COSMOGAS®
MADE IN ITALY

R290 heat pumps

FRYO R290

A+++

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

Environmentally friendly air-to-water heat pumps with natural R290 refrigerant

Italian excellence that merges savings and thermal sustainability. The heat pumps designed and built by Cosmogas are a triumph of quality and ecology.

Your wellness, our passion heat pumps
for over 20 years

Cosmogas has been producing heat pumps and chillers for over 20 years and its search for products that are increasingly environmentally and nature-friendly, as well as having high performance in terms of energy efficiency, has prompted its R&D department to design and develop **FRYO R290**, a range of innovative, inverter-driven, and environmentally friendly heat pumps, produced entirely in its factory in Meldola (Italy).

With their sophisticated design and clean lines of their casing, they blend into the architecture of your home, finding harmony in any setting.

Their strong point is their high operating range: in heating mode, with temperatures of -20°C outside air they reach supply temperatures of 60°C and with temperatures of -12°C outside air up to 75°C supply temperature. This allows the **FRYO R290** heat pumps to also be installed in radiator systems. Furthermore, in cooling mode they can work with outside temperatures of up to 50°C.

A complete range capable of covering all requirements from the residential sector. Various modulating models are available:
FRYO R290 6 and **FRYO R290 10** single-phase version
FRYO R290 10TR and **FRYO R290 15TR** three-phase version.

Versatility accessibility and easy maintenance

All **FRYO R290** air-to-water heat pumps can be installed 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.

FRYO R290 heat pumps are equipped with a completely removable casing, which provides three major advantages:

1 - ease of installation
2 - ease of cleaning and maintenance
3 - possibility for the user to repaint the panels

1 · Ventilated switchboard with inverter, 'CIMA' electronic platform and terminal board with fast connections
2 · Hydraulic connections
3 · 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 · Seasonal high-efficiency turbolized finned coil
8 · Degasser unit and safety valve set at 2,5 bar
9 · Electronic expansion valve
10 · Chassis in galvanised sheet metal
11 · Fully removable design panelling
12 · Antivibration floating frame for compressor unit and plate heat exchanger
13 · Vortex flow meter
14 · 'Comodo' remote chrono control
15 · Oversized condensate drain
16 · 4-way valve

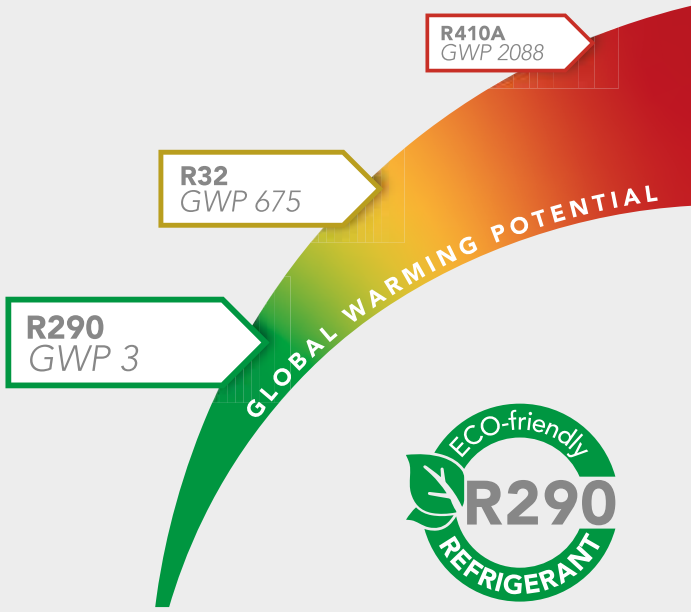
Natural R290 refrigerant low-impact
on the environment

Our new **FRYO 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.

Furthermore, the IPCC AR6 report (Intergovernmental Panel on Climate Change, Sixth Assessment Report) is the most recent global assessment on climate change published by the intergovernmental scientific body (IPCC).
IPCC is charged with providing objective, comprehensive and transparent assessments of the current state of scientific knowledge on climate change.

This organisation states that GWP_{100}, that measures 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.

F-gas licence not required as the natural R290 refrigerant contains no fluorinated gases.



Efficiency tested
in all conditions

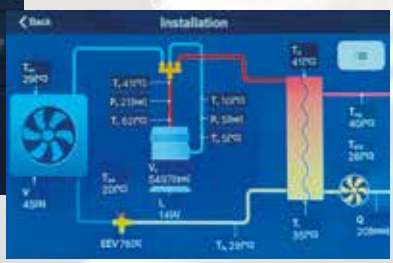
Thanks to our new proprietary in-house **Climatic Chamber**, **capable of reproducing temperatures ranging from -20°C to +55°C,** all the heat pumps can be designed and tested to achieve real efficient products, in every possible climatic condition, with a total control on quality and performance.

comodo

Comodo
innovation and total control

FRYO 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.

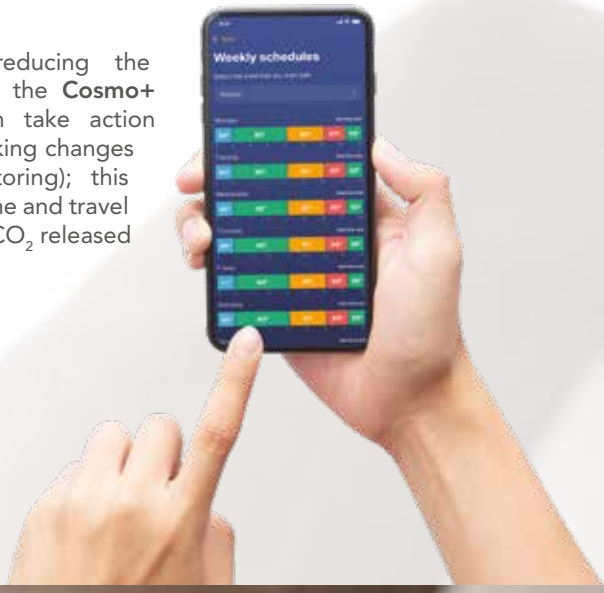
There are many functions of the **Comodo** chrono control including the possibility to control the heat pump remotely for checking operating parameters and electricity consumption. The operating data are also displayed in the synoptic panel 'Syn Check' to instantly monitor all parameters of the refrigeration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

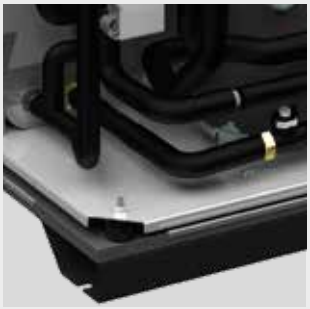
Password
silence!

Quietness
synonymous with comfort

Much attention has been paid to silent operation, and in order to achieve low noise emissions, fans with an oversized diameter and silenced blade profile have been adopted, with an inverter motor managed by the 'Cima' platform, coupled with a new-generation 'Scroll' type compressor, soundproofed with high-density sound-absorbing cladding.

Floating frame
vibrations under control

FRYO 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

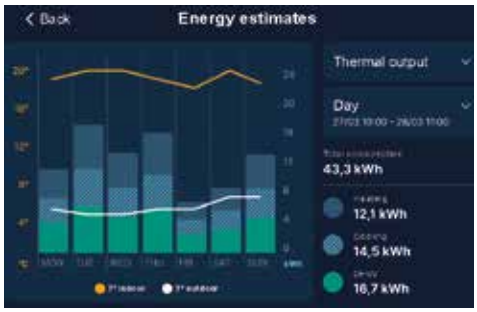
FRYO R290 is equipped with a 'High Silent' function. When the 'High Silent' function is activated, the sound pressure can be reduced to the desired value (as low as 30 dB) at times of your choice or by external system control.

EXTREMELY LOW-NOISE

SCROLL

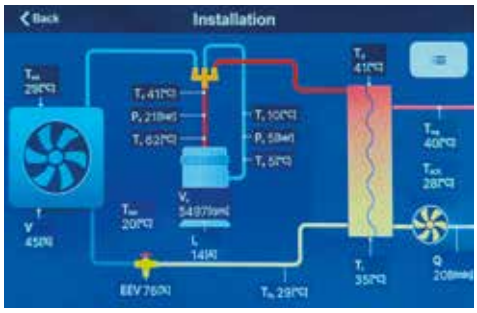
ANTI-VIBRATION FLOATING FRAME

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 **FRYO 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.

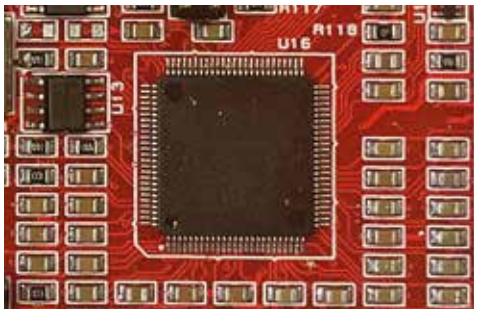


'Syn Check'
quick check of the refrigeration circuit

It is a real heating and cooling powerhouse that can be consulted with the 'Syn Check' synoptic panel with which the **Comodo** remote control of **FRYO 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

FRYO 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

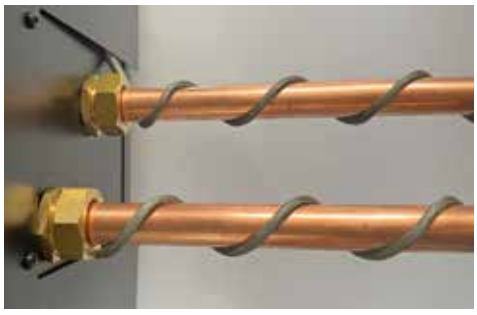
The brain of the **FRYO R290** is the new electronic platform **CIMA** (Cosmogas Integrated Modular Architecture) designed and manufactured in Italy to Cosmogas specifications. Equipped with modern and powerful microprocessors for controlling all the **FRYO R290** inverters, it communicates via Modbus with the **Comodo** remote control and is compatible with domotics systems for the homes of the future. 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.

Condensate drain
add a drip tray when needed

A 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 **FRYO 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 **FRYO R290**, we recommend the installation of a magnetic filter and a differential by-pass valve.
In addition, to ensure the minimum space required under the heat pump, as well as 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.

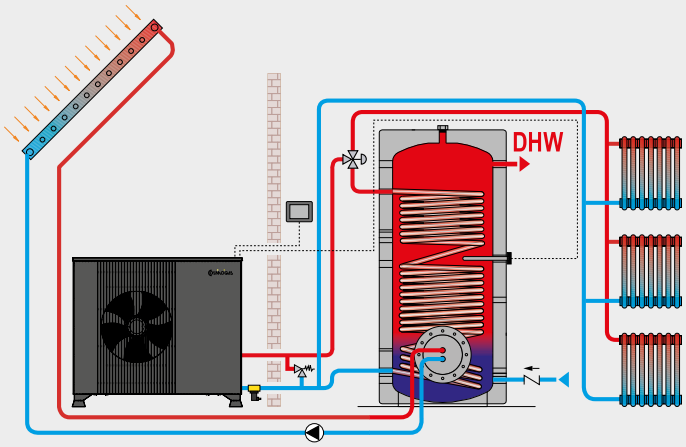
FRYO R290
also suitable in
radiator systems

The supply temperature of the **FRYO 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 **FRYO 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.

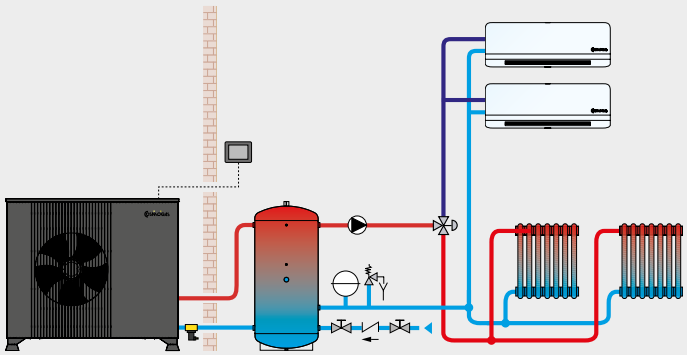
The **FRYO R290** can be connected to **BPF** model hot water storage tanks for domestic hot water production; the high operating temperature ensures adequate anti-legionella sterilisation.

Possible arrangements

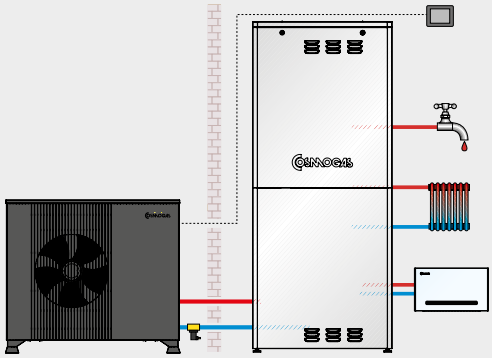
HEATING + SOLAR DHW



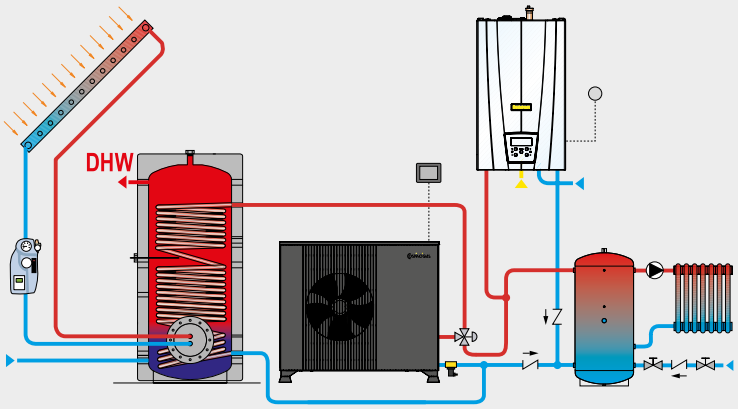
HEATING + AIR CONDITIONING



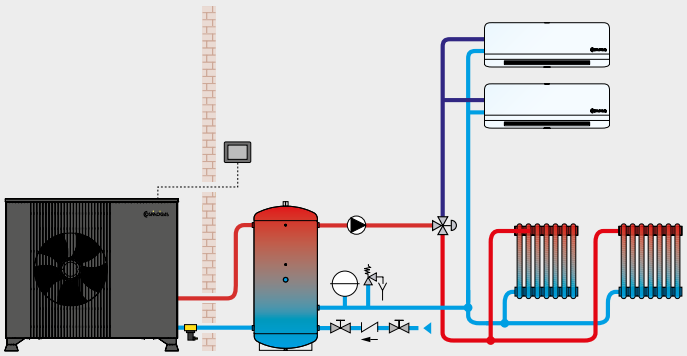
HYBRID SYSTEM WITH SOLARFRYO

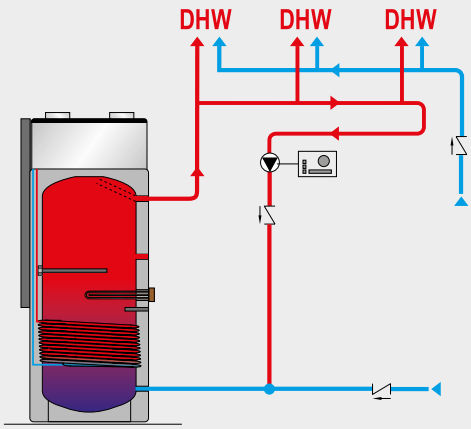


HYBRID SYSTEM WITH GAS CONDENSING BOILER



HEATING + AIR CONDITIONING + DHW WITH AGUAMAX





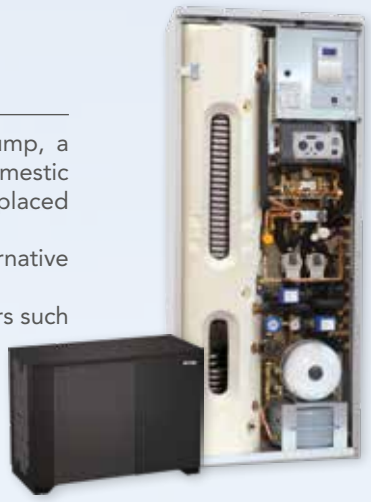
The examples reported are merely indicative

Two generators, double energy efficiency

The goals of the **'Fit for 55'** climate package, approved by the European Commission, include reducing greenhouse gas emissions by 55% compared to 1990 levels, with the aim of achieving **'carbon neutrality'** by 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, more power may be required to meet heating, cooling and domestic hot water production needs; therefore, **Cosmogas hybrid systems** are the most suitable solution to overcome the application limits of individual technologies.
These are systems in which there are several generators powered by different energy sources, 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 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** or with gas condensing boiler; or commercial version with **ECOhybrid Max**, a hybrid system designed and built to operate with boilers up to 280 kW.

FRYO R290
and SOLARfryo



Factory-Made '3-in-1' residential hybrid system consisting of a **FRYO 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 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** 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 optimises costs by always choosing the most cost-effective energy between gas and electricity, depending on the outside temperature.

FRYO 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 **FRYO R290** single-phase heat pump and an indoor/outdoor/built-in **condensing boiler**: when the heat pump cannot meet the heating demands of the system, the management electronics inside the **FRYO R290** activate the boiler in 'help'.

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

FRYO 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:** three-phase **FRYO 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.

Technical data




FRYO R290		MU	6	10	10TR	15TR
Rated power supply		V/Hz/Ph	220-240/50-60/1	220-240/50-60/1	400/50-60/3	400/50-60/3
Refrigerant		kg	R290 / 0,68	R290 / 1,50	R290 / 1,50	R290 / 2,75
Max. heating output (A7/W35)		kW	8,80	13,70	13,70	20,30
Max. heating output (A-7/W35)		kW	6,0	9,7	9,7	15,0
Max. cooling output (A35/W7)		kW	6,6	10,9	10,9	16,6
Max. cooling output (A35/W18)		kW	9,6	15,7	15,7	23,1
Heating output (1)		kW	4,8	7,8	7,8	12,0
Absorbed power in heating (1)		W	1000	1592	1592	2449
COP (1)		W/W	4,8	4,9	4,9	4,9
Heating output (2)		kW	4,2	6,7	6,7	10,5
Absorbed power in heating (2)		W	1024	1626	1595	2561
COP (2)		W/W	4,1	4,1	4,2	4,1
Heating output (3)		kW	3,2	5,0	5,0	7,5
Absorbed power in heating (3)		W	1030	1420	1420	2080
COP (3)		W/W	3,1	3,5	3,5	3,6
Cooling output (4)		kW	3,8	7,2	7,2	11,5
Absorbed power in cooling (4)		W	1188	2250	2250	3594
EER (4)		W/W	3,2	3,2	3,2	3,2
Cooling output (5)		kW	5,4	9,1	9,1	14,0
Absorbed power in cooling (5)		W	1200	2022	2022	3111
EER (5)		W/W	4,5	4,5	4,5	4,5
Max. absorbed power (FLI)		kW	4,5	5,5	6,0	9,0
Max. electric current absorbed (FLA)		A	27	31	17	19
Max. electric current absorbed in heating mode		A	18	22	8	11
Max. electric current absorbed in cooling mode		A	15	19	7	10
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 X5D	IP X5D	IP X5D	IP X5D
Sound power level (ISO 3744)		dB (A)	55	55	55	55
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 volume		l	1,7	2,3	2,3	3,7
Maximum water pressure in heating		bar	2,5	2,5	2,5	2,5

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

Regulation UE 811/2013

FRYO R290	MU	6	10	10TR	15TR
Seasonal space heating energy efficiency (ηs) (W35)	%	187	181	182	185
Rated output (W35)	kW	5,5	9,2	9,2	14,2
Energy efficiency class (W35)		A+++	A+++	A+++	A+++
Seasonal space heating energy efficiency (ηs) (W55)	%	157	151	152	155
Rated output (W55)	kW	5,1	8,0	8,1	13,8
Energy efficiency class (W55)		A+++	A+++	A+++	A+++

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

FRYO R290 - HEATING PERFORMANCE

Water inlet/outlet 30/35°C

	FRYO R290 6		FRYO R290 10		FRYO R290 10TR		FRYO R290 15TR	
Ot (°C)	Heat. out. (kW)	COP	Heat. out. (kW)	COP	Heat. out. (kW)	COP	Heat. out. (kW)	COP
-7	6,0	2,7	9,7	2,9	9,7	2,9	15,0	3,0
2	7,2	3,0	12,3	3,1	12,3	3,1	16,5	3,2
7	8,4	3,9	14,0	4,0	14,0	4,0	19,1	4,0
12	9,7	4,5	15,8	4,7	15,8	4,7	21,3	4,8

Water inlet/outlet 40/45°C

	FRYO R290 6		FRYO R290 10		FRYO R290 10TR		FRYO R290 15TR	
Ot (°C)	Heat. out. (kW)	COP	Heat. out. (kW)	COP	Heat. out. (kW)	COP	Heat. out. (kW)	COP
-7	5,7	2,4	9,6	2,5	9,6	2,5	12,1	2,4
2	7,0	2,6	11,6	2,7	11,6	2,7	14,7	2,7
7	7,9	3,1	13,2	3,2	13,2	3,2	17,2	3,3
12	8,6	3,6	14,5	3,8	14,5	3,8	19,8	3,9

Water inlet/outlet 50/55°C

	FRYO R290 6		FRYO R290 10		FRYO R290 10TR		FRYO R290 15TR	
Ot (°C)	Heat. out. (kW)	COP	Heat. out. (kW)	COP	Heat. out. (kW)	COP	Heat. out. (kW)	COP
-7	5,0	1,9	8,3	2,0	8,3	2,0	10,8	2,1
2	6,3	2,3	10,5	2,4	10,5	2,4	12,8	2,4
7	7,1	2,8	11,8	2,9	11,8	2,9	15,0	3,0
12	7,5	3,1	12,5	3,1	12,5	3,1	17,2	3,3

FRYO R290 - COOLING PERFORMANCE

Water inlet/outlet 23/18°C

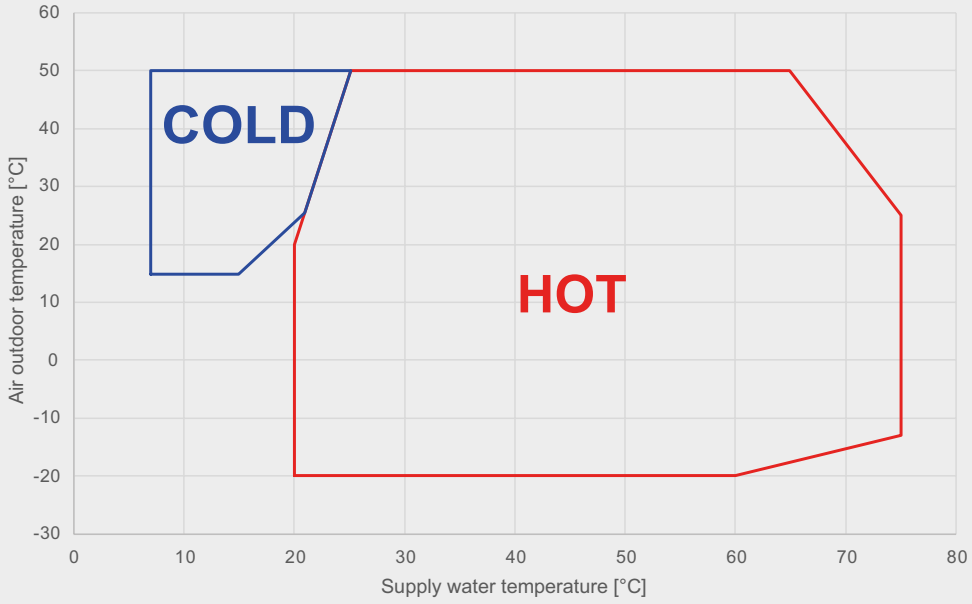
		FRYO R290 6		FRYO R290 10		FRYO R290 10TR		FRYO R290 15TR	
LF (%)	Ot (°C)	Cool. out. (kW)	EER	Cool. out. (kW)	EER	Cool. out. (kW)	EER	Cool. out. (kW)	EER
100	35	9,6	3,3	15,7	3,2	15,7	3,2	23,7	3,2
75	30	7,2	4,0	11,8	4,1	11,8	4,1	17,8	4,1
50	25	4,8	5,5	7,9	5,6	7,9	5,6	11,9	5,6
25	20	2,4	5,7	3,9	5,7	3,9	5,7	5,9	5,7

Water inlet/outlet 12/7°C

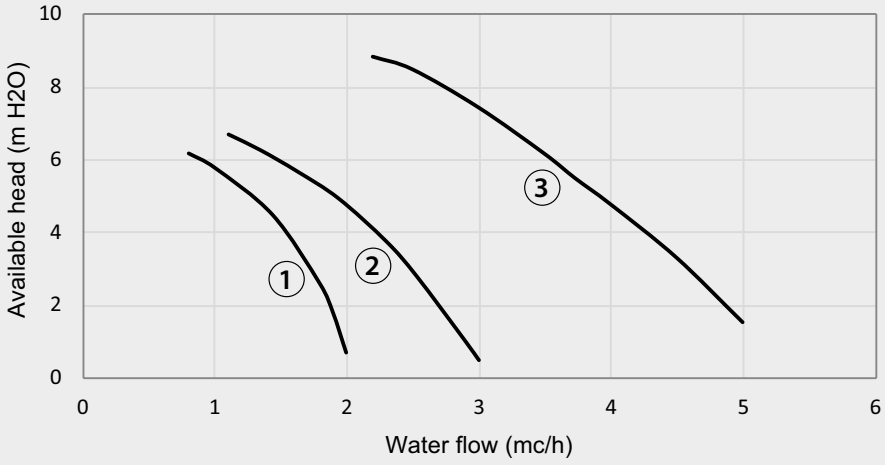
		FRYO R290 6		FRYO R290 10		FRYO R290 10TR		FRYO R290 15TR	
LF (%)	Ot (°C)	Cool. out. (kW)	EER	Cool. out. (kW)	EER	Cool. out. (kW)	EER	Cool. out. (kW)	EER
100	35	7,0	2,5	10,9	2,5	10,9	2,5	16,5	2,5
75	30	5,4	3,5	8,1	3,6	8,1	3,6	12,5	3,6
50	25	3,5	4,7	5,5	4,8	5,5	4,8	8,3	4,8
25	20	1,8	5,4	2,7	5,5	2,7	5,5	4,1	5,6

Ot = Outdoor temperature, LF = Load Factor

Working field
in heating and cooling



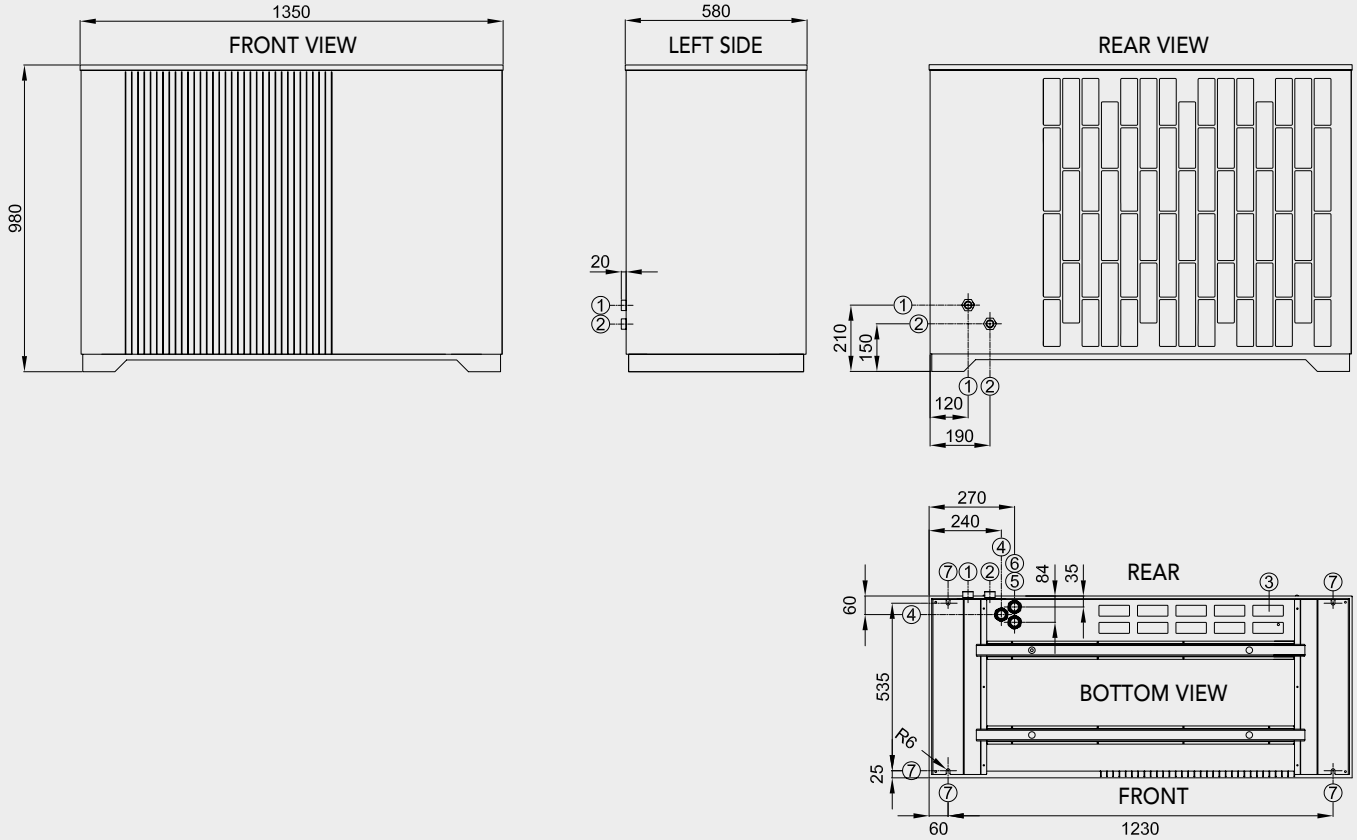
Available head curves
at the heating installation



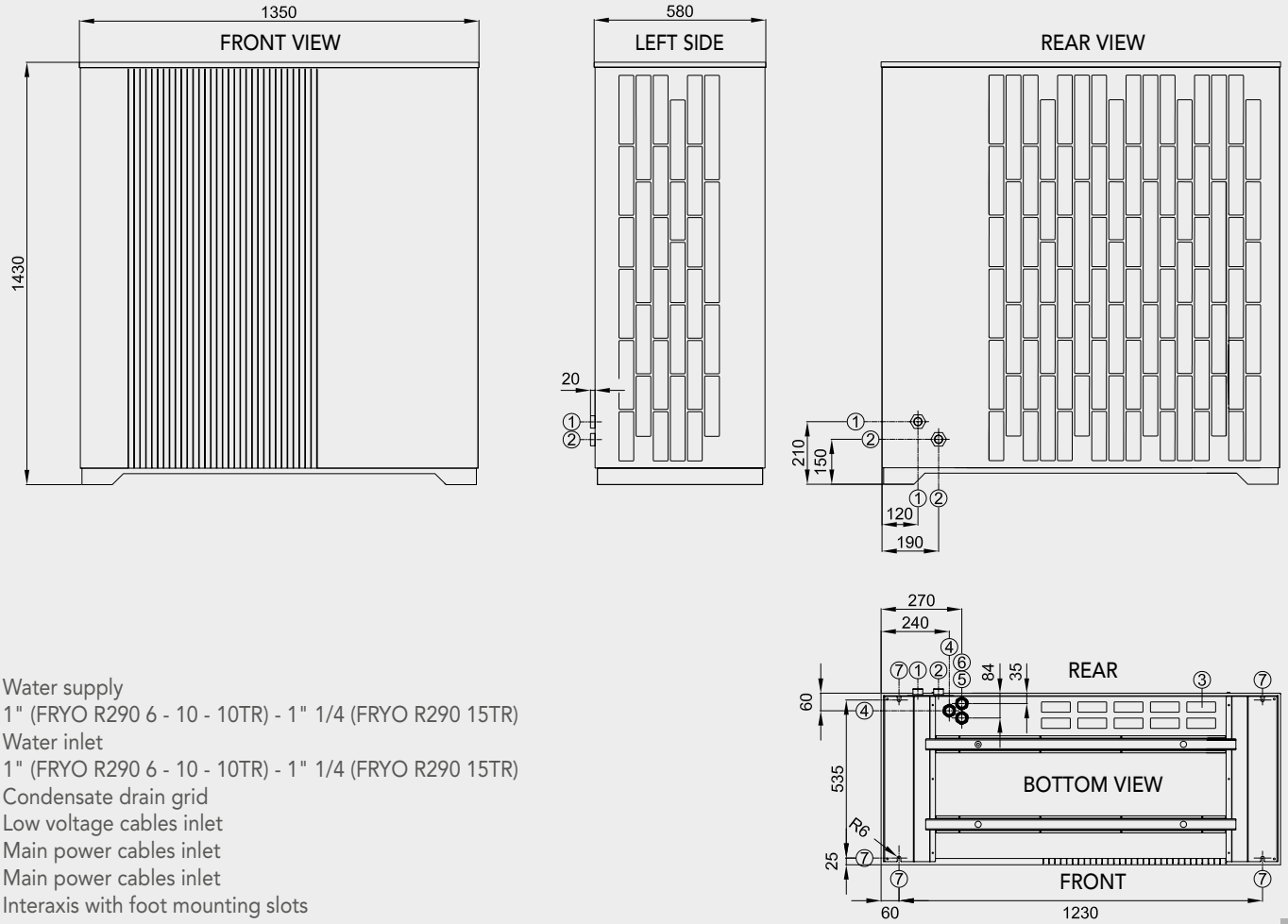
1 · FRYO R290 6
2 · FRYO R290 10 and 10TR
3 · FRYO R290 15TR

Size and connections

FRYO R290 6 - 10 - 10TR



FRYO R290 15TR



1 · Water supply
1" (FRYO R290 6 - 10 - 10TR) - 1" 1/4 (FRYO R290 15TR)
2 · Water inlet
1" (FRYO R290 6 - 10 - 10TR) - 1" 1/4 (FRYO R290 15TR)
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

Massimiliano Pieraccini

All Cosmogas products are designed, patented and built by us

COSMOGAS srl
Via Leonardo da Vinci, 16
47014 MELDOLA (LF) ITALY
Tel. +39 0543.49.83.70
Fax +39 0543.49.83.92
www.cosmogas.com
info@cosmogas.com

PURCHASE ORDERS - export@cosmogas.com
SPARE PARTS - export@cosmogas.com

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