COSMOGAS®
MADE IN ITALY



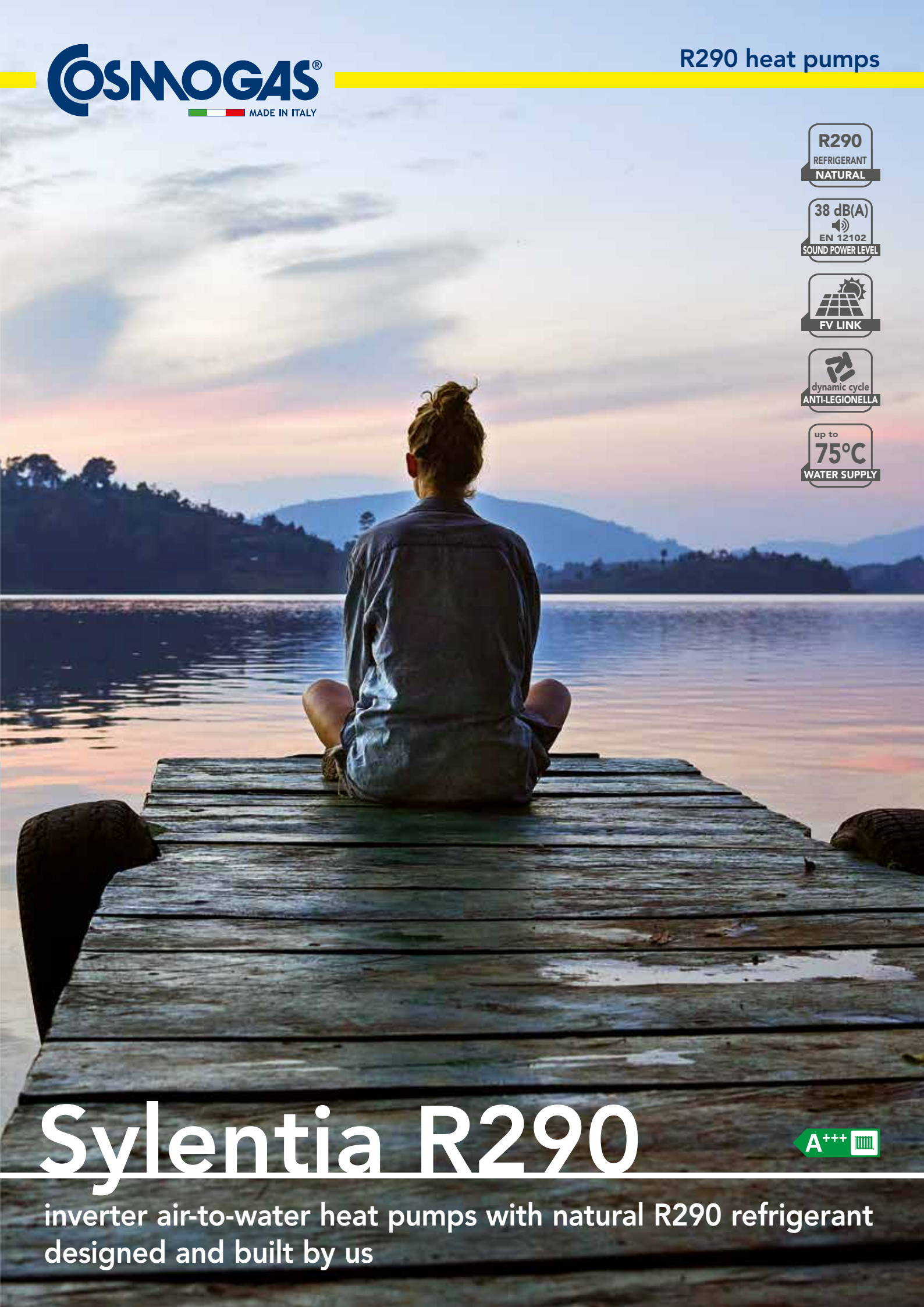
R290
REFRIGERANT
NATURAL

38 dB(A)
EN 12102
SOUND POWER LEVEL

FV LINK

dynamic cycle
ANTI-LEGIONELLA

up to
75°C
WATER SUPPLY



# Sylentia R290

A+++

inverter air-to-water heat pumps with natural R290 refrigerant
designed and built by us

# Silent

13 dB(A) at 10 metres

A breath

19 dB(A) at 5 metres

A rustle of leaves

24 dB(A) at 3 metres

A peaceful room

## Thermal comfort evolution made in Cosmogas
## for a sustainable future

Designed and made by Cosmogas which confirms its commitment to innovation and sustainability, offering advanced solutions for the heating industry of the future.

Italian excellence redefining thermal comfort while respecting the environment.

as...


# Sylentia R290 efficiency and design in perfect silence

Cosmogas, an Italian company at the forefront of research and innovation, presents the **Sylentia R290** heat pumps, designed and manufactured entirely in its own factories in Meldola (Italy), thanks to its in-house Research & Development Department.
**Sylentia R290** were born as an evolution of the already popular FRYO R290, even quieter with **38 dB(A) sound power level** and even better performing with **COP of 5.00** at 7/35°C.

**Sylentia R290** heat pumps guarantee thermal comfort in every season, managing heating, cooling and domestic hot water production with maximum efficiency thanks to a high working range. In heating mode, with -20°C outside air temperature they reach supply temperature of 60°C and with -12°C outside air temperature up to 75°C supply temperature, making them ideal also for systems with traditional radiators; while in cooling mode they can work with outside temperatures up to 50°C.

Equipped with inverter technology combined with proprietary electronics, **Sylentia R290** heat pumps adapt operation to the real needs of the system by exploiting their **high 1:4.5 modulation range.** This optimises consumption and reduces energy waste.
In addition to their advanced performance, **Sylentia R290** heat pumps are characterised by a modern and sophisticated design, with clean lines that blend perfectly into any architectural context.

A complete range capable of covering all requirements with various modulating models:
**Sylentia 8M R290** and **Sylentia 13M R290** single-phase version
**Sylentia 13T R290** and **Sylentia 20T R290** three-phase version.

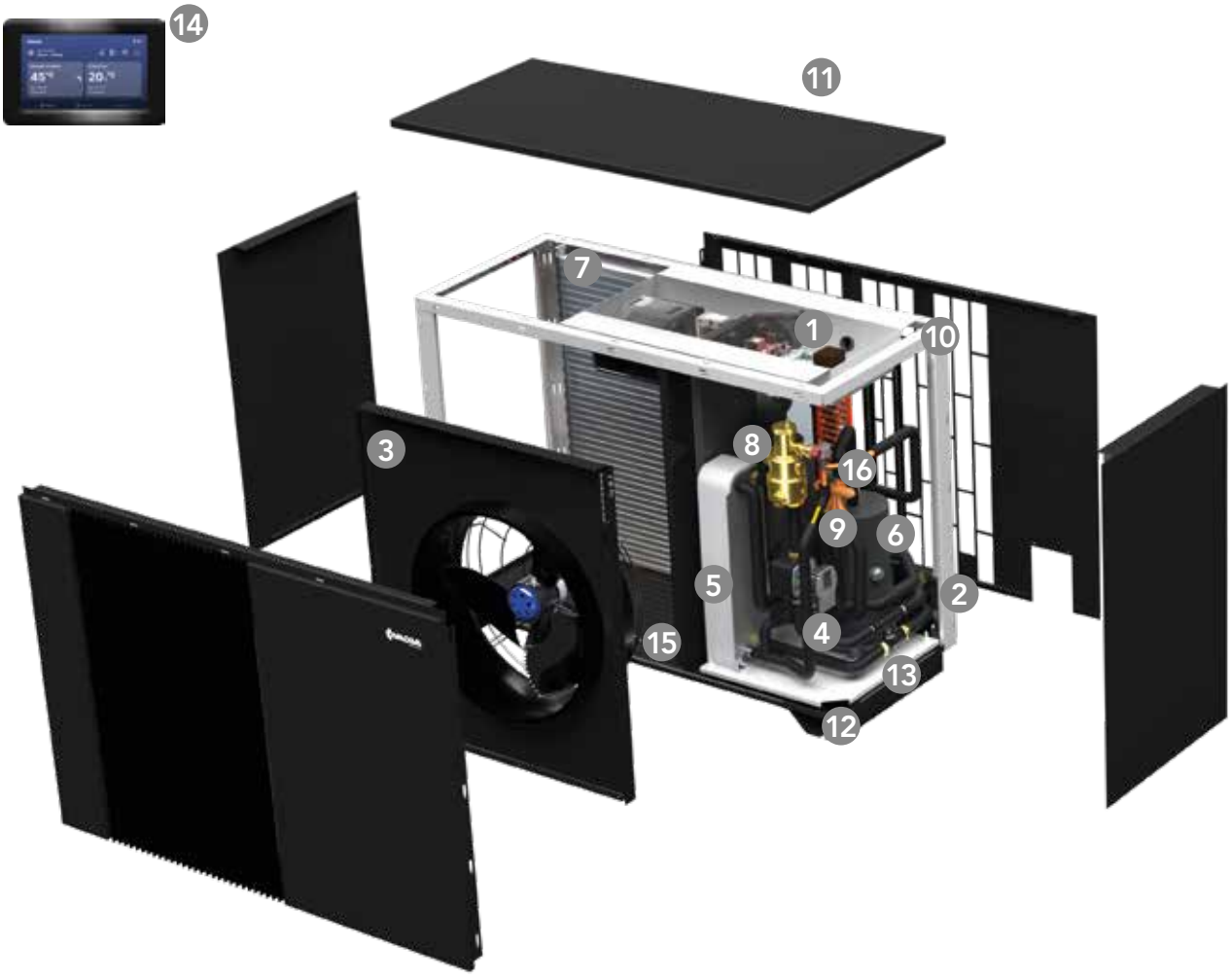
# Versatile accessible and carefree

All **Sylentia R290** air-to-water heat pumps can be used in all heating, cooling and domestic hot water systems.

They are easy to install as they can be placed on the floor, with related anti vibrating supports or fixed to the wall by special brackets and connected to the heating or cooling system with simple insulated supply and return piping.

They are also equipped with a completely removable casing, which provides three major advantages:

**1 - quick and easy installation**
**2 - ease of cleaning and maintenance**
**3 - possibility for the user to customise the design by repainting the panels as desired**

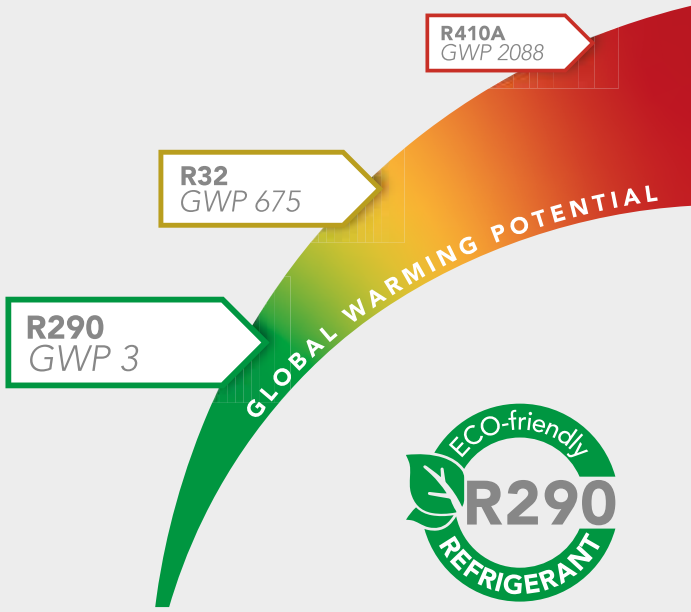



**1** · Ventilated switchboard with inverter, 'CIMA' electronic platform and terminal board with fast connections
**2** · Hydraulic connections
**3** · Oversized silenced inverter fan
**4** · High-efficiency inverter circulating pump specific for R290
**5** · Large-surface brazed plate heat exchanger complete with antifreeze heater
**6** · Inverter Scroll compressor with sound-absorbing cladding
**7** · Oversized seasonal high-efficiency turbolized finned coil
**8** · Degasser unit and safety valve specific for R290 set at 2,5 bar
**9** · Electronic expansion valve
**10** · Chassis in galvanised sheet metal
**11** · Fully removable and repaintable design panelling
**12** · Double antivibration floating frame for compressor unit and plate heat exchanger
**13** · Vortex flow meter
**14** · 'Comodo' advanced chrono control
**15** · Oversized condensate drain
**16** · 4-way valve

# Natural R290 refrigerant high efficiency
## low environmental impact

Our new **Sylentia R290** heat pumps use in their refrigeration circuit a natural R290 refrigerant (propane), which with a GWP 3, far lower than the R32 or R410A ones, places these heat pumps among those with the lowest environmental impact.

According to the IPCC AR6 report (Intergovernmental Panel on Climate Change, Sixth Assessment Report) which represents the most recent global assessment on climate change, the $GWP_{100}$, (i.e. the global warming potential of a greenhouse gas, compared to the amount of $CO_2$ over 100 years) of the natural R290 refrigerant, is equal to 0.02, this means that R290 has almost no impact on climate change and these heat pumps are the most efficient and eco-friendly choice.





# Quality tested
## in all conditions

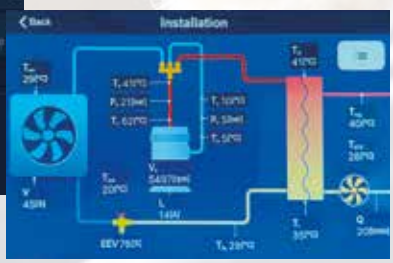
Thanks to our new proprietary in-house **Climatic Chamber**, **capable of reproducing temperatures ranging from -20°C to +55°C,** all the heat pumps can be designed and tested to achieve real efficient products, in every possible climatic condition, with a total control on quality and performance to guarantee maximum reliability.

comodo


# Comodo
## innovation and total control

**Sylentia R290** heat pumps are equipped as standard with **Comodo**, an elegant and innovative remote chrono control. The user can comfortably adjust and control the room temperature from inside the house on the 5" touch screen display at various levels and for different time slots throughout the day and week.
As with the heating functions, it can also programme the production of domestic hot water and the dynamic anti-legionella cycle.

There are many functions of the **Comodo** chrono control including the possibility to control the heat pump remotely for checking operating parameters and electricity consumption. The operating data are also displayed in the synoptic panel 'Syn Check' to instantly monitor all parameters of the refrigeration circuit and the hydraulic circuit.

# Cosmo+
## the App for the most demanding user

To complete the functionalities of **Comodo** and make it even 'smarter', the **Cosmo+** special App has been developed, very useful for users who prefer to manage their heating, cooling and hot water system from their smartphone and thus have the possibility to remotely monitor the comfort of their home.

With a special focus to reducing the environmental impact, through the **Cosmo+** App, the Service Centre can take action remotely (RAM - Remote Asset Monitoring); this results in a benefit in terms of time and travel costs saved, but above all, less $CO_2$ released into the atmosphere.


Download on the App Store

Download on Google play

# Connect
## to comfort

**Comodo** and **Cosmo+**functions:

- Programming of independent time slots for room temperature and domestic hot water
- Programming of time slots for noise and power consumption reduction
- Weekly programming of anti-legionella cycle
- Management of additional heat sources differentiated between heating and domestic hot water
- 'Boost' function to quickly change room temperature
- 'Away from home' function to save money when away from home for a few hours
- 'Holiday' function to keep rooms at the desired temperature for prolonged absences
- 'Syn Check' synoptic panel to detect refrigeration and hydraulic circuit operating parameters in real time
- Monitoring of energy flows absorbed and consumed by the system by day, week, month, year
- OTA (over the air) updates of the graphic interface

# Password
# silence!

## Quietness
### synonymous with comfort

Much attention was paid to acoustic comfort, achieving **sound emissions of only 38 dB(A).** We adopted inverter fans of oversized diameter with silenced and balanced blade profiles installed on a support with an aerodynamic profile specially designed by the R&D department to reduce the noise of incoming and outgoing airflow. Furthermore the new-generation 'Scroll' type compressor is soundproofed with a special high-density sound-absorbing cladding.

## Floating frame
### vibrations under control

**Sylentia R290** uses a double floating frame to reduce vibrations and improve the quietness during operation, thus creating a comfortable and disturbance-free environment: the first frame supports the plate heat exchanger including the pump and the hydraulic assembly, and also supports the second one, which houses the compressor.

## 'High Silent' function
### for a well-deserved rest

**Sylentia R290** is equipped with a 'High Silent' function. When the function is activated, the sound pressure can be reduced to the desired value (as low as 30 dB) at times of your choice or by external system control.

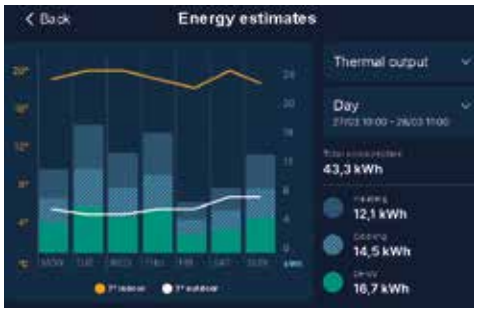
38 dB(A)
EN 12102
SOUND POWER LEVEL

EXTREMELY
LOW-NOISE

SCROLL

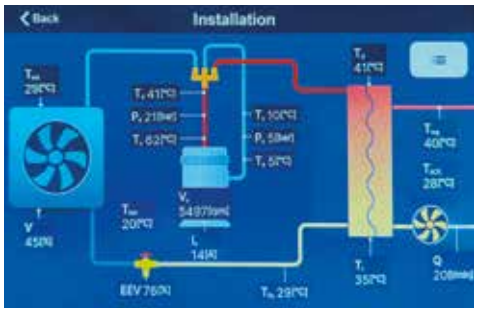
ANTI-VIBRATION
FLOATING FRAME

# Cutting-edge details
## that make the difference




### Electricity consumption and energy flows
### 'on line'

Either via the **Comodo** chrono control or via the **Cosmo+** App it is possible to monitor the electricity absorbed and energy flows consumed by the **Sylentia R290** and the system. The user is informed by day, week, month, year, about these important values and can activate changes all to take advantage of efficiency and savings.

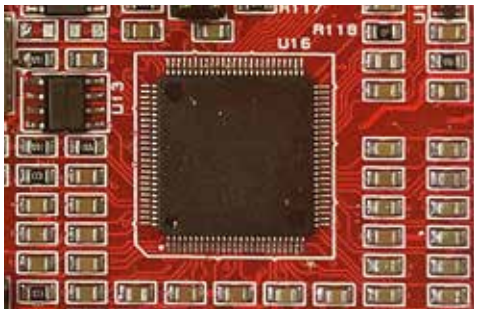



### 'Syn Check'
### quick check of the refrigeration circuit

It is a real heating and cooling powerhouse that can be consulted with the 'Syn Check' synoptic panel with which the **Comodo** chrono control of **Sylentia R290** is equipped.
It records operating parameters and the status of all components involved in the heating/cooling/domestic hot water operations.

### Energy Saving (PCR)
### consumption optimisation

**Sylentia R290** heat pumps are equipped as standard with the PCR (Power Consumption Reduction) function. When active, it reduces the absorbed electrical power (as modern induction hobs do), thus avoiding the risk of interruption due to power overload when several appliances are used at the same time.




### Electronics
### Made in Italy

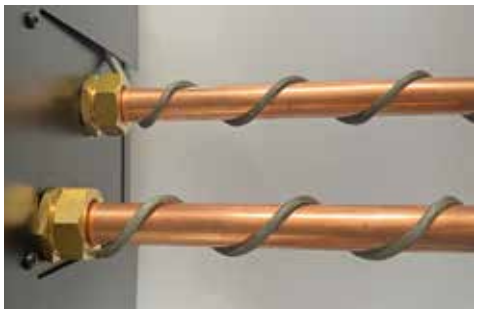
The brain of the **Sylentia R290** is the new electronic platform **CIMA** (Cosmogas Integrated Modular Architecture) designed and manufactured in Italy to Cosmogas specifications. Equipped with modern and powerful microprocessors for controlling all the **Sylentia R290** inverters, it communicates via Modbus with the **Comodo** chrono control and is compatible with most popular domotics systems. Among its many functions, the **FV link** system (connection to photovoltaic system) allows the self-consumption of any surplus energy produced by the photovoltaic panels.

## 'No Ice'
### high seasonal efficiency

Thanks to the generous 2,5 mm fin spacing, the ice that forms within the fins of the coil during the winter period does not block the passage of air.
This reduces defrost cycles to almost zero and increases efficiency, economy and comfort levels during the harshest part of the winter season.

## Convenient and safe
### condensate drain

An entirely stainless steel condensate drip tray, with central drain, is available on demand, to be installed under the heat pump to channel the condensate water.
The drip tray comes complete with an antifreeze heater that prevents clogging of the oversized condensate drain.



## 'Polar' protection
### safe even in winter

The **Sylentia R290** is an air-to-water heat pump equipped with two electrical heaters.
One standard heater is located on the plate heat exchanger. The second heater, on demand, is a convenient heating cable to protect the section of piping that exits the unit and enters the home.

## Ideal customisation:
### choose accessories on demand

For proper operation of the **Sylentia R290**, we recommend the installation of a magnetic filter, a differential by-pass valve and a condensate drip tray.
In addition, to ensure the minimum space required under the heat pump and to absorb any vibrations and noise, anti-vibration mounts made of recycled SBR rubber with an aluminium profile and hollowed-out bottom for water drainage are available on demand.

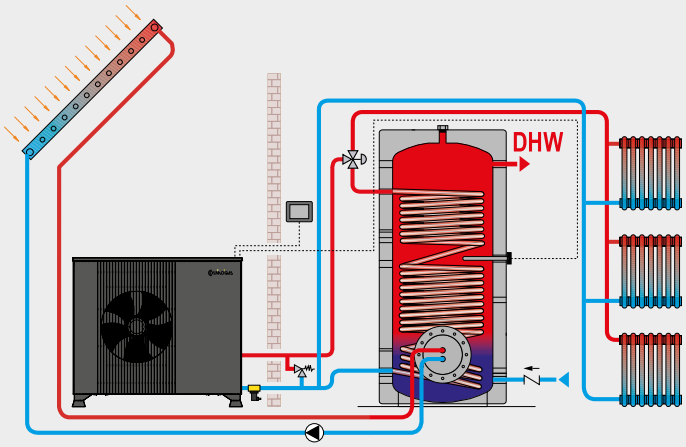
# Sylentia R290 also suitable in radiator systems

The supply temperature of the **Sylentia R290**, which reaches 75°C, even with outside temperatures of -12°C, allows it to be used in the retrofitting or upgrading of systems without changing existing high-temperature radiators.
The **Sylentia R290** can control a parameterisable three-way valve that can be used to manage the hot/cold system or the heating/domestic hot water system (see diagrams on opposite page). In addition, it is possible to manage the additional electric heaters for heating and domestic hot water production.

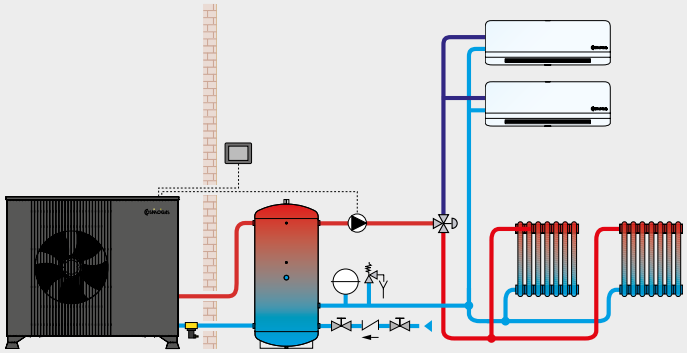
The **Sylentia R290** can be connected to **BPF** model hot water storage tanks for domestic hot water production; the high operating temperature ensures adequate anti-legionella sterilisation.

# Possible arrangements

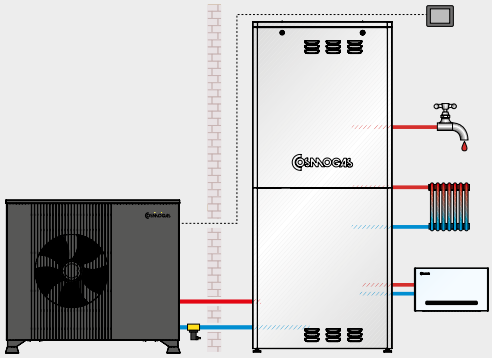
## HEATING + SOLAR DHW




## HEATING + AIR CONDITIONING

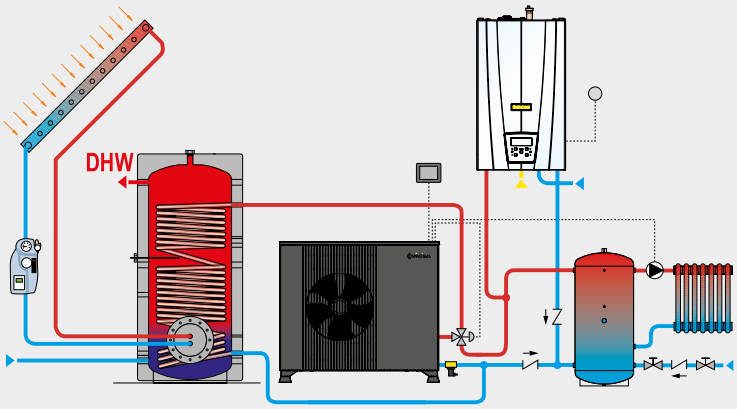


## HYBRID SYSTEM WITH SOLARFRYO



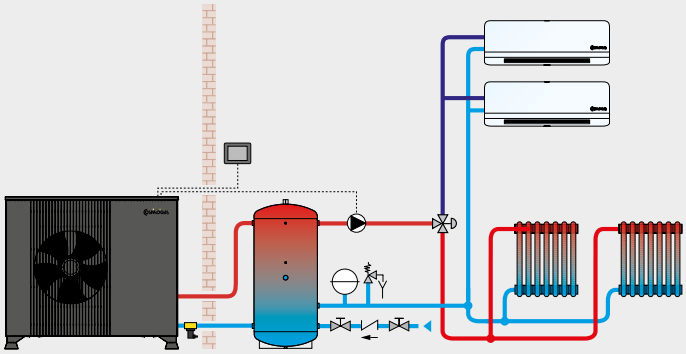
Combination ONLY possible with Sylentia 8M R290

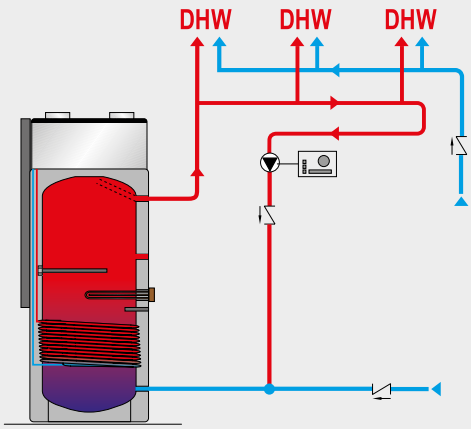
## HYBRID SYSTEM WITH GAS CONDENSING BOILER




Combination NOT possible with Sylentia 20T R290

## HEATING + AIR CONDITIONING + DHW WITH AGUAMAX






The examples reported are merely indicative

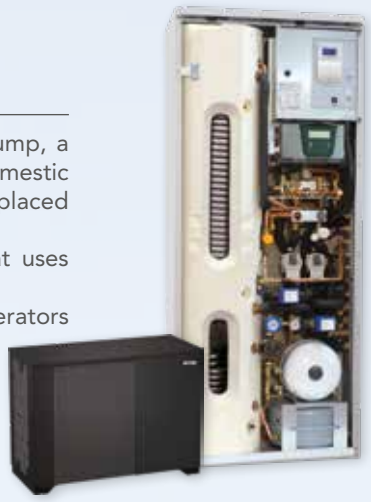
# Two generators, double energy efficiency

The goals of the **'Fit for 55'** climate package, aims to reduce greenhouse gas emissions by 55% by year 2030, with the ambitious goal of achieving **'carbon neutrality'** by year 2050.

Renewable energy sources have zero environmental impact, but the high contributions imposed by the **'Fit for 55'** are not always met by the application of a single source of energy when there are special conditions such as generous floor plans and poor insulation.
In these cases, **Cosmogas hybrid systems** are the most suitable solution to overcome the application limits of individual technologies. Several heat generators powered by different energy sources are combined together, in this case a **heat pump** and a **condensing boiler**, supplemented by a **smart control** system that gives priority from time to time to the most convenient generator, always ensuring maximum efficiency and savings on energy consumption.

Cosmogas is able to meet all heating, cooling and domestic hot water needs for both new and retrofitted buildings through different solutions consisting of residential hybrid systems (output up to 35 kW) in compact versions such as **SOLARfryo H** or commercial version with **ECOhybrid Max**, a hybrid system designed and built to operate with boilers up to 280 kW.

## Sylentia R290
### and SOLARfryo H



Factory-Made '3-in-1' residential hybrid system consisting of a **Sylentia R290** monobloc heat pump, a **condensing boiler** and a **150 litre stainless steel technical water tank** for heating, cooling, and domestic hot water production. The main unit encloses all components within a compact box, which can be placed indoors, outdoors, or built-in in the wall.
**SOLARfryo H** is equipped as standard with a system called H.I.K. (heating integration kit) that uses alternative energies in integration to heating, both in low-temperature and radiator systems.
In addition, thanks to its many accessories, **SOLARfryo H** can be combined with other heat generators such as solar thermal panels and can manage up to two circuits at the same time, a domestic hot water recirculation pump and a solar circuit.

**SOLARfryo H** optimises costs by always choosing the most cost-effective energy between gas and electricity, depending on the outside temperature.

## Sylentia R290
### and gas condensing boiler

Innovative, Factory-Made, smart and environmentally friendly residential hybrid system for heating, cooling your home and producing domestic hot water, consisting of the **Sylentia R290** single-phase heat pump and an indoor/outdoor/built-in **double condensing boiler**: when the heat pump cannot meet the heating demands of the system, the management electronics inside the **Sylentia R290** activate the boiler in 'help'.

The ideal solution for retrofittings and replacements of old boilers, even in systems with radiators.

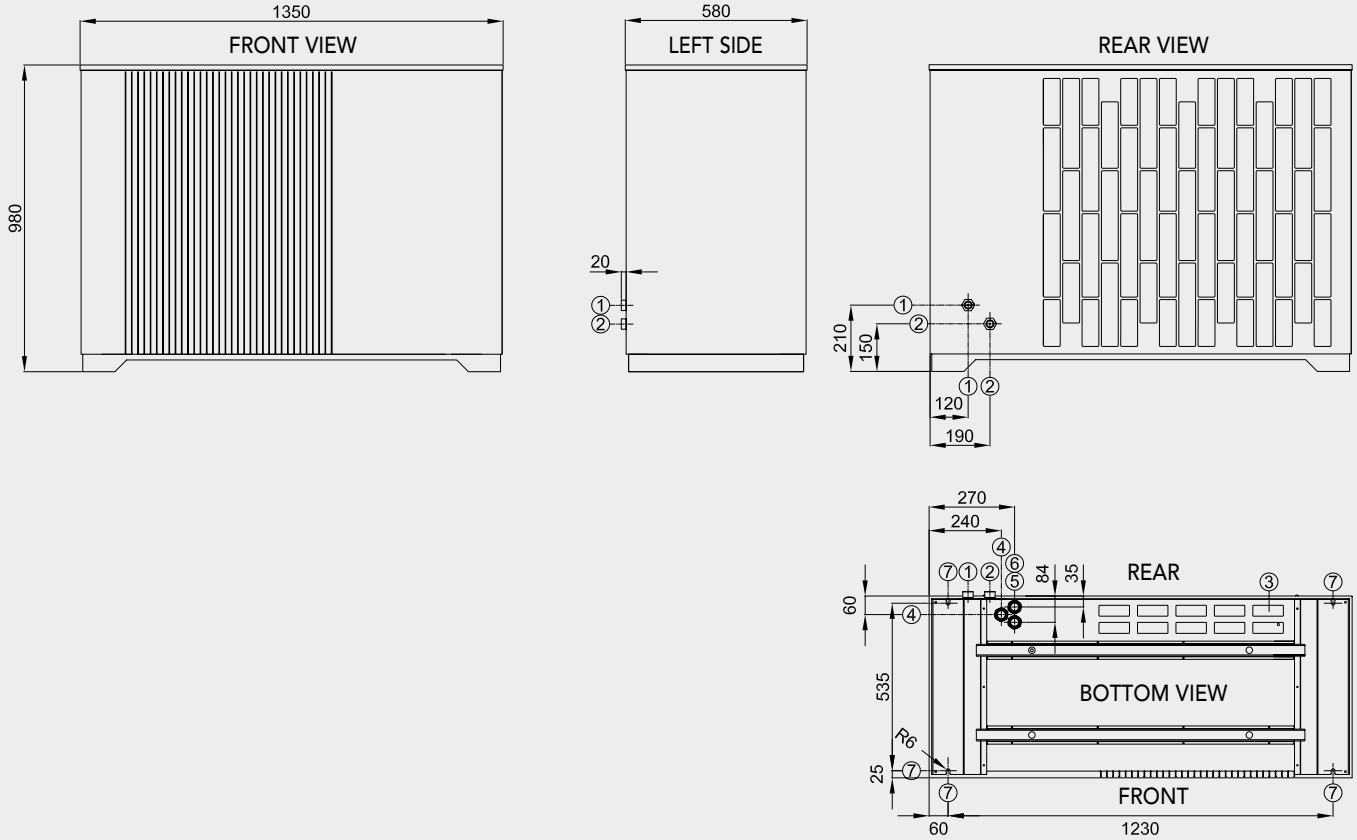
## Sylentia R290
### and ECOhybrid Max

Innovative, Factory-Made, smart and environmentally friendly commercial hybrid system for heating, cooling and domestic hot water production, **consisting of four elements: Sylentia R290** heat pump, **commercial condensing boiler** up to 280 kW, **FS** buffer tank and **TUTORbit** thermoregulator which, combined as required, can create multiple configurations.
**TUTORbit** controls and regulates the heat pump and gas generator, autonomously identifying the most efficient source based on climatic conditions and the state of the system in order to obtain the desired comfort by exploiting both the best performance of the system and the production of domestic hot water. In addition, it supervises the system by signalling any alarms and, thanks to the remote control with display as standard, allows remote control up to 50 metres.

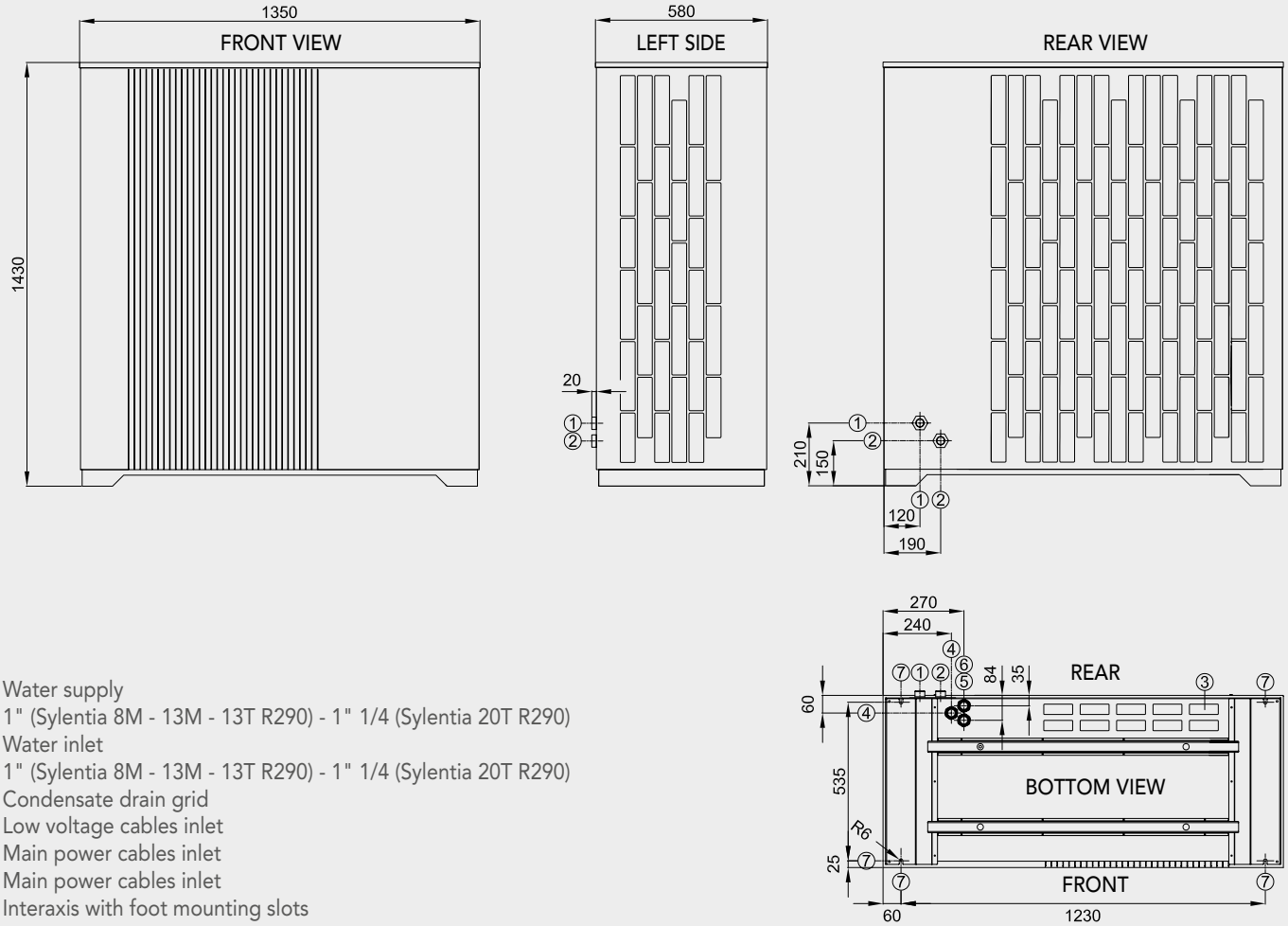
**ECOhybrid Max** is the ideal solution for the upgrading of existing or new residential or commercial buildings, apartment buildings with centralised systems.

# Size and connections

### Sylentia 8M - 13M - 13T R290

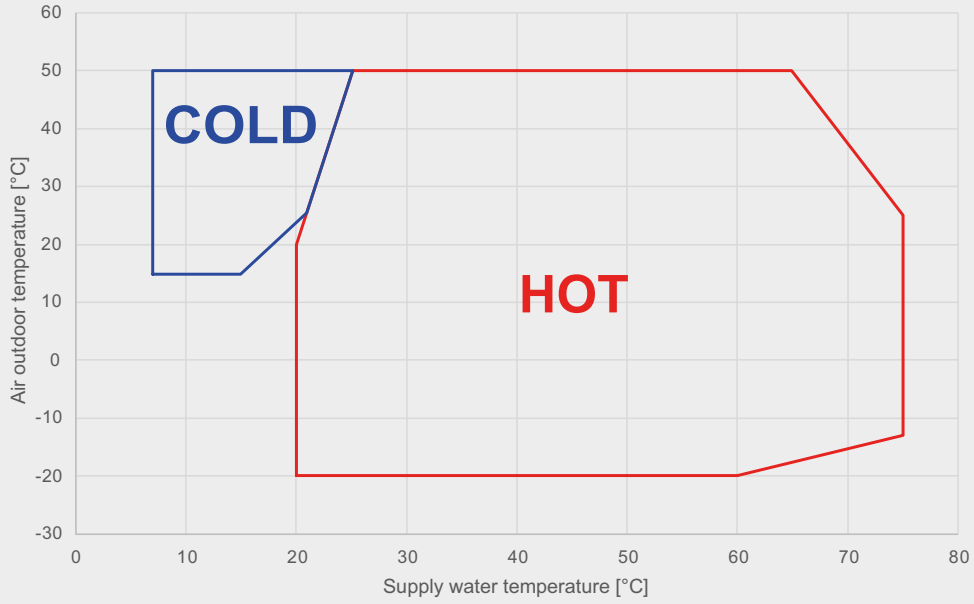



### Sylentia 20T R290

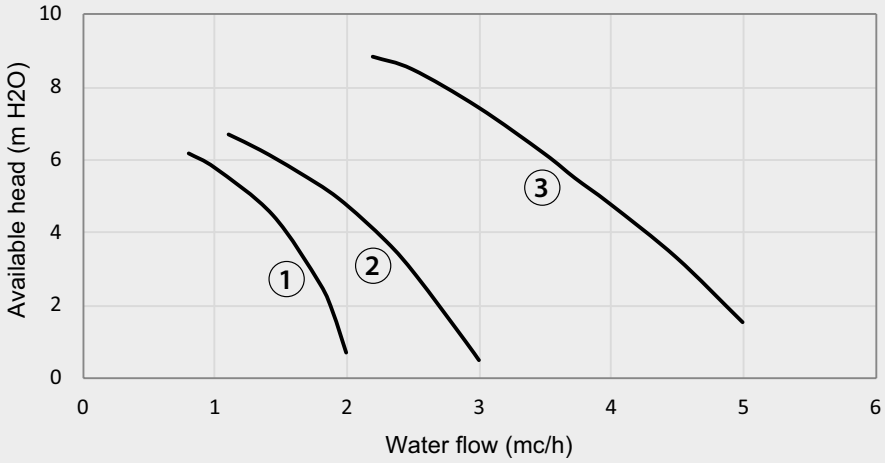



**1** · Water supply
1" (Sylentia 8M - 13M - 13T R290) - 1" 1/4 (Sylentia 20T R290)
**2** · Water inlet
1" (Sylentia 8M - 13M - 13T R290) - 1" 1/4 (Sylentia 20T R290)
**3** · Condensate drain grid
**4** · Low voltage cables inlet
**5** · Main power cables inlet
**6** · Main power cables inlet
**7** · Interaxis with foot mounting slots

# Working field
## in heating and cooling




# Available head curves
## at the heating installation




**1** · Sylentia 8M R290
**2** · Sylentia 13M R290 and 13T R290
**3** · Sylentia 20T R290

# Technical data




| SYLENTIA R290 | | MU | 8M | 13M | 13T | 20T |
|---|---|---|---|---|---|---|
| Rated power supply | | V/Hz/Ph | 230/50/1 | 230/50/1 | 400/50/3 | 400/50/3 |
| R290 refrigerant | Quantity | kg | 0,68 | 1,60 | 1,60 | 2,75 |
| | Global Warming Potential | (AR6) | 0,02 | 0,02 | 0,02 | 0,02 |
| | $CO_2$ equivalent | t | 0,000014 | 0,000032 | 0,000032 | 0,000055 |
| Max. heating output (A7/W35) | | kW | 8,2 | 13,0 | 13,0 | 19,7 |
| Max. heating output (A-7/W35) | | kW | 5,6 | 8,7 | 8,7 | 13,5 |
| Max. cooling output (A35/W7) | | kW | 6,5 | 9,9 | 9,9 | 15,5 |
| Max. cooling output (A35/W18) | | kW | 9,2 | 13,8 | 13,8 | 21,5 |
| Heating output (1) | | kW | 3,3 | 6,0 | 6,0 | 8,0 |
| Absorbed power in heating (1) | | W | 780 | 1280 | 1280 | 1749 |
| COP (1) | | W/W | 4,50 | 5,00 | 5,00 | 4,97 |
| Cooling output (2) | | kW | 2,5 | 3,9 | 3,9 | 5,7 |
| Absorbed power in cooling (2) | | W | 885 | 1450 | 1450 | 2215 |
| EER (2) | | W/W | 2,98 | 2,85 | 2,85 | 3,00 |
| Cooling output (3) | | kW | 4,0 | 5,9 | 5,9 | 7,6 |
| Absorbed power in cooling (3) | | W | 1002 | 1500 | 1500 | 1820 |
| EER (3) | | W/W | 4,10 | 4,22 | 4,22 | 4,52 |
| Max. absorbed power (FLI) | | kW | 4,5 | 5,5 | 6,0 | 9,0 |
| Max. electric current absorbed (FLA) | | A | 21 | 27 | 9 | 13 |
| Cooling circuit maximum pressure | | bar | 31,0 | 31,0 | 31,0 | 31,0 |
| Pump rated output | | W | 50 | 87 | 87 | 195 |
| Compressor | Type | | Scroll | Scroll | Scroll | Scroll |
| | Quantity / System | | 1 | 1 | 1 | 1 |
| | Oil | | PAG | PAG | PAG | PAG |
| Fan | Quantity | | 1 | 1 | 1 | 2 |
| Electrical protection rating | | | IP 15B | IP 15B | IP 15B | IP 15B |
| Water side plate heat exchanger | | Material | AISI 316 | AISI 316 | AISI 316 | AISI 316 |
| Hydraulic connections diameter | | " | 1" | 1" | 1" | 1" 1/4 |
| Net size (D×W×H) | | mm | 1350x580x980 | 1350x580x980 | 1350x580x980 | 1350x580x1430 |
| Net weight | | kg | 168 | 177 | 177 | 260 |
| Max. supply temperature | | °C | 75 | 75 | 75 | 75 |
| Water flow rate | | l/h | 1410 | 2170 | 2170 | 3400 |
| Water volume | | l | 1,7 | 2,3 | 2,3 | 3,7 |
| Maximum water pressure in heating | | bar | 2,5 | 2,5 | 2,5 | 2,5 |
| Outdoor temperature for heating operation | | °C | -20 ~ 50 | -20 ~ 50 | -20 ~ 50 | -20 ~ 50 |
| Outdoor temperature for cooling operation | | °C | 15 ~ 50 | 15 ~ 50 | 15 ~ 50 | 15 ~ 50 |

(1) Heating operating conditions: Inlet/supply water temperature: 30°C/35°C, outdoor temperature: 7°C
(2) Cooling operating conditions: Inlet/supply water temperature: 12°C/7°C, outdoor temperature: 35°C
(3) Cooling operating conditions: Inlet/supply water temperature: 23°C/18°C, outdoor temperature: 35°C
Performance testing according to UNI EN 14511:2022

# Regulation UE 811/2013

| SYLENTIA R290 | MU | 8M | 13M | 13T | 20T |
|---|---|---|---|---|---|
| Seasonal space heating energy efficiency (ηs) (W35) | % | 178 | 180 | 180 | 182 |
| Rated output (W35) | kW | 4,7 | 7,6 | 7,6 | 13,0 |
| Energy efficiency class (W35) | | A+++ | A+++ | A+++ | A+++ |
| Sound power level (EN 12102) (A7/W35) | dB (A) | 38 | 38 | 38 | 39 |
| Seasonal space heating energy efficiency (ηs) (W55) | % | 134 | 151 | 151 | 140 |
| Rated output (W55) | kW | 4,5 | 7,5 | 7,5 | 12,5 |
| Energy efficiency class (W55) | | A++ | A+++ | A+++ | A++ |
| Sound power level (EN 12102) (A7/W55) | dB (A) | 43 | 43 | 43 | 44 |

Technical features are subject to change without prior notice. For actual technical features of the unit, please refer to the label on the unit.

# Output and COP
## ref. UNI-TS11300-4

### SYLENTIA R290 - HEATING PERFORMANCE

**Water outlet 35°C**

| | Sylentia 8M R290 | | Sylentia 13M R290 | | Sylentia 13T R290 | | Sylentia 20T R290 | |
|---|---|---|---|---|---|---|---|---|
| Ot (°C) | Heat. out. (kW) | COP | Heat. out. (kW) | COP | Heat. out. (kW) | COP | Heat. out. (kW) | COP |
| -7 | 5,6 | 2,68 | 8,7 | 2,86 | 8,7 | 2,86 | 13,5 | 2,79 |
| 2 | 7,2 | 3,33 | 11,2 | 3,45 | 11,2 | 3,45 | 17,2 | 3,40 |
| 7 | 8,2 | 3,80 | 13,0 | 3,79 | 13,0 | 3,79 | 19,7 | 3,84 |
| 12 | 9,0 | 4,10 | 14,3 | 4,29 | 14,3 | 4,29 | 22,5 | 4,30 |

**Water outlet 45°C**

| | Sylentia 8M R290 | | Sylentia 13M R290 | | Sylentia 13T R290 | | Sylentia 20T R290 | |
|---|---|---|---|---|---|---|---|---|
| Ot (°C) | Heat. out. (kW) | COP | Heat. out. (kW) | COP | Heat. out. (kW) | COP | Heat. out. (kW) | COP |
| -7 | 5,4 | 2,21 | 8,4 | 2,42 | 8,4 | 2,42 | 13,1 | 2,36 |
| 2 | 6,8 | 2,65 | 10,7 | 2,89 | 10,7 | 2,89 | 16,5 | 2,81 |
| 7 | 7,8 | 3,00 | 12,4 | 3,23 | 12,4 | 3,23 | 19,1 | 3,20 |
| 12 | 8,9 | 3,38 | 13,8 | 3,52 | 13,8 | 3,52 | 21,8 | 3,57 |

**Water outlet 55°C**

| | Sylentia 8M R290 | | Sylentia 13M R290 | | Sylentia 13T R290 | | Sylentia 20T R290 | |
|---|---|---|---|---|---|---|---|---|
| Ot (°C) | Heat. out. (kW) | COP | Heat. out. (kW) | COP | Heat. out. (kW) | COP | Heat. out. (kW) | COP |
| -7 | 5,2 | 1,91 | 8,3 | 2,15 | 8,3 | 2,15 | 12,7 | 2,02 |
| 2 | 6,7 | 2,33 | 10,5 | 2,51 | 10,5 | 2,51 | 15,8 | 2,41 |
| 7 | 7,5 | 2,57 | 11,8 | 2,75 | 11,8 | 2,75 | 17,6 | 2,64 |
| 12 | 8,6 | 2,87 | 13,5 | 3,04 | 13,5 | 3,04 | 20,0 | 2,91 |

### SYLENTIA R290 - COOLING PERFORMANCE

**Water outlet 7°C**

| | | Sylentia 8M R290 | | Sylentia 13M R290 | | Sylentia 13T R290 | | Sylentia 20T R290 | |
|---|---|---|---|---|---|---|---|---|---|
| LF (%) | Ot (°C) | Cool. out. (kW) | EER | Cool. out. (kW) | EER | Cool. out. (kW) | EER | Cool. out. (kW) | EER |
| 100 | 35 | 6,5 | 2,25 | 9,9 | 2,33 | 9,9 | 2,33 | 15,5 | 2,37 |
| 75 | 30 | 5,5 | 2,75 | 8,8 | 2,96 | 8,8 | 2,96 | 13,2 | 2,92 |
| 50 | 25 | 4,6 | 3,58 | 7,2 | 3,81 | 7,2 | 3,81 | 11,2 | 3,88 |
| 25 | 20 | 3,3 | 4,46 | 5,1 | 4,80 | 5,1 | 4,80 | 8,1 | 5,07 |

Ot = Outdoor temperature, LF = Load Factor

Massimiliano Pieraccini

**All Cosmogas products are designed, patented and built by us**

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