R 290

FLIPPER

FLIPPER

WATER-COOLED CHILLER / HEAT PUMP

Indoor installation

Natural refrigerant: R 290

Maximum flow temperature: 70 °C

Cooling capacity range[1]:

from 36 kW to 85 kW

Heating capacity range[2]:

from 45 kW to 107 kW



[1] Evaporator intlet/outlet water temperature 15 / 10 °C

[2] Condenser intlet/outlet water temperature 40 / 45 °C

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NATURAL COOLING & HEATING

R290

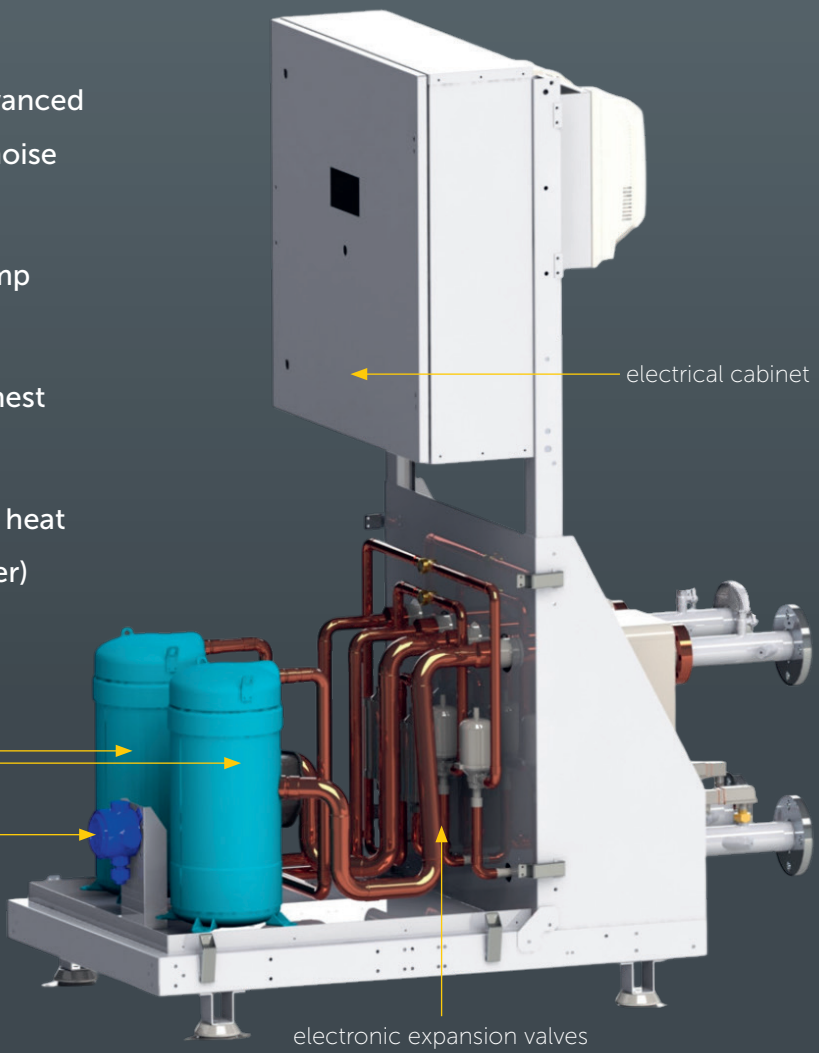
FLIPPER

WATER-COOLED CHILLER / HEAT PUMP

FLIPPER series consists of high-efficiency, water-cooled units featuring a very compact design, intended for indoor installation. They are designed to cover heating or cooling demands ranging from smaller to medium capacity systems, but allow for parallel configuration in order to increase total capacity.

REFRIGERATION CIRCUIT

- Hermetic scroll compressors with advanced characteristics which result in lower noise emission during operation.
- Wide operating envelope for heat pump and chiller applications
- Ensured stable performance with highest efficiency
- High-quality, high-performance plate heat exchangers (evaporator and condenser) require less refrigerant charge



✓ Safety strategy: refrigerant gas leak detector + differential air presure switch + ATEX fan

✓ Refrigerant charge below 4,9 kg for indoor installation purposes

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NATURAL COOLING & HEATING

R290

HYDRONIC CIRCUIT

Standard equipment:

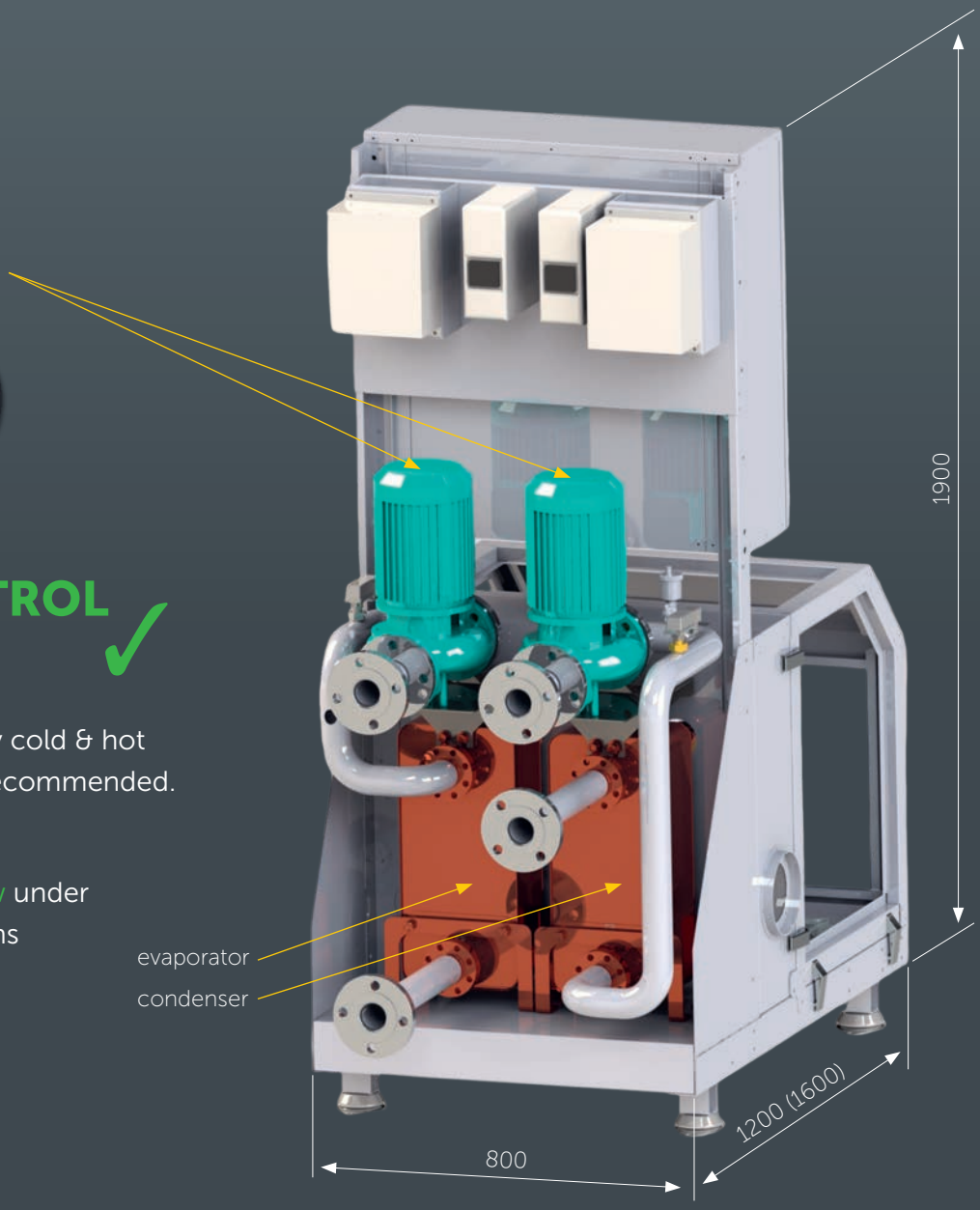
- Stainless steel piping with thermal insulation
- Flow switches
- Air vent valves
- Drain valves
- Temperature probes

Optional equipment: Primary pumps (AC + External inverter)

ELECTRICAL CABINET

- Factory-integrated pump power supply and control signals for pumps
- 4-pole main switch
- GSM router
- Lamp with socket for electrical cabinet
- For heat pump use:
  - 0-10 V analog output for externalheat source control
  - Regulation of a 3-way valve via dry contacts for DHW





FLOW UNDER CONTROL ✓

Factory-installed primary cold & hot **circulation pumps** are recommended.

Benefits include:

- ✓ Stable evaporator flow under all operating conditions
- ✓ Faster commissioning
- ✓ Simplified installation

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NATURAL COOLING & HEATING

		FL721	FL722	FL941	FL942	FL1191	FL1192
Cooling capacity (1)	kW	36	44	51	57	74	85
EER	-	4,14	3,95	4,16	4,02	4,26	4,00
Heating capacity (2)	kW	45	55	64	72	91	107
COP	-	5,14	4,95	5,16	5,02	5,26	5,00
Compressor	Hermetic scroll						
Compressors/circuits	n°	2/2	2/2	2/2	2/2	2/2	2/2
Evaporator (cooling side)	Brazed plate heat exchanger						
Water flow rate	m^3/h	6,20	7,50	8,80	9,80	12,70	14,70
Head loss	-	Up to 40 kPa					
Type of connection	Flange	DN 40	DN 40	DN 50	DN 50	DN 50	DN 65
Condenser (heating side)	Brazed plate heat exchanger						
Water flow rate	m^3/h	7,90	9,50	11,10	12,40	15,80	18,60
Head loss	-	Up to 40 kPa					
Type of connection	Flange	DN 40	DN 50	DN 50	DN 50	DN 65	DN 65
Noise levels (3)							
Sound power lev.	dB(A)	70,30	70,30	70,30	70,30	75,30	75,30
Sound pressure lev. @10m	dB(A)	38,60	38,60	38,60	38,60	43,70	43,70
Dimensions							
Length (+connections)	mm	1200 (+380)					
Width	mm	800					
Height	mm	1900					
Weight	kg	460	460	510	510	540	550
Electrical characteristics							
Power supply	-	TN-S (400/3/50 + PE + N)					
Maximum current	A	38	38	56	56	76	76
Recommended dim. of power supply cable	mm^2	5x10	5x10	5x16	5x16	5x35	5x35
Capacity							
Heating capacity, B0/W45	kW	45	45	64	64	81	81
Heating capacity, B0/W55	kW	44	44	61	61	78	78

(1) - Evaporator inlet/outlet water temperature 15/10°C. Performance values determined in accordance with EN 14511.
(2) - Condenser inlet/outlet water temperature 40/45°C. Performance values determined in accordance with EN 14511.
(3) - Sound data is based on 7/40 °C operation and compressor frequency of 85 Hz.

ECOLOGY

Natural refrigerant: propane - R290

It belongs to the group of hydrocarbons with GWP_{100} = 0,02 which is completely exempted from the restrictions prescribed by the F-gas Regulation (EU) 2024/573.

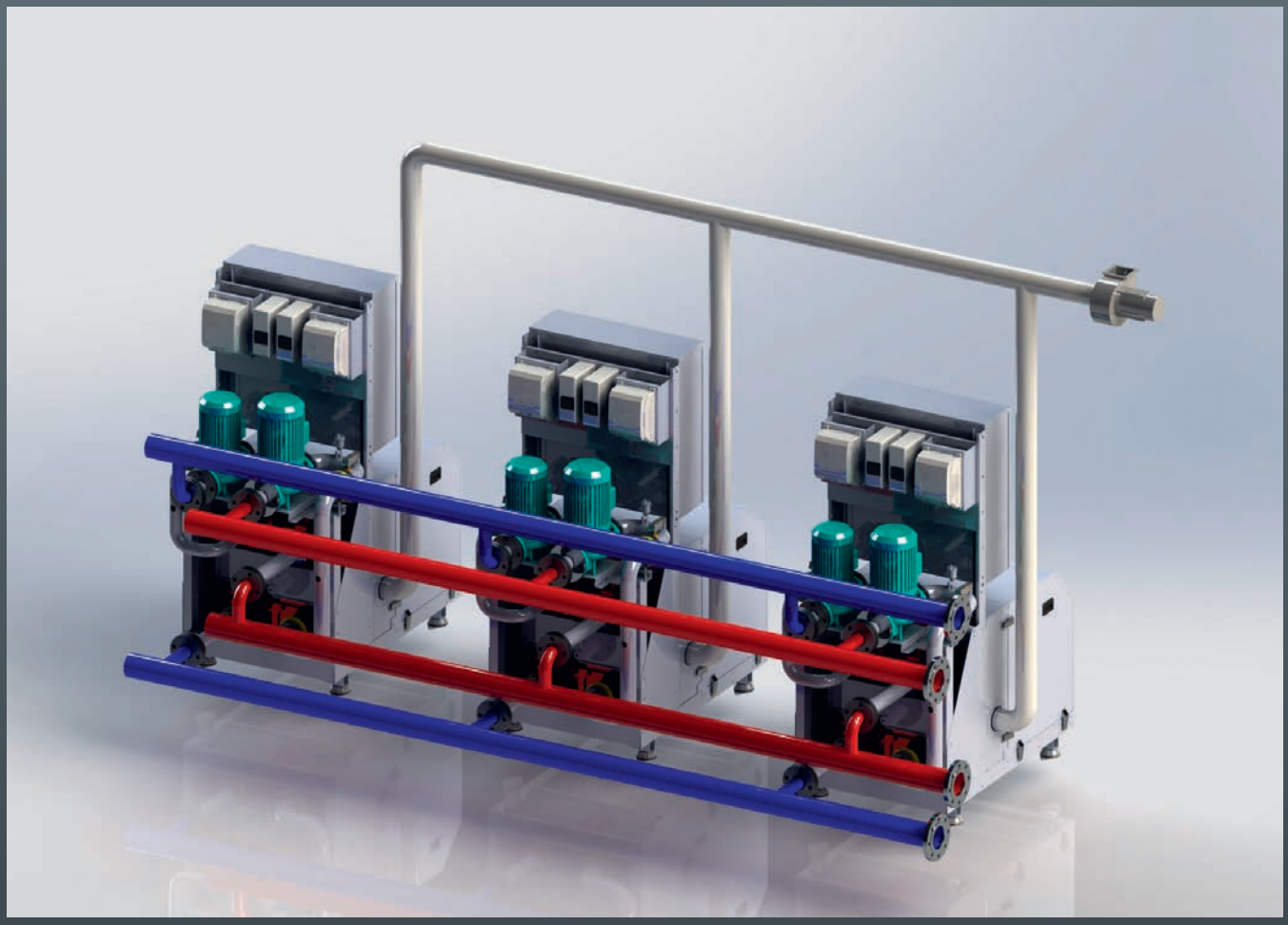
ENERGY EFFICIENCY

Thanks to the ideal thermodynamic characteristics of the R290 refrigerant and the optimal selection of the key components of the refrigeration circuit, FLIPPER units have high energy efficiency and meet the requirements of ECODESIGN REGULATIONS.

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PARALLEL CONFIGURATION

FLIPPER units support parallel configuration, enabling scalable capacity, with the compact design further enhancing flexibility and efficiency of system layout.



WHY PARALLEL?

SCALABLE CAPACITY
Capacity can be increased by simply adding units.

BUILT-IN REDUNDANCY
System remains operational even if one unit is unavailable.

HIGH PART-LOAD EFFICIENCY
Only the required number of units operates, saving energy.

EASY SERVICE & MAINTENANCE
Individual units can be serviced with minimal impact on the system.

KEY FEATURES

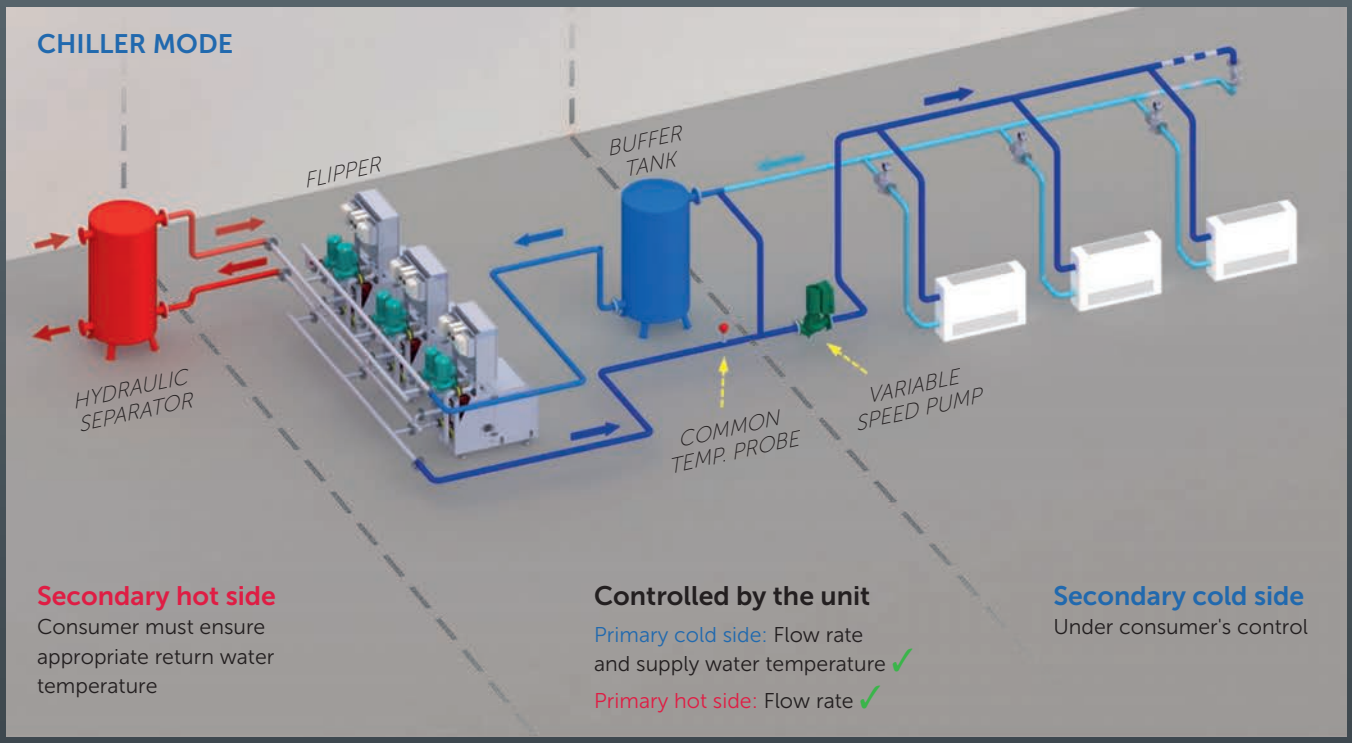
- Lead/follow control strategy
- Automatic unit staging ON/OFF
- Variable-speed compressors for maximum efficiency
- Compact design saves space in the plant room
- Easy future expansion

INTEGRATION INTO HYDRONIC SYSTEMS

FLIPPER units connected in parallel can be easily integrated into hydronic systems using common collectors (headers) and a buffer tank installed in the return line.

Whether the system consists of one or multiple units, the integrated controller regulates the supply temperature and flow rate on the controlled (i.e. regulated) side. The return temperature on the opposite side (hot side in chiller mode, cold side in heat pump mode) must be maintained by the external system within the unit's specified operating range.

CHILLER MODE

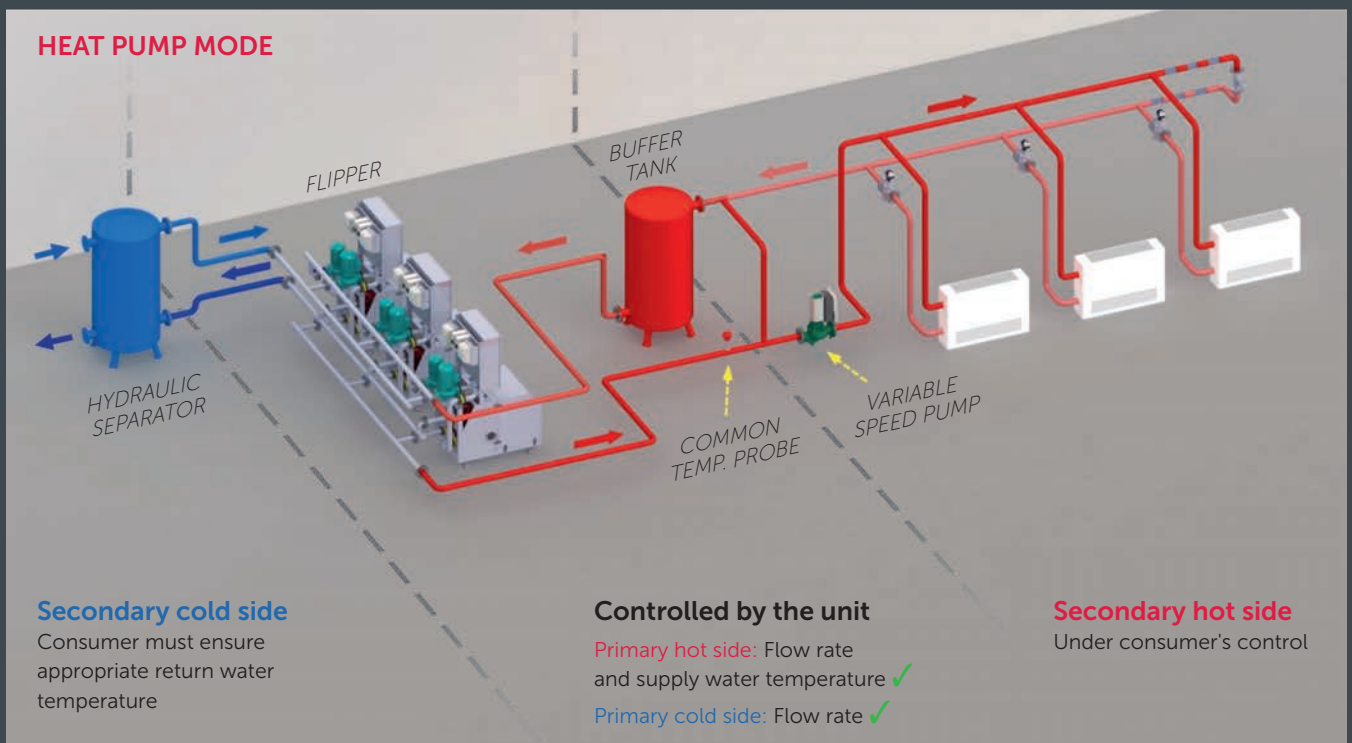


Secondary hot side
Consumer must ensure appropriate return water temperature

Controlled by the unit
Primary cold side: Flow rate and supply water temperature ✓
Primary hot side: Flow rate ✓

Secondary cold side
Under consumer's control

HEAT PUMP MODE

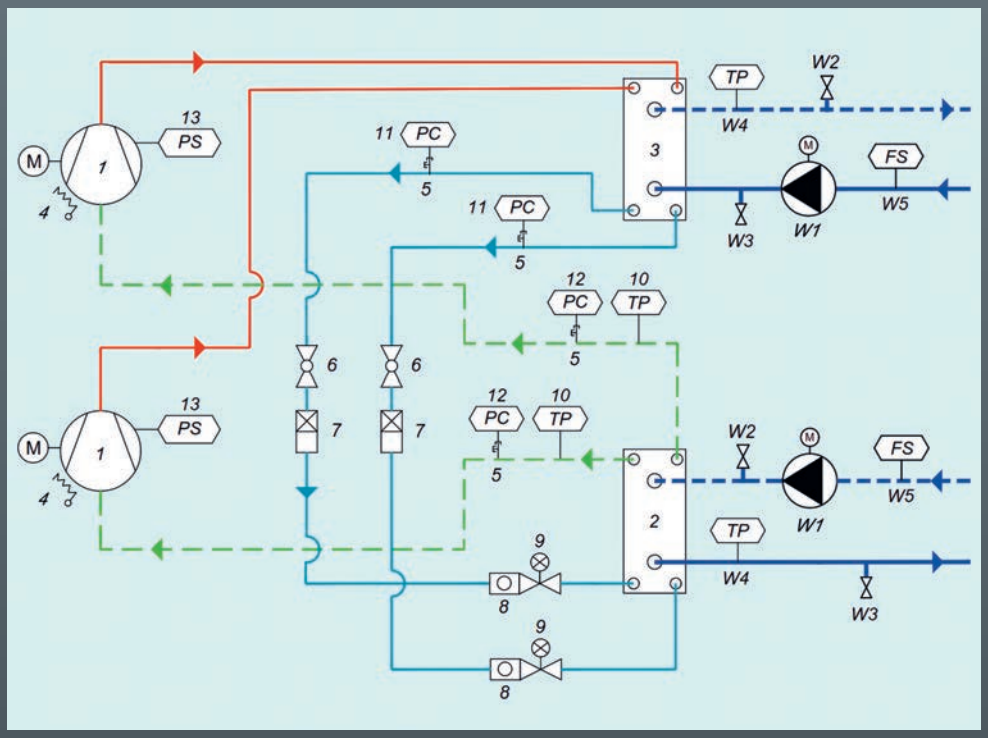


Secondary cold side
Consumer must ensure appropriate return water temperature

Controlled by the unit
Primary hot side: Flow rate and supply water temperature ✓
Primary cold side: Flow rate ✓

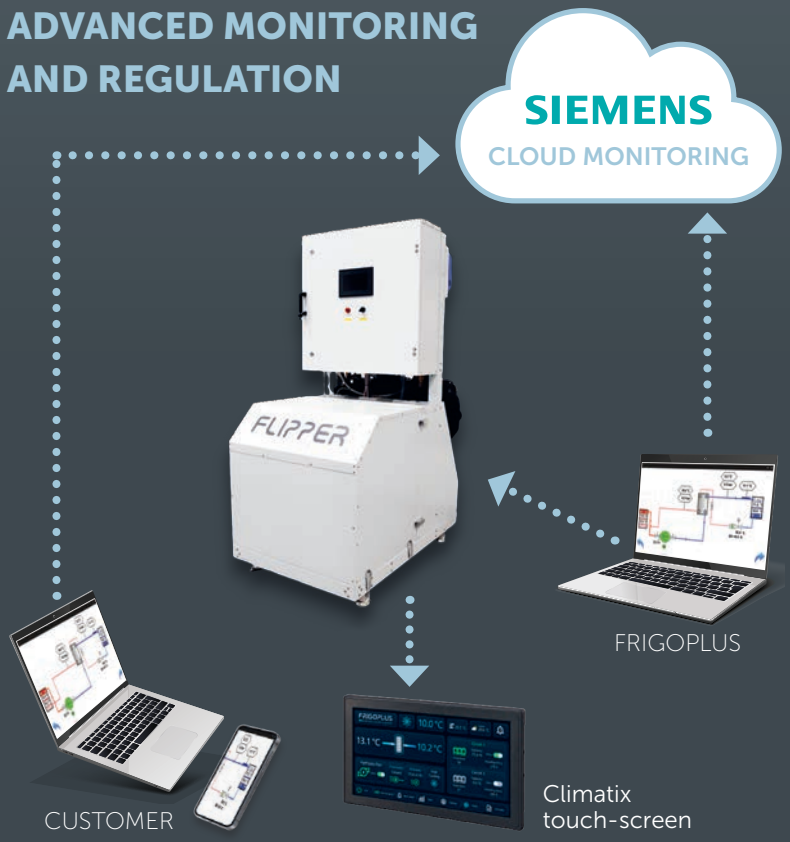
Secondary hot side
Under consumer's control

SIMPLIFIED P&ID



Pos.	Part name
1	Compressor
2	Evaporator (BPHE)
3	Condenser (BPHE)
4	Crankcase heater
5	Tee access fitting
6	Shut-off valve
7	Filter drier
8	Sight glass
9	El. expansion valve
10	Temperature probe
11	Pressure probe HP
12	Pressure probe LP
13	Pressure switch
W1	Pump
W2	Autom. air vent valve
W3	Drain valve
W4	Temperature probe
W5	Flow switch

ADVANCED MONITORING AND REGULATION



SIEMENS controller:

- Intuitive and user friendly touch-screen
- Advanced compressor frequency regulation depending on the required water temperature regime
- Electronic expansion valve & superheat control
- Primary circuit pump regulation
- Easy connectivity with standard MODBUS or BACnet protocols
- Unit protection and alarm management for safe and reliable operation

SIEMENS cloud:

- Live data tracking
- Data archiving
- Process variable comparison
- Alarm monitoring & diagnostics

SAFETY & QUALITY

All units are designed in accordance with the highest safety standards and follow EN 378 for refrigerants from group A3.

- Testing units according to EN 14 511
- ISO 9001 : 2015
- Module A2 - Monitoring of Final Assessment, according to Directive 2014/68/EU

WATER COOLED CHILLERS / HEAT PUMPS

Water-cooled units are used for indirect cooling or heating for air conditioning of buildings, industrial processes, logistic centers for food retail, precision cooling of data centers etc. Heat transfer fluid can be water, mixture of water and ethylene/propylene glycol or some other secondary heat transfer fluid.

Refrigerant is propane (R290), which due to its excellent thermodynamic properties allows the use of the unit in the temperature range from -25 °C to 20 °C.

Producing natural cooling and heating systems since 2002.

FRIGOPLUS
NATURAL COOLING & HEATING

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