R 290

NANOWONE

NANOWONE

WATER-COOLED CHILLER / HEAT PUMP

Indoor installation

Natural refrigerant: Propane (R 290)

Maximum flow temperature[1]: 65 °C (75 °C)

Cooling capacity range[2]:

from 10 kW to 32 kW

Heating capacity range[3]:

from 12 kW to 41 kW



[1] Up to 75 °C available on request

[2] Evaporator intlet/outlet watertemperature 15 / 10 °C

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

ATEX key components

EN 378 compliant enclosed housing

FRIGOPLUS

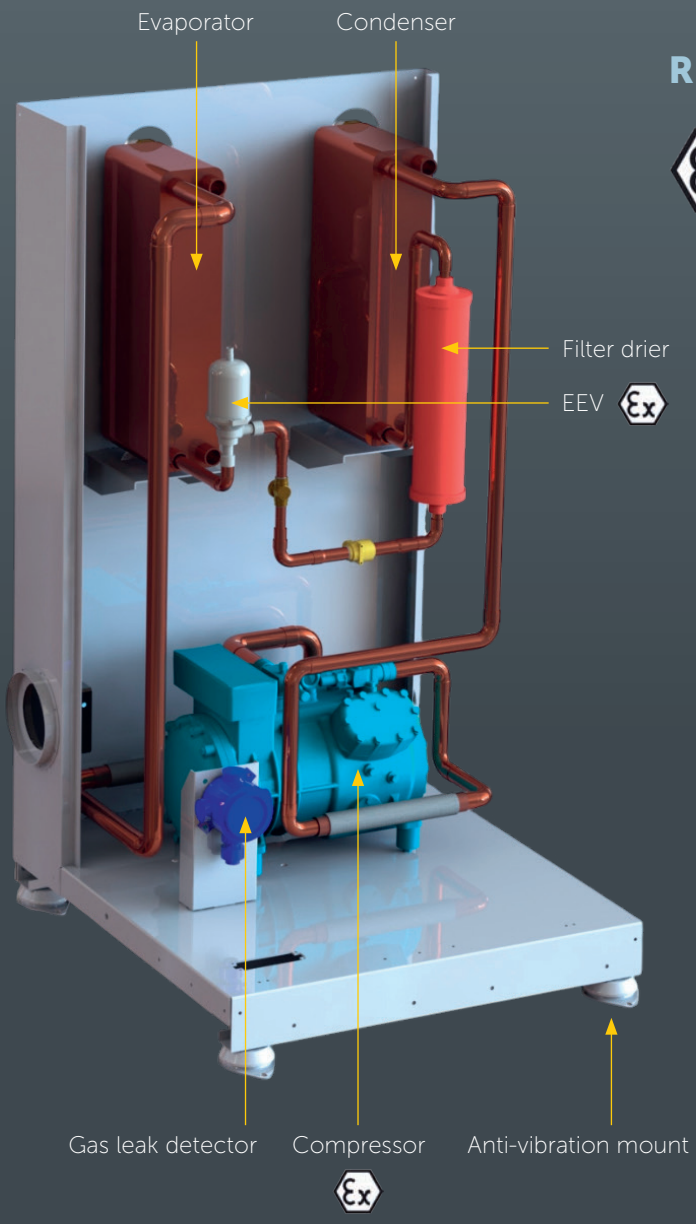
NATURAL COOLING & HEATING

R290

NANOWONE

WATER-COOLED CHILLER / HEAT PUMP

NANOWONE units are exceptionally compact, high-efficiency water-cooled chillers and/or heat pumps designed for indoor installation. They are designed to meet the heating and cooling demands of smaller systems.



REFRIGERATION CIRCUIT

ATEX-Certified components:

- Semi-hermetic reciprocating compressor
- Pressure switch
- Electronic expansion valve (EEV)

- The evaporator and condenser (BPHE) are high-quality and high-performance heat exchangers that require less refrigerant charge
- Powder-coated galvanized steel housing, corrosion and weather resistant, standard color RAL 7035

FRIGOPLUS
NATURAL COOLING & HEATING

R290

EN 378 compliant:

✓ Enclosed housing - All refrigerant circuit components installed inside the housing

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

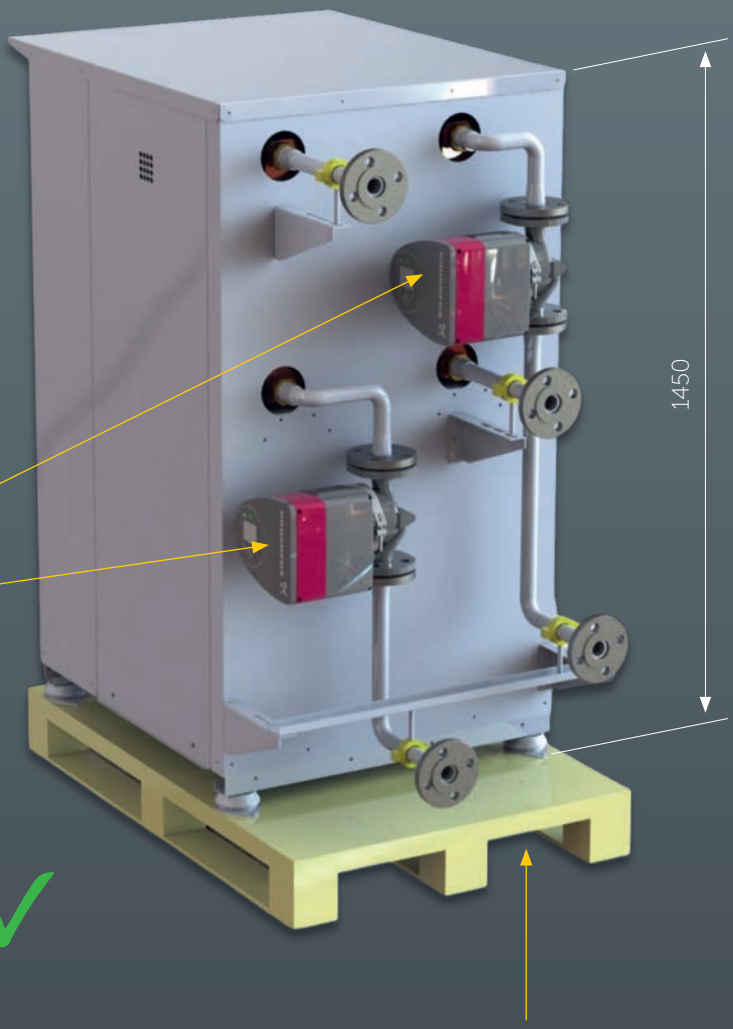
✓ Refrigerant charge below 4,9 kg

HYDRONIC CIRCUIT

Standard equipment:

- Stainless steel piping with thermal insulation
- Flow switches
- Air vent valves
- Drain valves
- EC pumps





FLOW UNDER CONTROL ✓

Factory-installed **Grundfos MAGNA3** EC pumps provide benefits:

- ✓ Stable evaporator flow under all operating conditions
- ✓ Lower pumping energy consumption
- ✓ Faster commissioning
- ✓ Simplified installation

EURO-PALLET FOOTPRINT

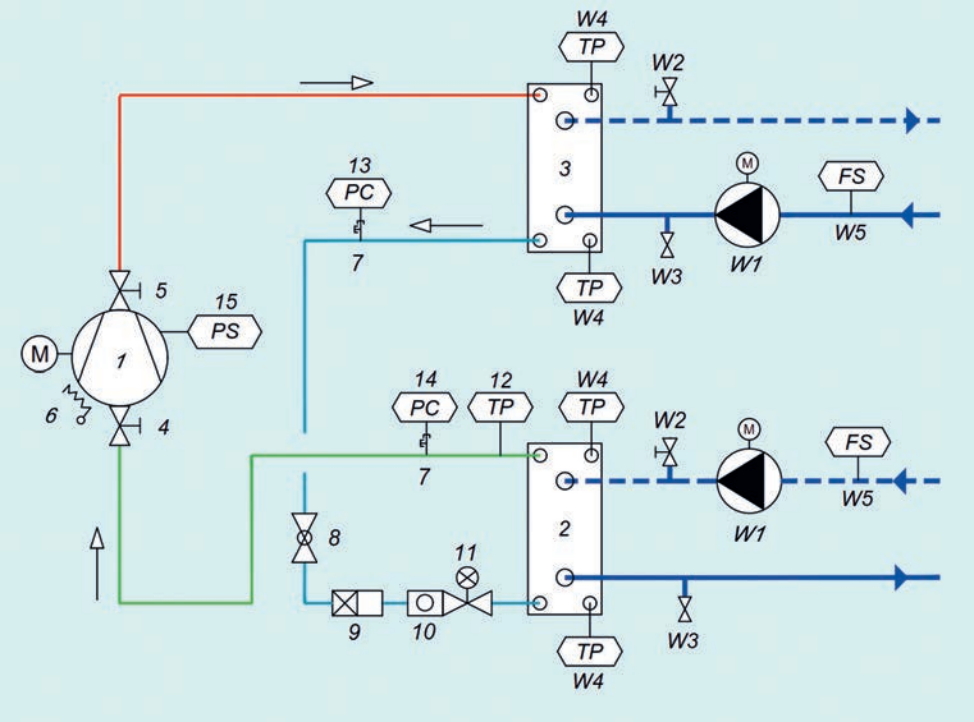
Unit fits within the footprint of a standard 1200×800 mm Euro pallet, enabling easy transport, handling and installation

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 external heat source control
  - Regulation of a 3-way valve via dry contacts for DHW

FRIGOPLUS
NATURAL COOLING & HEATING

SIMPLIFIED P&ID



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

ECOLOGY

Natural refrigerant: propane - R290

It belongs to the group of hydrocarbons with GWP < 0,02 which completely exempts it 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, NANOWONE units have high energy efficiency and meet the requirements of ECODESIGN REGULATIONS.

SAFETY & QUALITY

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

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

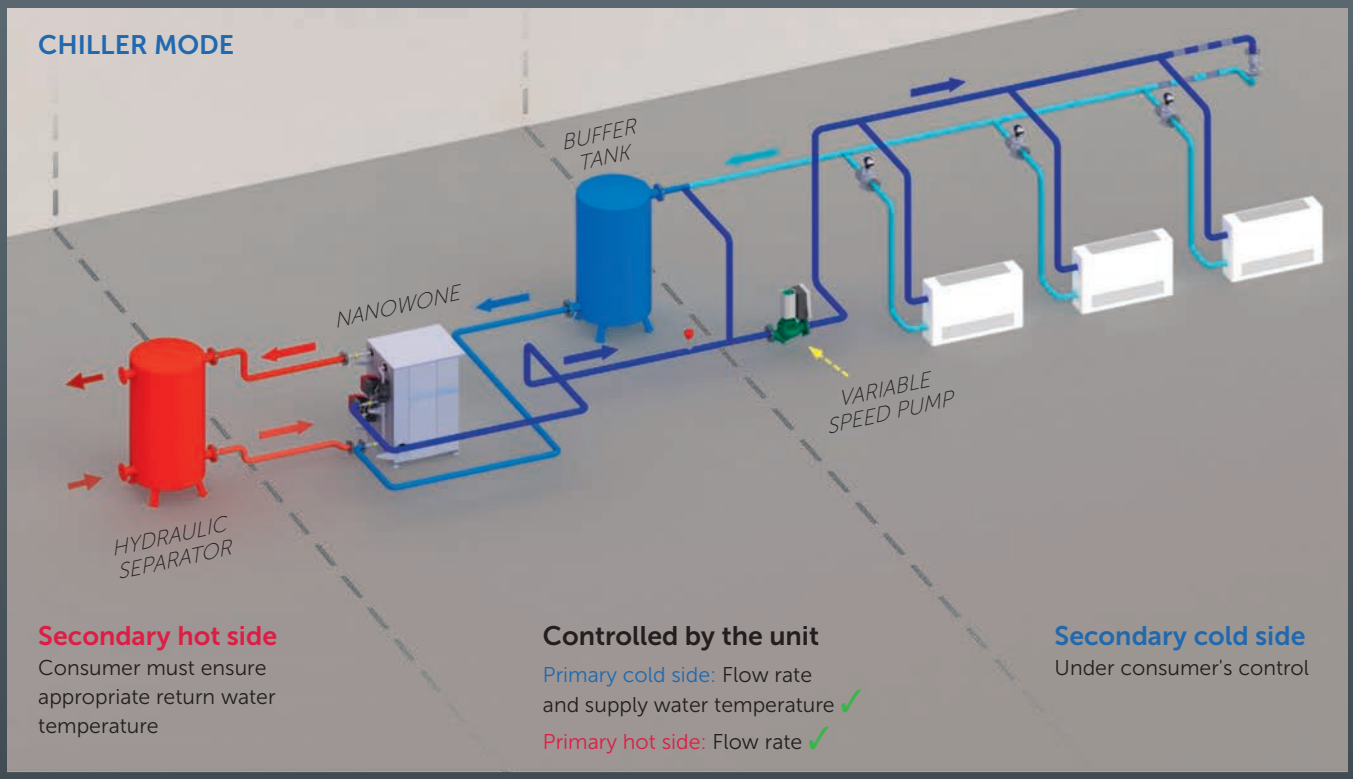
FRIGOPLUS

NATURAL COOLING & HEATING

INTEGRATION INTO HYDRONIC SYSTEMS

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

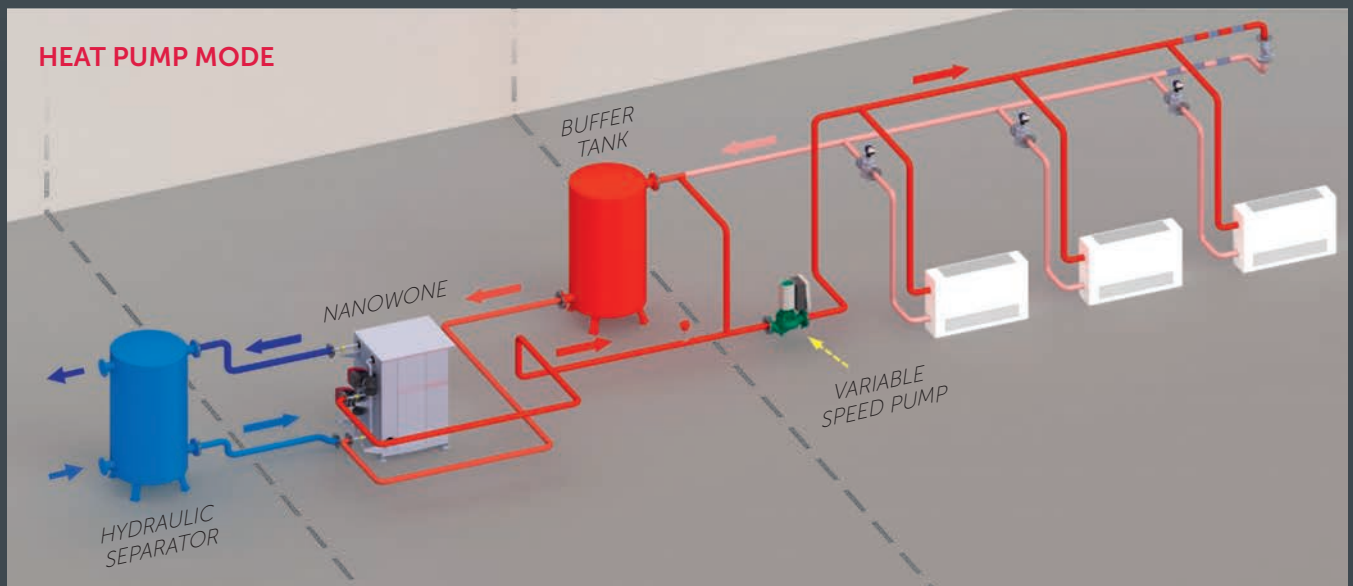


Secondary hot side
Consumer must ensure appropriate return water temperature

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

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:

Remote monitoring from a web interface:

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

FRIGOPLUS
NATURAL COOLING & HEATING

		NW11	NW15	NW21	NW25	NW33
Cooling capacity (1)	kW	10	16	21	26	32
EER (1)	-	4,54	3,94	4,28	4,07	3,60
Heating capacity (2)	kW	12	20	26	32	41
COP (2)	-	5,54	4,94	5,28	5,07	4,60
Compressor	Semi-hermetic reciprocating					
Compressors / circuits	n°	1/1	1/1	1/1	1/1	1/1
Evaporator (cooling side)	Brazed plate heat exchanger					
Water flow rate	m^3/h	1,8	2,8	3,7	4,5	5,6
Head loss	kPa	up to 50 kPa				
Type of connection	Flange	DN 32	DN 32	DN 32	DN 32	DN 32
Condenser (heating side)	Brazed plate heat exchanger					
Water flow rate	m^3/h	2,1	3,5	4,6	5,6	7,2
Head loss	kPa	up to 50 kPa				
Type of connection	Flange	DN 32	DN 32	DN 32	DN 32	DN 32
Noise levels (3)						
Sound power lev.	dB(A)	63,0	64,0	66,0	68,0	70,0
Sound pressure lev. @10m in open space	dB(A)	31,5	32,5	34,5	36,5	38,5
Dimensions						
Length (+connections)	mm	950 (+350)				
Width	mm	800				
Height	mm	1450				
Operating weight (est.)	kg	360	380	410	410	420
Electrical characteristics						
Power supply	-	TN-S (400/3/50 + PE + N)				
Maximum current	A	7	9	11	15	21
Recommended dim. of power supply cable	mm^2	5x2,5	5x2,5	5x2,5	5x2,5	5x4
Capacity						
Heating capacity, B0/W45	kW	11	17	22	25	33
Heating capacity, B0/W55	kW	9	16	19	22	29

(1) - Evaporator inlet/outlet water temperature 15/10°C. Values in accordance with EN 14511.

(2) - Condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) - Sound data is based on 7/40 °C operation and compressor frequency of 50 Hz.

FRIGOPLUS

NATURAL COOLING & HEATING

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

Frigo Plus d.o.o.

Address:

Prepuštovečka ulica 19, Soblinec

HR-10 360 Sesvete, Croatia

Tel.: +385 1 202 00 10

Fax: +385 1 200 38 01

www.frigo-plus.hr