Outdoor packaged unit with R290

PLN 50 - 150 kW

Scroll compressor | R-290 Refrigerant | A3 gas leak detection | 3-way external valve management | Cooling only | Heating/ Cooling

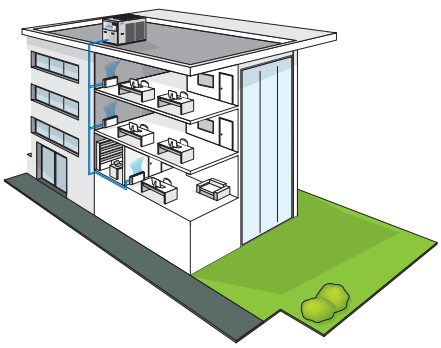
Air-water units with R290 refrigerant and multi-scroll compressors

The reduction of polluting emissions, whether directly related to the use of greenhouse gases or more indirectly related to emissions from the production of electricity used during the lifetime of a heat pump, is the first and most important pillar on which Galletti has based its Advanced Design solutions.
This journey has led to the creation of PLN, a new range of air-water units with natural refrigerant and multi-scroll solutions. Their extremely wide operating range and high performance under all operating conditions make them the perfect answer to the need to gradually phase out the use of energy from fossil sources for heating and cooling buildings.
Thanks to the high temperature of the water produced (up to 75°C), we can replace a fossil fuel generator while maintaining the full performance of the existing emissions system.
By leveraging multi-scroll configurations (with up to 4 compressors), we produce exactly what is needed at any given moment to ensure people's comfort no more, no less while working to maximize the overall system efficiency.
We look to the future of our environment as well as the needs of the people who use our products.
We work every day to make indoor comfort more sustainable.

PLUS

- R290 refrigerant (GWP=3)
- Multi-scroll solutions
- Low refrigerant charge (<10 kg for circuit)
- Production of hot water up to 75°C
- Full load operation down to -20°C air (45°C water)
- Very high seasonal efficiency values
- Power output and COP monitoring (option)
- Availability of silenced setups

PLN heat pumps and water chillers are designed for heating or cooling the water to be used in air-conditioning systems for residential, commercial or industrial use.
The use of the natural refrigerant R290 (propane) ensures compliance with the more stringent limits imposed by the F-GAS regulation regarding gases with a potential contribution to global warming (greenhouse gases).



Natural refrigerant (R290)

R290 (propane) is a natural refrigerant with a GWP (Global Warming Potential) of only 3. This makes it a strong contender to be one of the leading refrigerants for air conditioning solutions. It has a much lower contribution to the greenhouse effect than synthetic refrigerants and physical properties that make it ideal for the design requirements associated with the ever-increasing use of heat pumps.

Scroll compressor

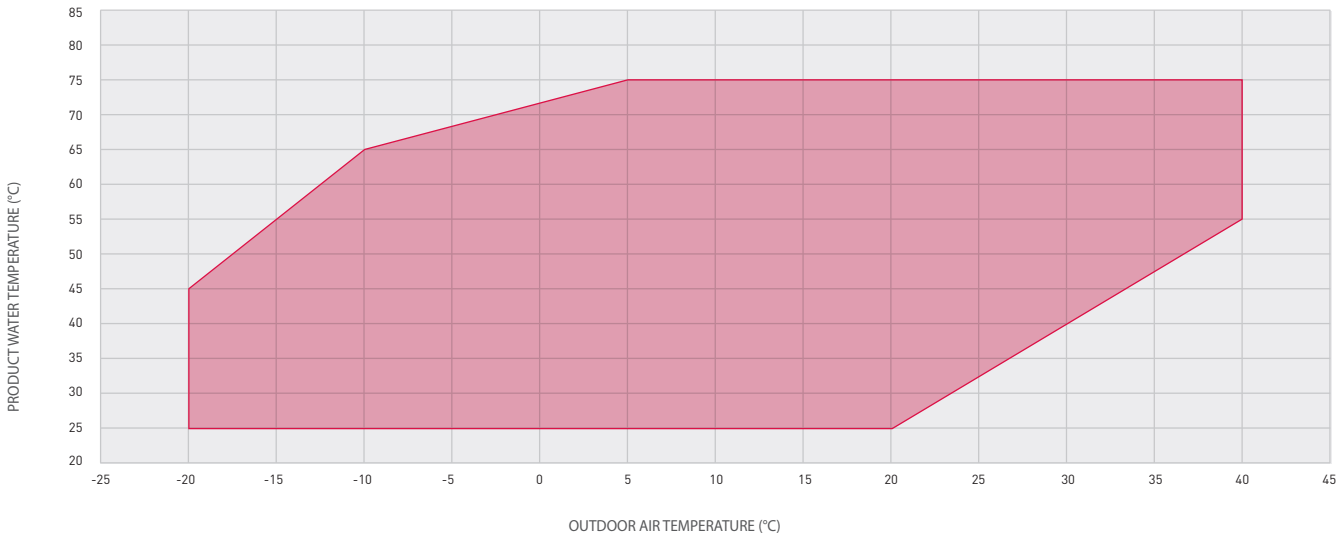
The new scroll compressor for R290 is designed for both single and parallel configurations, offering higher efficiency and extended durability. Featuring innovative elements such as intermediate discharge valves (IDV) for superior seasonal efficiency, lead-free polymer bearings for improved performance under low-lubrication conditions, and a patented motor for optimal cooling, this series sets a new benchmark in compressor technology. In addition, the internal non-return valve (INRV) minimizes the risk of leakage, while the brazed oil tube connection ensures leak-free operation.

EXTENDED OPERATING RANGE FOR EACH APPLICATION

Extremely extended operating limits

It is now clear that heat pumps will play a fundamental role in achieving the objectives of the European Green Deal, foremost among them the phase-out of fossil fuels. One of the key requirements for a heat pump to be considered a valid alternative to boilers, even in the harshest climates, is undoubtedly the extension of the operating limits that have characterized traditional heat pumps used up to now.
Thanks to the use of next-generation scroll compressor technology, combined with the use of propane as a refrigerant and the innovative solutions developed by the Advanced Design Unit of Galletti during the design and prototyping phase, PLN ensures the ability to produce hot water at very high temperatures (up to 75°C) and to operate at full load even with extremely low outdoor temperatures (down to -20°C).
In this way (given the level of temperatures achievable, which would be unthinkable with a traditional heat pump), it is possible to envision replacing a combustion generator with an R290 heat pump, even if building insulation measures are postponed. This allows for a significant increase in the share of renewable energy used for heating, without compromising indoor comfort.

Advanced Design solutions look to the future of the environment and the needs of the people who use our products



CONFIGURATOR

The models are completely configurable by selecting the version and the options. To the right is shown an example of configuration.

Version	Field	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PLN072HS2A		A	1	S	0	E	E	0	0	0	I	G	0	1	2	0

To verify the compatibility of the options, use the online selection software or the price list.

AVAILABLE VERSIONS

Cooling only versions

PLN..CS2A	400V-3N-50Hz power supply + circuit breakers
PLN..CS5A	400V-3-50Hz power supply + circuit breakers

Versioni pompa di calore reversibile

PLN..HS2A	400V-3N-50Hz power supply + circuit breakers
PLN..HS5A	400V-3-50Hz power supply + circuit breakers

CONFIGURATION OPTIONS

1 Expansion valve
- A Electronic valve

2 Water pump and accessories
- 0 Absent
- 1 Single standard pump
- 2 Double std pump - OR
- 3 Single HP pump
- 4 HP double pump - OR
- A Single inverter standard pump
- B Standard dual inverter OR pump
- C Inverter Single HP pump
- D Dual inverter HP OR pump

3 Water buffer tank
- 0 Absent
- S Selected

4 De-superheater
- 0 Absent
- D Included with pump free contact

5 Condensation/Evaporation Control
- A With EC Fans high pressure head
- C Phase cutting (not available up to size 114)
- E with EC Fans (supplied up to size 114)

6 Antifreezing kit
- E Only cooling versions and plate exchanger (supplied)
- P Plate exchanger + pump
- S Plate exchanger + pump + tank
- T For plate exchanger and tank

7 Acoustic insulation and attenuation
- 0 Absent
- 3 Compressor compartment acoustic insulation and sound blanket
- 6 Compressor compartment acoustic insulation and sound blanket + Low-noise fans

8 Water low temperature production
- 0 Up to 5°C
- 1 Up to 0°C
- 2 Up to -5°C (only if the option 5 = E or A)

9 Remote control
- 0 Absent
- 2 RS485 Board (Modbus protocol or Carel)
- B BACNET IP/PCOWEB serial board
- G BACNET IP / PCOWEB serial board + supervision software
- S Simplified additional remote control panel
- T Touch screen control (up to 50m)
- X Additional remote control for advanced control (up to 50m)

10 Special coils / Protective treatments
- 0 Copper / aluminium (standard for H version)
- C Cataphoresis (only for H versions)
- E Microchannel in Long Life Alloy (standard for C version)
- I Hydrophilic (only H version)
- M Microchannel with E-coating (only for C version)
- P Pre-painted fins with epoxy painting (only H version)
- R Copper-copper (heat pump only)

11 Base vibration dampers
- 0 Absent
- G Made of rubber
- M With spring

12 Outdoor coil trace heater
- 0 Absent
- 1 Present (only H version)

13 Control panel
- 1 Advanced
- 2 Advanced with touch screen display

14 Water flow control
- 2 Vane-type flow switch
- 3 Hot-wire electronic flow switch

15 DHW accessory only (if option 3 = 0)
- 0 Absent
- 1 DHW 3-way valve + tank probe
- 2 DHW mode enabling with dry contact
- 3 DHW 3-way valve (supplied) + ACS from ID contact

ACCESSORIES

B	Outdoor finned coil heat exchanger protection grille
D	ON/OFF status of the compressors (mandatory only if opt.4 = D)
E	Remote control for power step limits (accessory 2 excluded)
F	Configurable digital alarm board
G	Soft starter
H	Power factor capacitors
I	Refrigerant sensors (standard)
L	Double insulation water side (as standard for tank)
M	0-10V signal for external user pump control (only if opt 4 =0)
N	Integration system enabling contact (boiler / electric heater) plant
O	Night-time low-noise (only if opt 7 different from 6)
Q	Temperature probe for pump shutdown on the primary circuit
R	Enabling 2nd set-point
T	Mains power analyzer for monitoring of power consumption
V	Set-point modification with 4-20mA signal
Z	Flow meter for calculating power output
1	Integration system enabling contact (electric heater) DHW (only if opt 15 different from 0)
2	Smart Grid Certification (option E excluded)
3	Deaerator for hydraulic circuit (supplied as an accessory)
4	Dirt separator (supplied as an accessory)

RATED TECHNICAL DATA OF PLN C WATER CHILLERS

PLN C			052	072	082	104	114	134	154
Power supply		V-ph-Hz	400-3N-50						
Cooling capacity	(1)(E)	kW	50,8	65,5	77,4	106	118	138	160
Total power input	(1)(E)	kW	16,5	20,1	24,3	35,6	40,6	43,3	51,7
EER	(1)(E)		3,08	3,25	3,19	2,99	2,90	3,18	3,09
SEER	(2)(E)		4,12	4,61	4,40	4,45	4,65	5,00	4,62
Water flow	(1)	l/h	8743	11262	13322	18341	20289	23702	27456
Water pressure drop	(1)(E)	kPa	25	27	35	55	65	35	44
Available pressure head - LP pumps	(1)	kPa	158	145	129	113	102	198	178
Available pressure head - HP pumps	(1)	kPa	192	180	165	172	160	322	301
Compressors / circuits			2/1	2/1	2/1	4/2	4/2	4/2	4/2
Maximum current absorption		A	67,0	77,0	84,0	129	137	152	157
Start up current		A	187	240	247	249	264	315	320
Startup current with soft starter		A	143	181	188	205	217	256	261
Buffer tank volume		dm^3	125	200	200	200	200	600	600
Sound power level	(3)(E)	dB(A)	84	85	85	85	86	87	87
Sound power level, low-noise version	(3)	dB(A)	81	82	82	82	83	84	84
Maximum transport weight		kg	1042	1270	1270	1805	1805	2587	2589

(1) Outdoor air temperature 35°C, water temperature 12°C / 7°C (EN14511:2022)
(2) η efficiency values for heating and cooling are respectively calculated by the following formulas: [η = SCOP / 2,5 - F(1) - F(2)] e [η = SEER / 2,5 - F(1) - F(2)]. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.
(3) Sound power level measured according to ISO 9614
(E) EUROVENT certified data

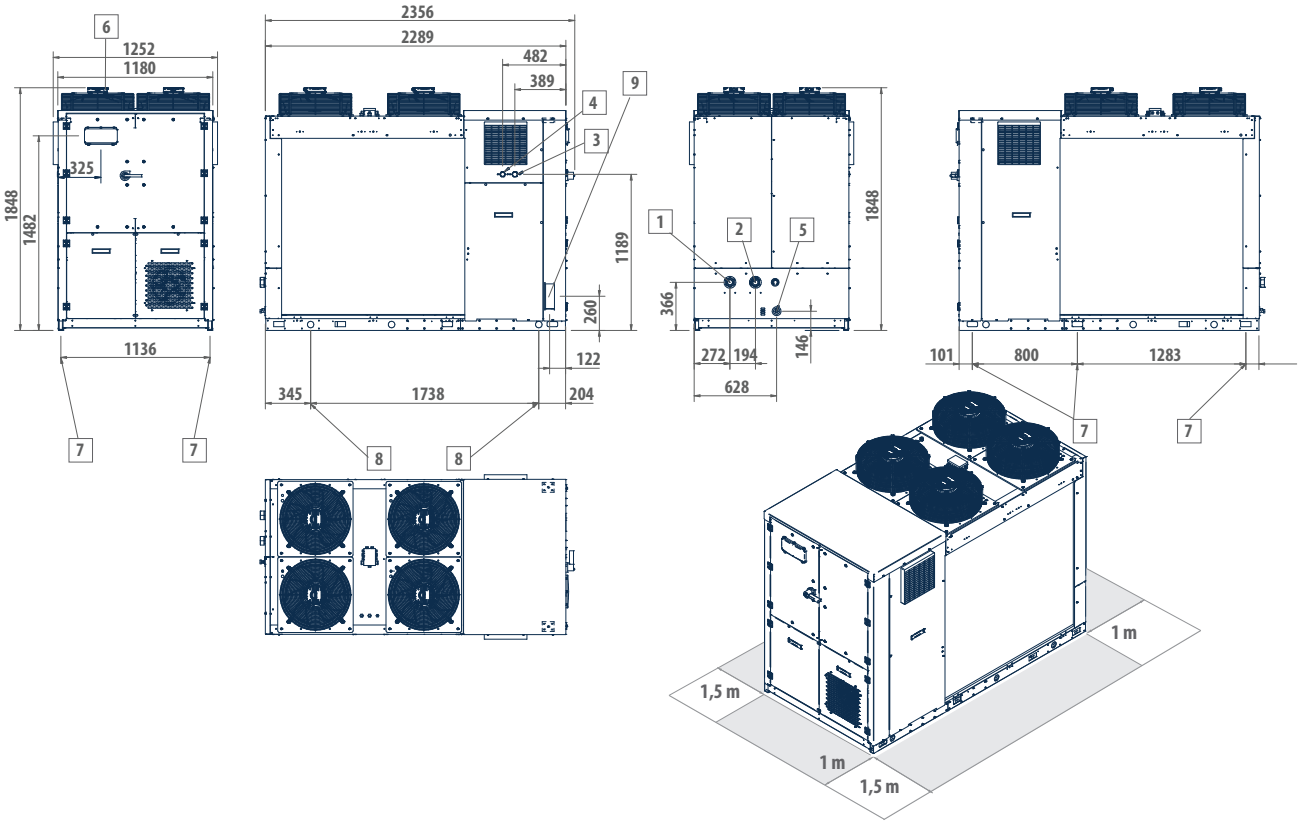
RATED TECHNICAL DATA PLN H HEAT PUMPS

PLN H			052	072	082	104	114	134	154
Power supply		V-ph-Hz	400 / 3+N / 50						
Cooling capacity	(1)(E)	kW	48,6	63,4	72,0	101	111	130	148
Total power input	(1)(E)	kW	16,9	21,2	25,2	35,3	39,2	41,6	49,9
EER	(1)(E)		2,88	2,99	2,86	2,86	2,83	3,12	2,97
SEER	(2)(E)		4,02	4,32	4,11	4,28	4,50	4,90	4,55
Water flow	(1)	l/h	8355	10912	12397	17374	19097	22336	25465
Water pressure drop	(1)(E)	kPa	25	30	37	49	57	32	38
Available pressure head - LP pumps	(1)	kPa	158	144	128	116	104	199	180
Available pressure head - HP pumps	(1)	kPa	192	179	163	175	162	322	303
Heating capacity	(3)(E)	kW	54,6	68,6	79,5	106	120	132	154
Total power input	(3)(E)	kW	16,7	20,7	23,9	32,8	36,6	40,0	47,7
COP	(3)(E)		3,28	3,32	3,32	3,24	3,29	3,30	3,22
SCOP	(4)(E)		3,80	3,70	3,82	3,90	4,00	3,80	3,95
SCOP	(5)(E)		3,05	3,03	3,12	3,30	3,34	3,14	3,25
Heating energy efficiency class	(6)(E)		A+	A+	A+	A++	A++	A+	A++
Heating energy efficiency class	(7)(E)		A+	A+	A+	A++	A++	A+	A++
Water flow	(3)	l/h	9464	11898	13782	18364	20827	22910	26629
Water pressure drop	(3)(E)	kPa	29	33	42	49	59	32	40
Available pressure head - LP pumps	(3)	kPa	149	136	114	101	86	179	151
Available pressure head - HP pumps	(3)	kPa	183	171	149	159	144	301	272
Maximum current absorption		A	67,0	77,0	84,0	129	137	152	157
Startup current		A	187	240	247	249	264	315	320
Startup current with soft starter		A	143	181	188	205	217	256	261
Compressors / circuits			2/1	2/1	2/1	4/2	4/2	4/2	4/2
Buffer tank volume		dm^3	125	200	200	200	200	600	600
Sound power level	(8)(E)	dB(A)	84	85	85	85	86	87	87
Sound power level, low-noise version	(8)	dB(A)	81	82	82	82	83	84	84
Maximum transport weight		kg	960	1196	1206	1698	1771	2534	2624

(1) Outdoor air temperature 35°C, water temperature 12°C / 7°C (EN14511:2022)
(2) η efficiency values for heating and cooling are respectively calculated by the following formulas: [η = SCOP / 2,5 - F(1) - F(2)] e [η = SEER / 2,5 - F(1) - F(2)]. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.
(3) Outdoor air temperature dry bulb 7°C / wet bulb 6°C, water temperature 40°C / 45°C (EN14511:2022)
(4) η efficiency values for heating and cooling are respectively calculated by the following formulas: [η = SCOP / 2,5 - F(1) - F(2)] e [η = SEER / 2,5 - F(1) - F(2)]. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation. Low temperature conditions.
(5) η efficiency values for heating and cooling are respectively calculated by the following formulas: [η = SCOP / 2,5 - F(1) - F(2)] e [η = SEER / 2,5 - F(1) - F(2)]. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation. Medium temperature conditions.
(6) Seasonal energy efficiency class for LOW TEMPERATURE room heating under AVERAGE climatic conditions [EUROPEAN REGULATION No 811/2013]
(7) Seasonal energy efficiency class for MEDIUM TEMPERATURE room heating under AVERAGE climatic conditions [EUROPEAN REGULATION No 811/2013]
(8) Sound power level measured according to ISO 9614
(E) EUROVENT certified data

DIMENSIONAL DRAWINGS

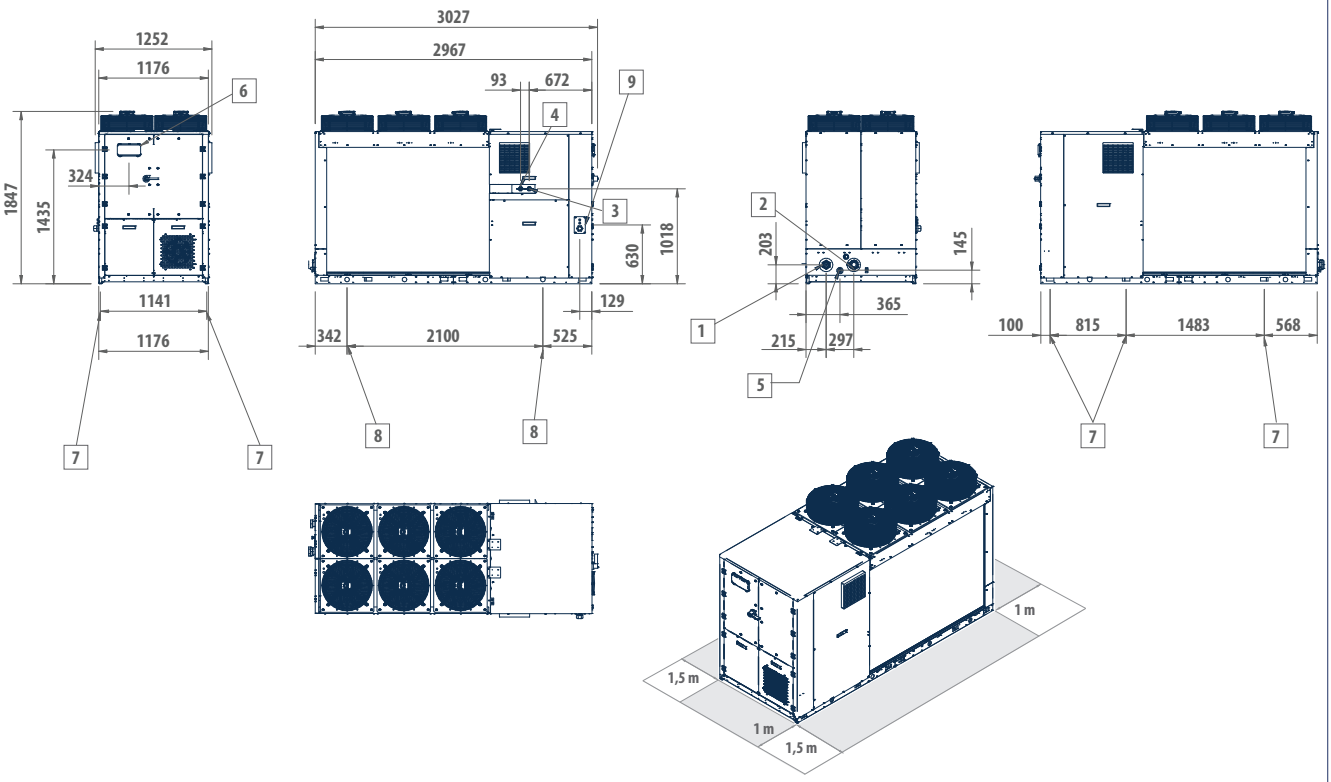
PLN 52



LEGEND	
1	Water inlet on user side 2" F
2	Water outlet user 2" F
3	Desuperheater water inlet 1" F
4	De-superheater water outlet 1" F
5	Water drainage 1/2" F
6	User interface
7	Vibration dampers
8	Lifting points
9	Power supply input

DIMENSIONAL DRAWINGS

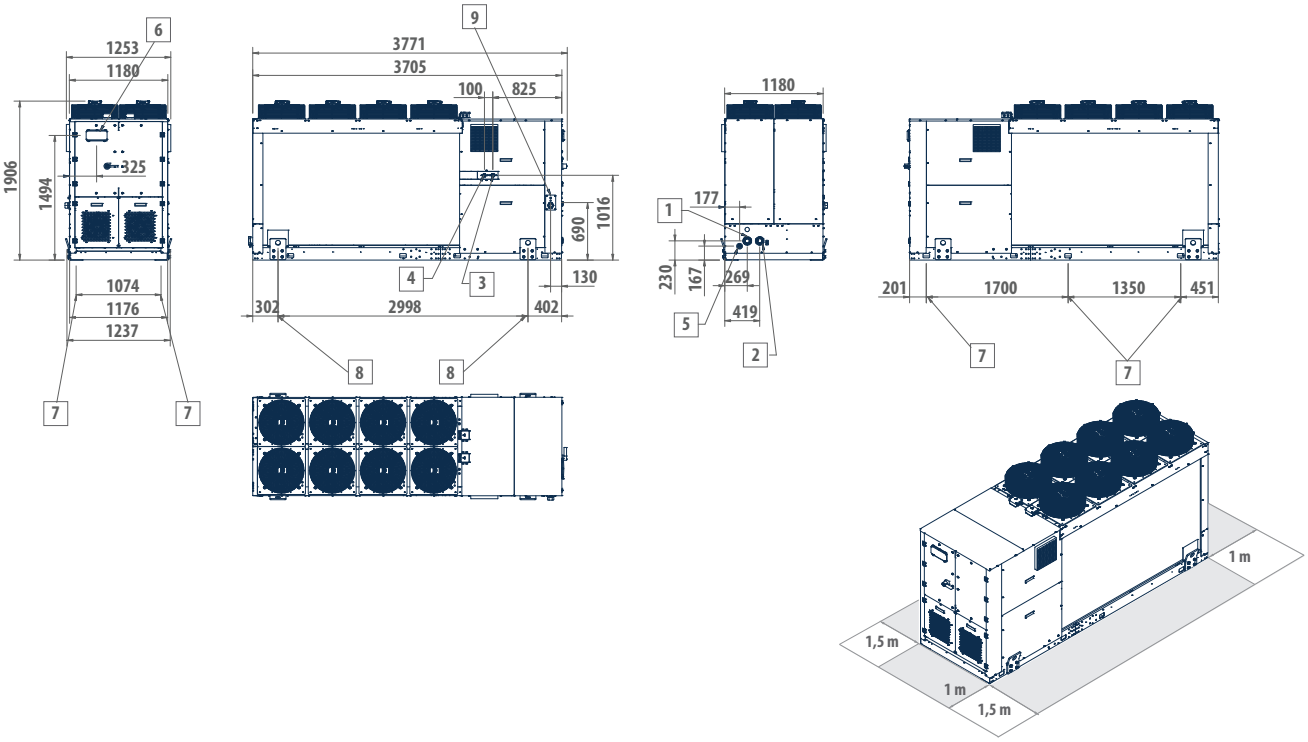
PLN 72 - 82



LEGEND	
1	Water inlet on user side 2'' 1/2 F
2	Water outlet user 2'' 1/2 F
3	Desuperheater water inlet 1" F
4	De-superheater water outlet 1" F
5	Water drainage 1/2" F
6	User interface
7	Vibration dampers
8	Lifting points
9	Power supply input

DIMENSIONAL DRAWINGS

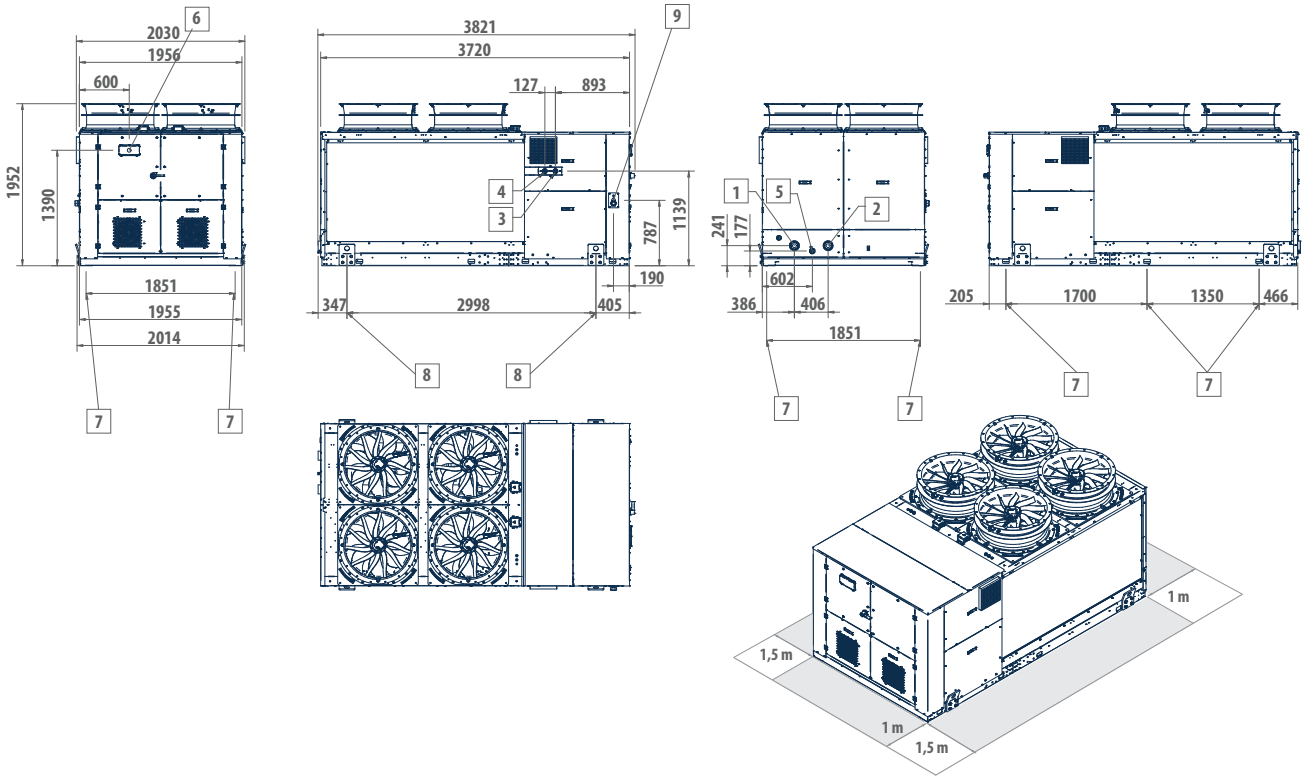
PLN 104 - 114



LEGEND	
1	Water inlet on user side 2" 1/2 F
2	Water outlet user 2" 1/2 F
3	Desuperheater water inlet 1" F
4	De-superheater water outlet 1" F
5	Water drainage 1/2" F
6	User interface
7	Vibration dampers
8	Lifting points
9	Power supply input

DIMENSIONAL DRAWINGS

PLN 134 - 154



LEGEND	
1	Water inlet on user side 3'' VIC
2	Water outlet user 3'' VIC
3	Desuperheater water inlet 1'' 1/2 F
4	De-superheater water outlet 1'' 1/2 F
5	Water drainage 1/2" F
6	User interface
7	Vibration dampers
8	Lifting points
9	Power supply input