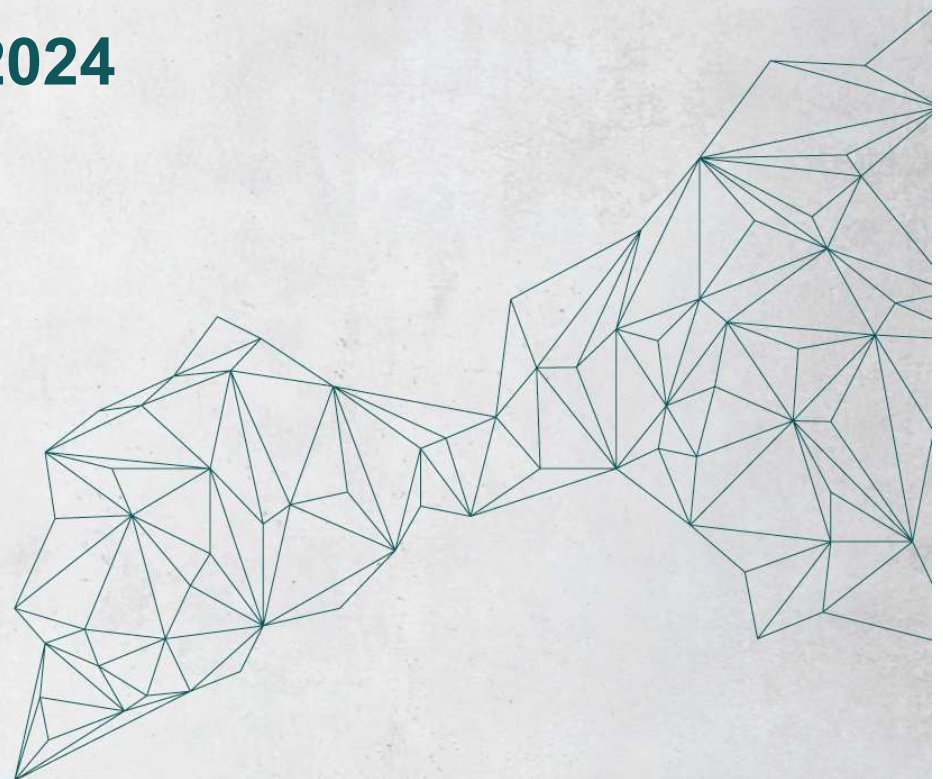


Hall 4A

CHILLVENTA

Chillventa Specialist Forums 2024
Chillventa Fachforen 2024

**CONNECTING
EXPERTS.**



SILVER

EXPERIENCE THE COOLEST

The air-cooled R290 large capacity chillers range with inverter.



enerblue

INSPIRED BY NATURE



PRESENTATION SUMMARY

1.0 PRODUCT ID →

2.0 MAIN FEATURES & PRODUCT
STRENGTHS →

3.0 APPLICATIONS →

4.0 RANGE →

5.0 TYPICAL INSTALLATION →

6.0 CONNECTIVITY →

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8.0 QUALITY →



1.0.0 PRODUCT ID

SILVER

Experience The
Coolest

The air-cooled R290 large capacity chillers range with inverter.



 **R290**



Sizes: 11

Versions: 2 - Inverter / Full Inverter

CH capacity: 308/768 kW
(A35/W7 EN14511)

Ecodesign: SEER and SEPR HT Compliance

Refrigerant: R290 (natural gas)

Applications: Air conditioning and process cooling

Main features



COOLING ONLY



LOW NOISE



HEAT RECOVERY
OPTION



SCREW
COMPRESSORS



MICROCHANNEL AL
COILS



INVERTER/FULL INVERTER
OPTION



AXIAL FANS



DESUPERHEATER
OPTION

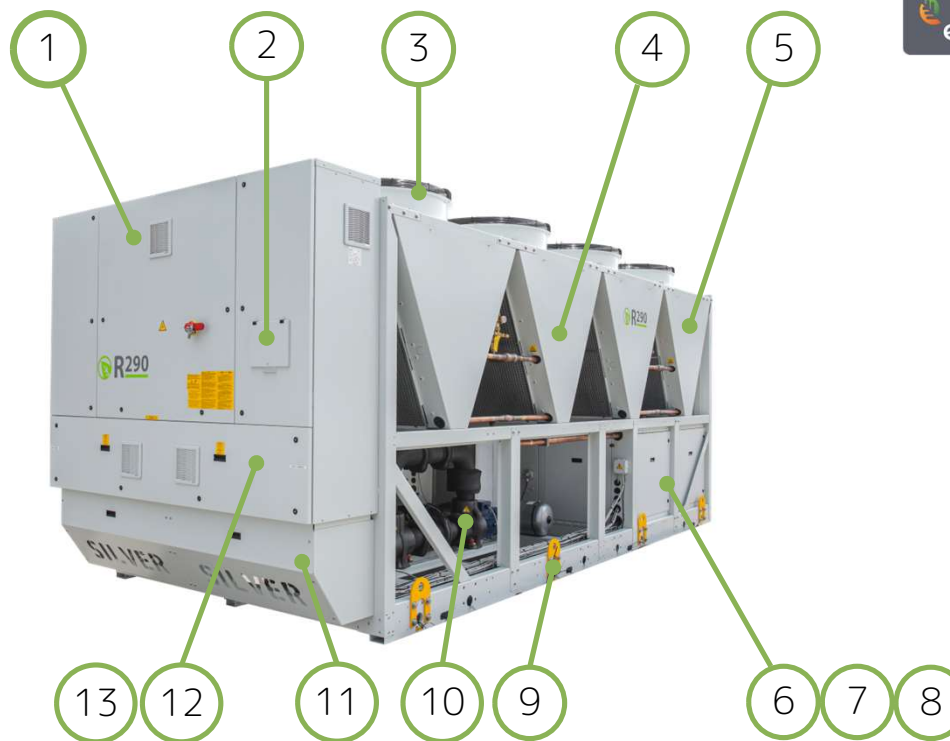


2.0.0 MAIN FEATURES

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The air-cooled R290 large capacity
chillers range with inverter.



1 IP54 ELECTRICAL CABINET

2 PROGRAMMABLE MICROPROCESSOR CONTROL

3 EC AXIAL D.910 FANS

4 MICROCHANNELS AL COILS

5 V-SHAPE MODULAR DESIGN

6 LOW NOISE COMPRESSOR BOX

7 VENTILATED COMPRESSOR BOX

8 LEAKAGE SENSOR INCLUDED

9 LIFTING BRACKETS

10 CUSTOMIZABLE HYDRONIC KIT

11 PROTECTION CARTER FOR CABLES

12 INVERTER ON ONE OR TWO COMPRESSOR/

13 FULL SAFETY SET-UP INCLUDED



2.0.1 STRENGTHS

SILVER

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The air-cooled R290 large capacity chillers range with inverter.



R290 refrigerant, a LONG-TERM solution

High level Energy Efficiency with EC Fans and Inverter compressors

Low refrigerant charge thanks to microchannels coils and optimized BPHE

High safety level designed and tested by ENERBLUE according to the European regulations

Design driven by experience
10 YEARS FORWARD >>



2.0.2 MAIN FEATURES

SILVER

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The air-cooled R290 large capacity
chillers range with inverter.

COMPRESSOR REGULATION VERSIONS



SILVER 300.1–340.1:
One compressor always
with inverter
regulation.



SILVER 350.2 – 770.2:
One compressor with
inverter regulation and
one with on/off
regulation.



SILVER 350.2 – 770.2:
Two compressors with
inverter regulation.

The best fitting for any applications is always possible with SILVER.



2.0.2 MAIN FEATURES

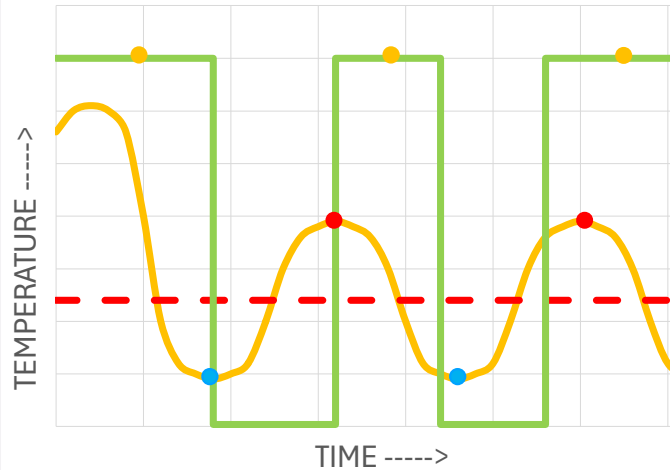
SILVER

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The air-cooled R290 large capacity
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COMPRESSOR REGULATION VERSIONS

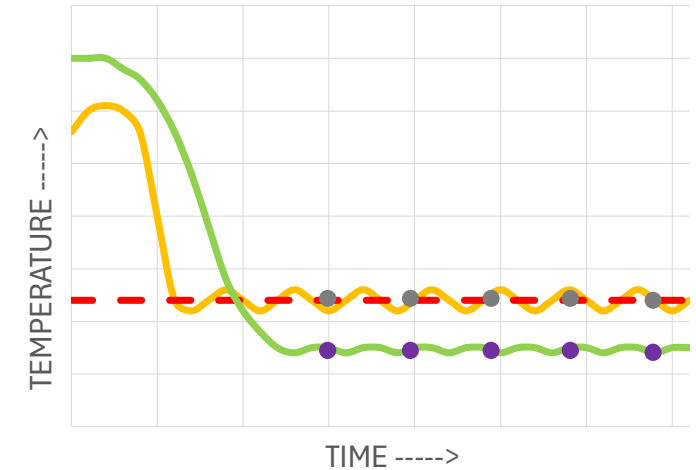
ON/OFF



— INDOOR TEMPERATURE — SETPOINT — COMPRESSOR STATUS

- TOO COLD POOR INDOOR COMFORT
- TOO HOT POOR INDOOR COMFORT
- MAX CONSUMPTION LOW EFFICIENCY

INVERTER



— INDOOR TEMPERATURE — SETPOINT — COMPRESSOR STATUS

- OPTIMIZED INDOOR COMFORT
- LOW-CAPACITY HIGH EFFICIENCY

SILVER RANGE IS ALWAYS COMPLETE WITH INVERTER REGULATION ON ONE OR TWO COMPRESSORS.

The regulation is perfectly suitable to serve air conditioning loads but also more constant applications like process cooling, with always the best possible efficiency.



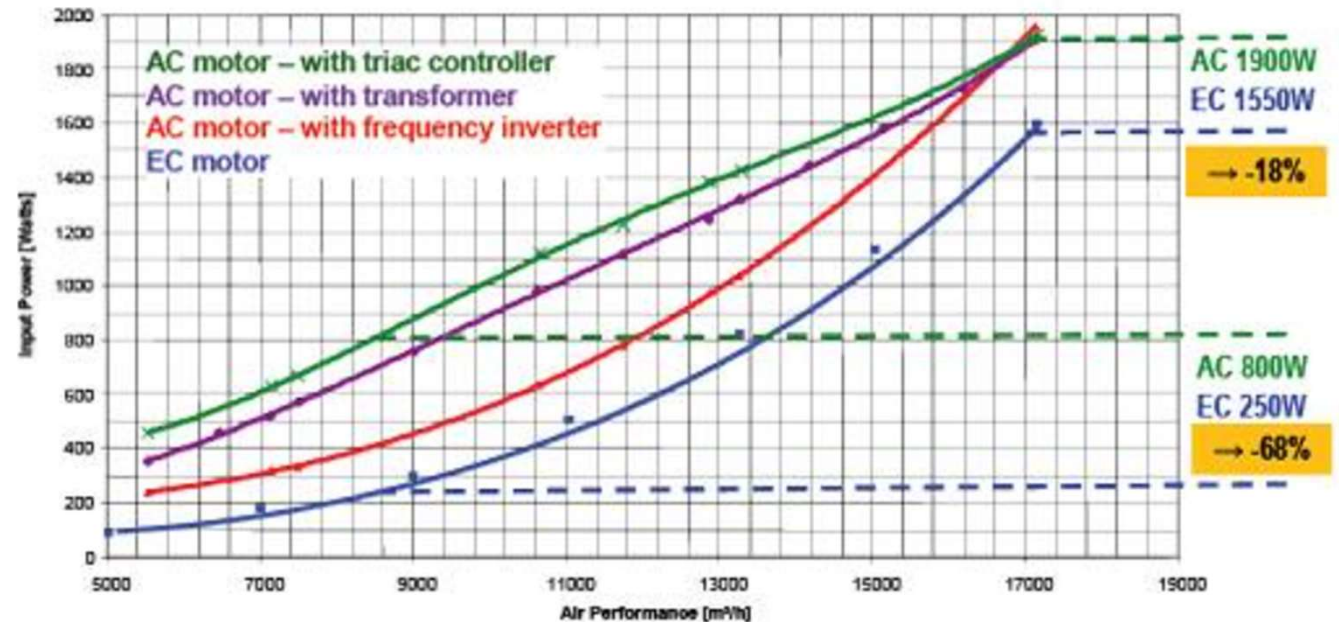
2.0.3 MAIN FEATURES

SILVER

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The air-cooled R290 large capacity
chillers range with inverter.

EC FANS TECHNOLOGY



As shown in the chart, at half of the maximum airflow (low fan speed), the energy savings can reach up to 68% compared to an AC Fan. At maximum airflow (high fan speed), the energy savings remain an impressive 18% compared to an AC Fan. Fans are rarely used at maximum speed, so the energy savings allow you to recoup the cost difference of EC Fans within a few months. On average, fans operate at half of the maximum airflow, resulting in energy consumption reductions of 43% to 50%.



2.0.4 MAIN FEATURES

SILVER

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The air-cooled R290 large capacity
chillers range with inverter.

PROGRAMMABLE CONTROL



iPRO programmable controller is the standard for the SILVER range. The user's interface is an LCD display and as an option is possible to upgrade to a touch-screen interface. This programmable controller allows a better control for all the functions of the unit, including the logics and algorithms that Enerblue developed during the years. Improving the controller functions is a key topic to improve the working mode of the unit and to grant a longer working life for all the components.



3.0.0 APPLICATIONS

SILVER

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The air-cooled R290 large capacity chillers range with inverter.

SILVER range, thanks to the wide operating limits, the range extension and cascade application (optional with Manager Pro) is the right choice to satisfy several applications like:



- Multi Residential
- Hotels
- Hospital
- Green Buildings
- Shopping malls
- Sport Arenas
- Exhibition centres
- Industrial process
- Data Center

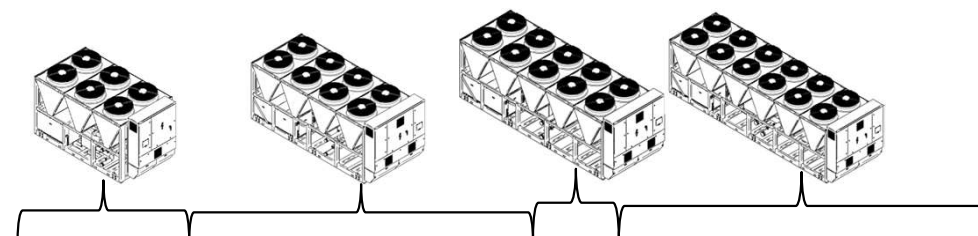


4.0.0 RANGE

SILVER

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The air-cooled R290 large capacity chillers range with inverter.



MODEL			300.1	340.1	350.2	370.2	410.2	460.2	540.2	600.2	650.2	710.2	770.2
COOLING (A35;W7)													
Cooling capacity	(1) (5)	kW	308	343	353	373	409	458	538	597	651	712,0	768
Total absorbed capacity	(1) (5)	kW	100	116	111	119	127	150	174	189	213	245	261
EER	(1) (5)		3,08	2,96	3,18	3,13	3,22	3,05	3,09	3,16	3,06	2,91	2,94
ENERGY SEASONAL INDEX 1 INVERTER VERSION													
SEER	(4)	-	-	4,16	4,26	4,65	4,61	4,90	4,78	4,73	4,82	4,84	
Seasonal energy efficiency η_{sc}	(4)	%	-	-	163,5	167,4	183,0	181,4	193,0	188,2	186,2	190,0	190,5
SEPR HT	(4)	-	-	5,40	5,27	5,67	5,52	5,53	5,59	5,55	5,50	5,52	
ENERGY SEASONAL INDEX FULL INVERTER VERSION													
SEER	(4)		4,41	4,22	4,35	4,44	4,70	4,70	4,95	4,97	4,90	4,95	4,90
Seasonal energy efficiency η_{sc}	(4)	%	173,3	165,8	171,0	174,6	185,0	185,0	195,0	195,8	193,0	195,0	193,0
SEPR HT	(4)		5,30	5,53	5,83	5,45	5,89	5,81	5,91	5,95	5,76	5,82	5,78



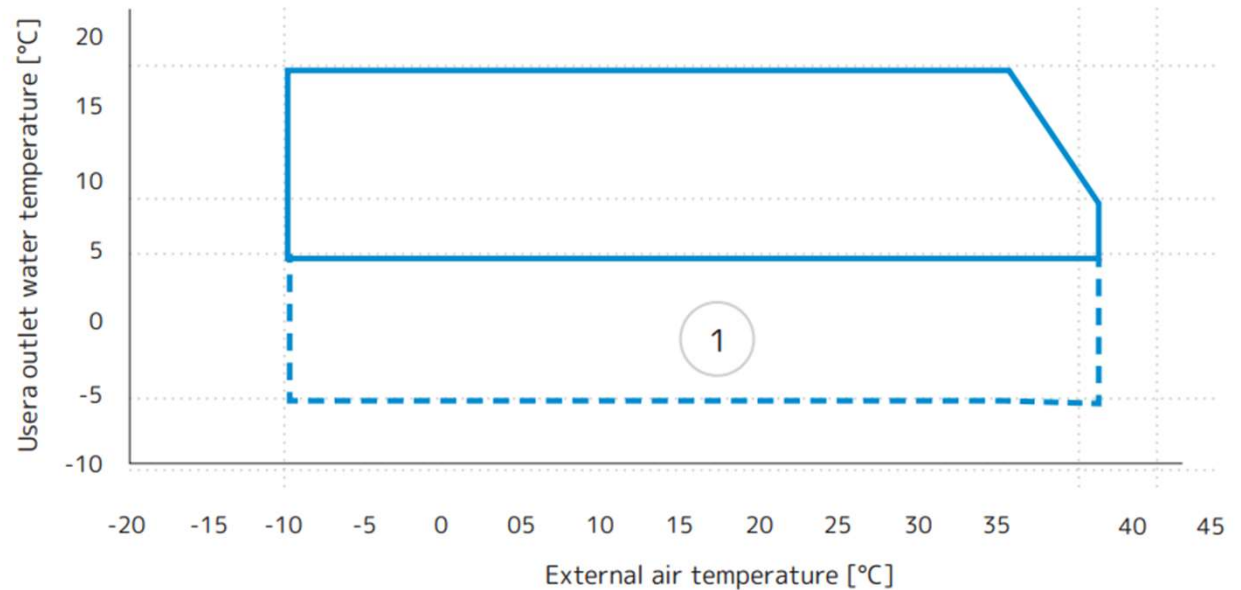
4.0.1 RANGE

SILVER

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The air-cooled R290 large capacity
chillers range with inverter.

WORKING LIMITS



Notes

- The delta T value between the evaporator inlet and outlet must be between 3°C and 5°C

① The unit can operate in this area of the envelope only after the addition to the hydraulic circuit of anti-freeze additives in suitable amounts.



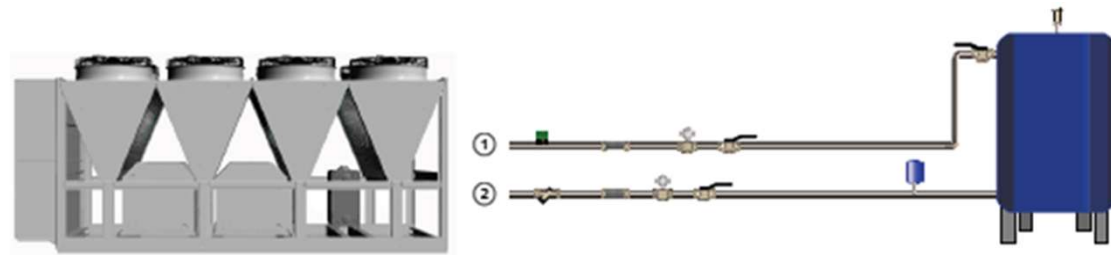
5.0.0 INSTALLATION

SILVER

Experience The
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The air-cooled R290 large capacity
chillers range with inverter.

COOLING ONLY



The SILVER range chillers basic installation includes an inertial water tank too. The SILVER works to keep the inertial tank at the needed temperature using the chiller inlet water temperature to regulate the cooling capacity.



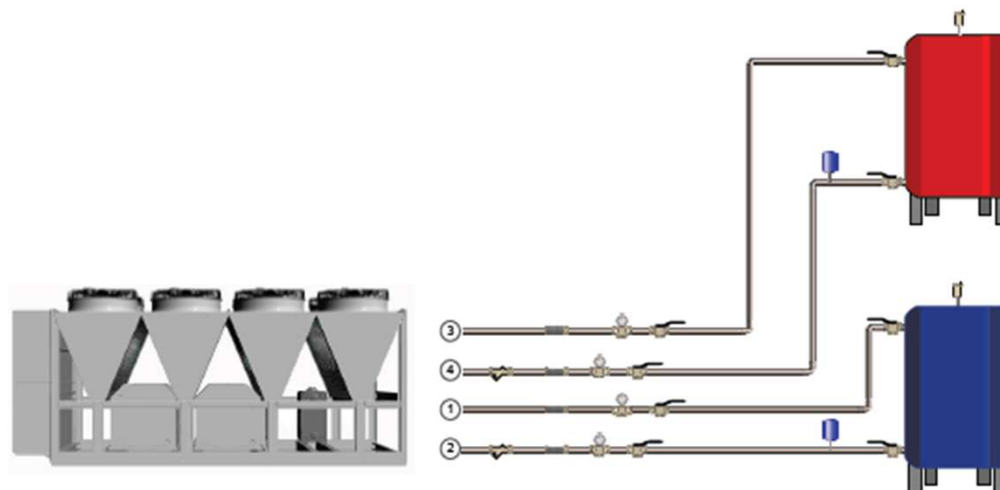
5.0.1 INSTALLATION

SILVER

Experience The
Coolest

The air-cooled R290 large capacity
chillers range with inverter.

COOLING + DESUPERHEATER



The SILVER range chillers installation, for the version with desuperheater option, includes two inertial water tanks too. The blue tank (cold) is dedicated to the main users circuit, the chiller works to keep the inertial tank at the needed temperature using the chiller inlet water temperature to regulate the cooling capacity.

While the chiller is producing cold water, part of the heating capacity can be recovered using the red tank (hot) inertial capacity. This circuit will store hot water for any different uses related to the installation.



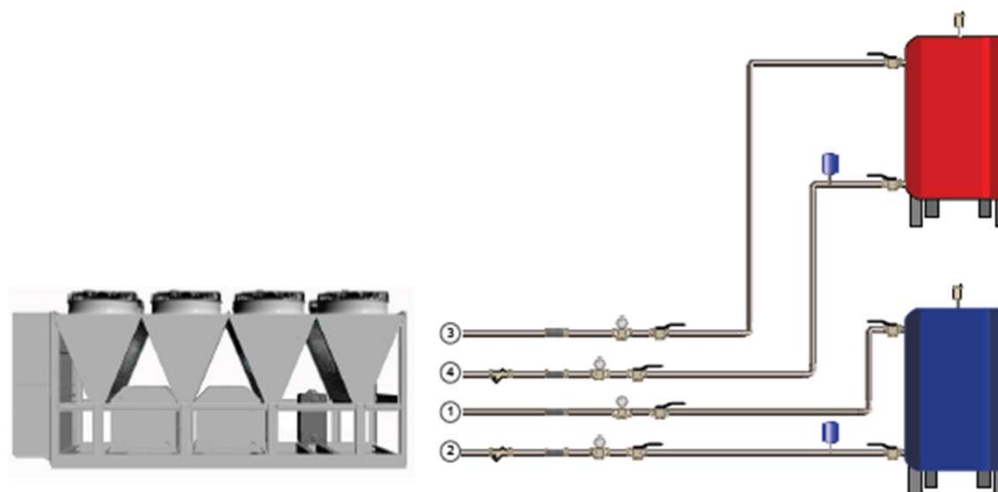
5.0.2 INSTALLATION

SILVER

Experience The
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The air-cooled R290 large capacity
chillers range with inverter.

COOLING + HEAT RECOVERY



The SILVER range chillers installation, for the version with total heat recovery option, includes two inertial water tanks too. The blue tank (cold) is dedicated to the main users circuit, the chiller works to keep the inertial tank at the needed temperature using the chiller inlet water temperature to regulate the cooling capacity.

While the chiller is producing cold water, the whole heating capacity can be recovered using the red tank (hot) inertial capacity. This circuit will store hot water for any different uses related to the installation.



6.0.0 CONNECTIVITY

SILVER

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The air-cooled R290 large capacity
chillers range with inverter.

COMMUNICATION FEATURES

SILVER range is combinable with several BMS systems thanks to the flexible microprocessor electronic control and the optional gateways. The following communication interfaces are allowable:

- ModBus™ RTU Serial interface
- ModBus™ TCP Ethernet interface



- BACnet™ IP Ethernet interface (OPTIONAL)
- BACnet™ MSTP Serial interface (OPTIONAL)



Optimizing the system operation is easier thanks to the communication options.



6.0.1 CONNECTIVITY

SILVER

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The air-cooled R290 large capacity
chillers range with inverter.



REMOTE MONITORING FUNCTIONS

SILVER range can be equipped with EnerblueOnWeb option. With this additional feature the unit will be equipped with a Supervision Device, a UMTS Router with 2 years SIM card and access via secure VPN.

This configuration option allows to access to the unit by remote, even if there are no connection available on the site and in a total independent way from the installation site web infrastructure.

With this feature is possible to:

- Check the unit working mode in real time
- Recording the units functioning selecting the needed values
- Check and modify the working parameters
- Receive email in case of alarm or units stops



7.0.0 TEST

SILVER

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The air-cooled R290 large capacity
chillers range with inverter.



TEST

The SILVER range underwent successful testing in the Enerblue lab and in real-world pilot projects prior to its official release. This rigorous internal evaluation process, combined with close collaboration with customers in the field, has resulted in a stable and reliable product that is well-suited for even the most demanding air conditioning and process cooling applications.

Now, every manufactured unit undergoes a stringent testing and verification procedure:

- Quality checks on spare components.
- Verification of the refrigerant circuit during and after assembly.
- Verification of the electrical wiring circuit after assembly.
- Functional testing, which includes running the units and conducting a comprehensive assessment of operating parameters and logic.



8.0.0 QUALITY

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chillers range with inverter.

QUALITY STANDARDS



CE conformity

- Pressure Equipment Directive 2014/68/UE
- Machinery Directive 2006/42/CE
- EMC Directive 2014/30/UE
- Ecodesign Directive 2009/125/CE

QUALITY PROCESSES

- ISO9001: an internationally recognized standard for quality management systems (QMS). Applying it, Enerblue can meet customer and regulatory requirements and continually improve the internal processes and product performances.

Thanks for your attention

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