity (heating capacity)	kW	55,7	54,7	65,5	82,7
Power consumption	kW	15,2	17,2	18,7	20,3
E.E.R.		2,96	2,47	2,84	3,47
Current consumption, nominal	A	37,3	39,1	40,5	42,2
Max. current consumption	A	58,3	58,3	58,3	58,3
Main power supply	V/PH/Hz	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW	380-420V Y/ YY -3- 50Hz PW
Volume flow cold side (Ethylene glycol 34%)	m³/h	8,5	8	10	13,3
Pressure drop cold side	kPa	< 40	< 40	< 40	< 40
Volume flow warm side (Ethylene glycol 34%)	m³/h	10,5	10,3	12,3	15,6
Pressure drop warm side	kPa	< 40	< 40	< 40	< 40
Refrigerant / Compressor					
Refrigerant	R290				
Refrigerant charge	< 2.400 g				
Expansion valve	Electronic				
Compressor type	Semi-hermetic piston (GEA Bock)				
Number of compressors	1				
Capacity steps	3				
Connections					
Return / flow cold fluid	Victaulic 42,4				
Return / flow warm fluid	Victaulic 42,4				
Power supply connection	Machine connector Phoenix HC-B				
Connection control	Machine connector Phoenix HC-B				
Connection sensors / gas warning system	Machine connector Phoenix HC-B				
Exhaust safety device	Pipe DN50				
Sound pressure level					
sound pressure level LpA in 5m	dB(A)	48			
Sound measurement according to DIN 45635 Part 1					
Dimensions					
Length	mm	1259			
Width	mm	750			
Height	mm	700			
Transport weight approx.	kg	450			

Control system

The complete control system is based on decentralized regulation of the used components. The reason for this is to add new components if required or to change components in terms of size or performance without changing the overall system. Communication takes place via a BUS system between the individual components. It doesn't matter which components are involved. It is possible to combine and visualize all components on one platform individually.

The control components used are exclusively Siemens products, which ensures the highest quality and reliability. A further advantage is that the components used are still available after several years and the system can be supplemented.

Depending on the application, a decentralised or centralised control system can be supplied. Individual customer requirements can be implemented by our own programmers in the superior control system.

Decentralised control system

A decentralized control system has no superior control system that addresses all components. Each unit is controlled separately and receives its commands from one unit, which is automatically defined as master unit. Thus, exchanging one unit or upgrading a whole chiller rack is very simple. Communication takes place via BUS lines that interconnect all individual components. Expansion and integration is possible at any time without reprogramming. (SIEMENS CLIMATIX)

Central control system

A central control system addresses each unit from a superior control and controls it according to requirements. It is necessary to wire each component to this control center and to define which units are available. Individual solutions are only possible with superior controls.

Outdoor installation

†combiEcoChill | PERFORMANCE

- Unit complete with up to 2 **†combiChillers**, dry cooler, control box and pumps
- Cooling capacity from 50 kW to 120 kW
- Usage of R290-Propane and R1270-Propene
- Refrigerant charge max. 2x 2,5 kg
- optional with **†combiHEATRECOVERY** and **†combiHYDROSWITCH**



†combiAirChill | PERFORMANCE

- Air cooled unit with condenser and up to 2 refrigeration circuits and control (no pump included, optional with gas warning system)
- Cooling capacity from 20 kW to 250 kW
- Usage of R290-Propane and R1270-Propene



Modular concept

The **combiChillerKit** was developed for indoor installation, is individually assembled and designed to meet the requirements of capacity and temperature.

Highest possible redundancy by using several intrinsically safe circuits next to each other.

combiHEATRECOVERY

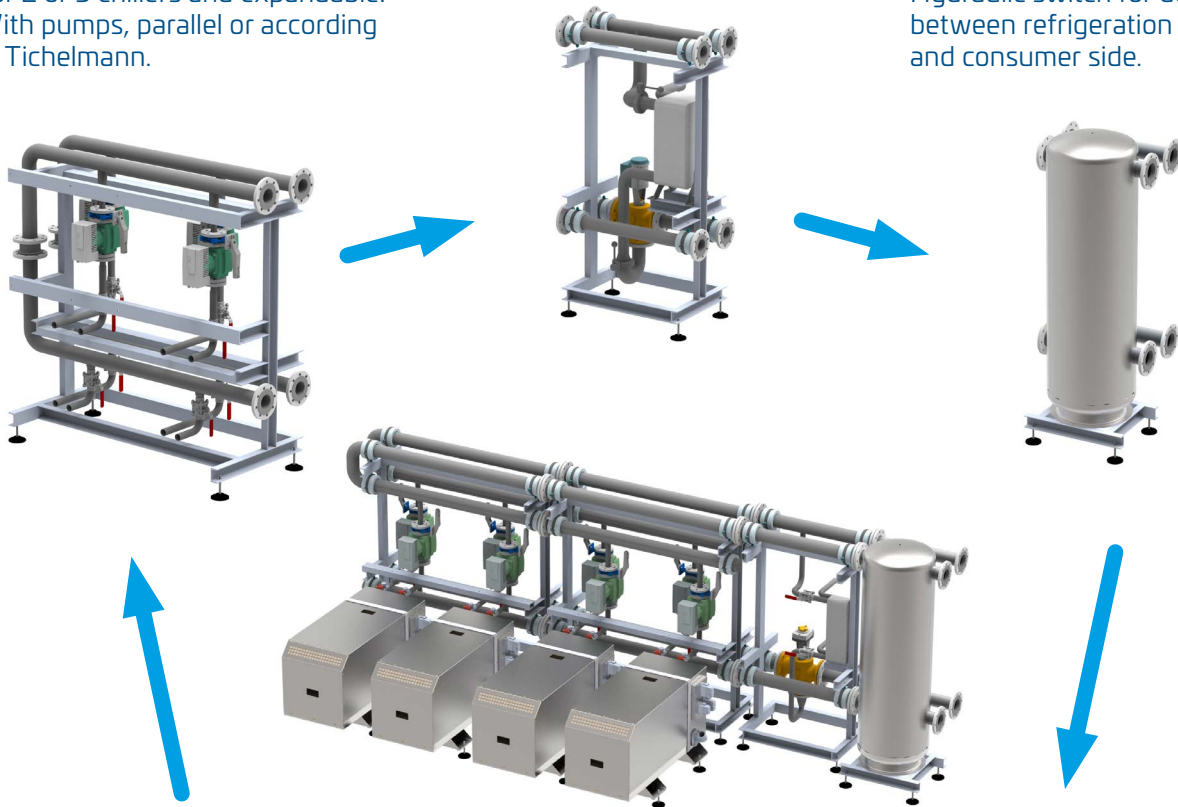
Heat recovery for the use of waste heat in cooling systems.

combiHYDRO module

For 2 or 3 chillers and expandable. With pumps, parallel or according to Tichelmann.

combiHYDROSWITCH

Hydraulic switch for decoupling between refrigeration and consumer side.



combiCHILLER

Basis of cooling (or heating)



combiCONTROL

Control box for each chiller with optional master-slave control.

