

Abs Pro



 **ROBUR**[®]
caring for the environment





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Sustainable technology for the future. Our warmest welcome.

We are proud designers and manufacturers of sustainable Heating and Cooling Technologies.

Robur was founded in 1956 on a strong idea: creativity, research, development and production of innovative products and a commitment to continuous improvement. We also embraced a thought that, back then, was well ahead of the times: ecological conscience. From the very beginning, our workshops have developed solutions based on the use of renewable energy and gas which are particularly efficient and environmentally friendly.

An evolution which has research as its greatest value. GAHPs – gas absorption heat pumps – come from the intuition of one of the most brilliant minds of the last century: Albert Einstein. It boasts the highest thermal efficiency with the use of significant shares of renewable energy which provides a qualified and high-value proposition for our customers.

This is Robur: innovative, high-performance, rational and quality products oriented towards our customers', employees' and partners' well-being, as well as for the future of heating and our planet.

Mission

Robur is dedicated to dynamic progression in research, development and promotion of safe, environmentally-friendly, and energy-efficient products, through the commitment and caring of its employees and partners

Vision

Robur turns the love for beauty and well-made things into innovative heating and cooling systems that are especially designed and developed to answer the specific needs of Man

 ROBUR
SOLAR FOR THE ENVIRONMENT



Proud Creator and Manufacturer
of Sustainable Heating and
Cooling Technologies

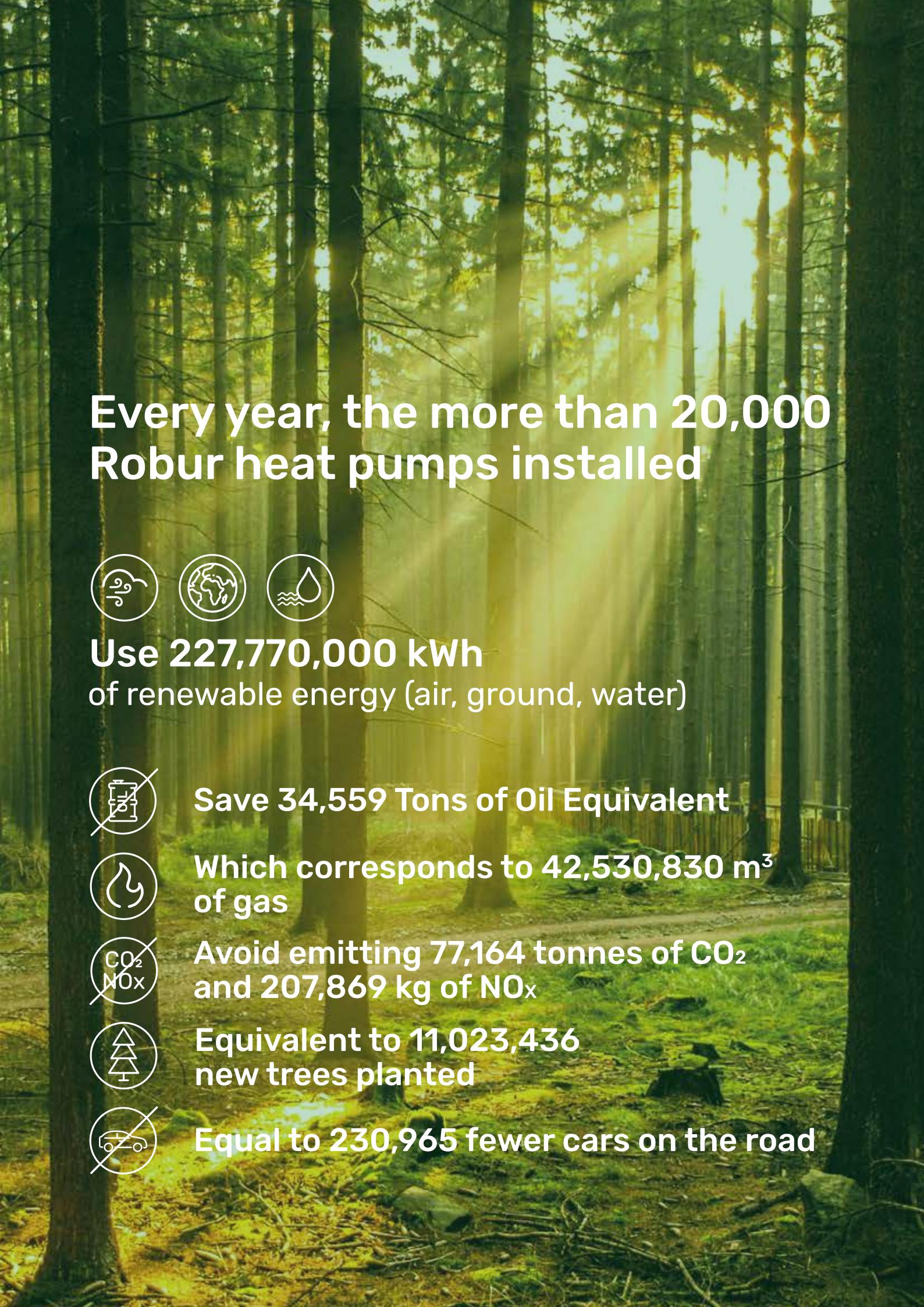
Est. 1956

Our thought in two words: Ecological Conscience.

Two words that speak to the spirit of Robur, A strength which translates into concrete facts. The Robur Ecological Conscience guides the company's strategic choices and is one of the parameters we use in our product development. Today, we strongly believe in the efficient use of gas to cover the global energy needs of our country and the whole of Europe.

This is demonstrated by our GAHPs. It already performs very well in its use of gas, and is able to use important shares of renewable energy from air, water and ground, allowing us to reach a thermal efficiency up to 174%. Efficiency that translates into savings for our customers of up to 50% compared to boilers.

This commitment to efficiency also translates into respect for nature, as demonstrated by the results produced by one year of using a gas absorption heat pump. GAHPs do not use synthetic fluids which are harmful to the ozone layer, but an ecological and natural refrigerant, ammonia. This represents the solution to the problem of climate-altering gases.



Every year, the more than 20,000 Robur heat pumps installed



Use 227,770,000 kWh
of renewable energy (air, ground, water)



Save 34,559 Tons of Oil Equivalent



Which corresponds to 42,530,830 m³ of gas



Avoid emitting 77,164 tonnes of CO₂ and 207,869 kg of NO_x



Equivalent to 11,023,436 new trees planted



Equal to 230,965 fewer cars on the road

Gas Absorption Heat Pumps.

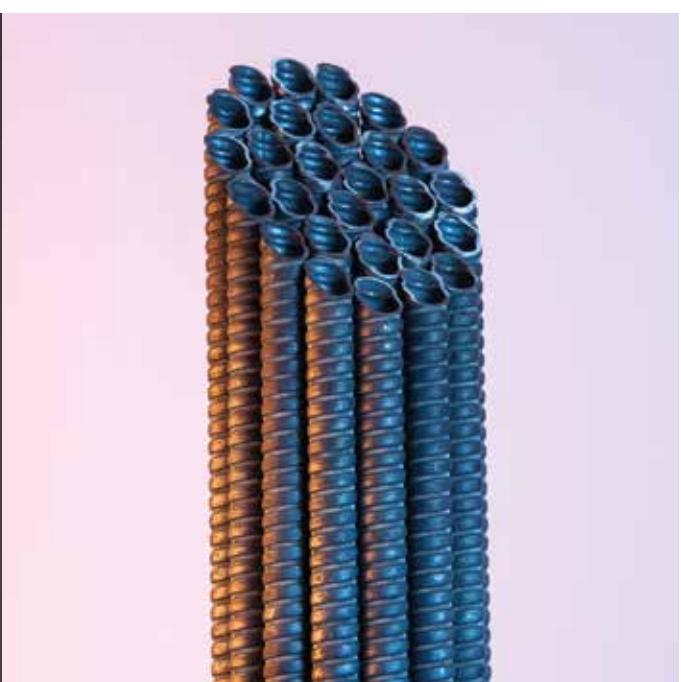
Heating tomorrow, today.

Robur technology.

The gas absorption heat pump GAHP is capable to produce hot water for space heating and domestic hot water like a boiler, but in a much more efficient and efficacious way.

Its ability to recover renewable energy from air, water and ground gives this pump its particular name. When combined with the heat of combustion and gas condensation, very high efficiencies (even exceeding 170%) can be achieved. They reduce the electrical effort to a minimum, thanks to the prevalent use of natural gas, unlike electric heat pumps. In addition, the use of environmentally harmful fluids is avoided, as it uses natural refrigerants and can also provide chilled water for summer cooling (in the reversible model).

Continuous technological improvement over the years has led to constant increases in energy efficiency values for the different models. It is a technology that is constantly evolving and ready for further development.

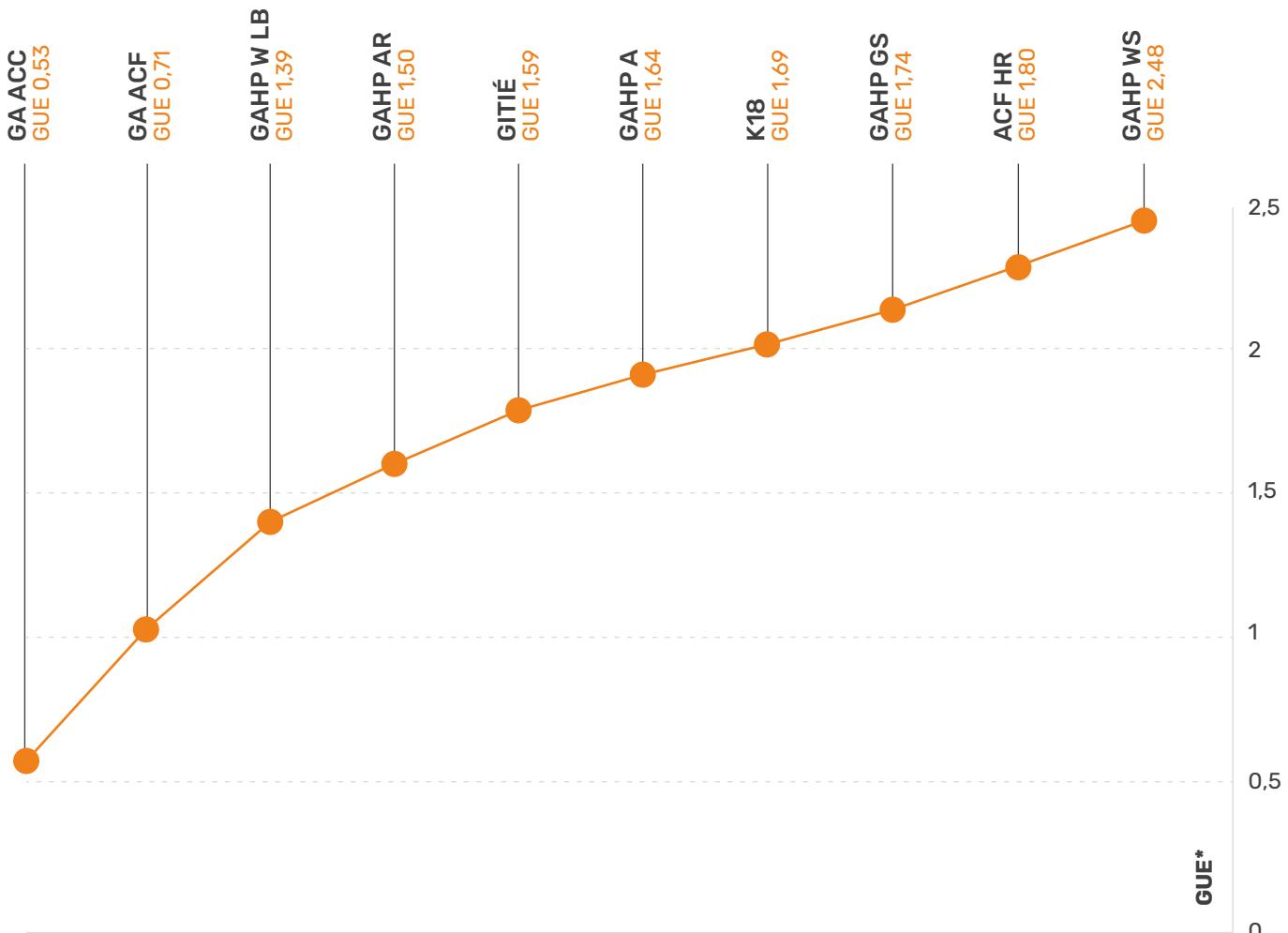


*Solid construction mirrors a solid organisation.
Commercial / GAHP heat pump pre-absorber*



A technology that is constantly evolving and ready for further development.

Whether it's the first chillers or gas heat pumps using renewables, the continuous improvement of gas absorption technology has led to steady increases in energy efficiency in our various models.



GAHP - Gas Absorption Heat Pump

***GUE** - Gas Utilization Efficiency

GA ACC the first gas chiller

GA ACF Made-in-Italy gas chiller

GAHP W LB the first water-to-water heat pump

GAHP AR the first reversible gas absorption heat pump

GITIÉ the first hybrid GAHP and boiler system

GAHP A the first absorption heat pump for heating and domestic hot water

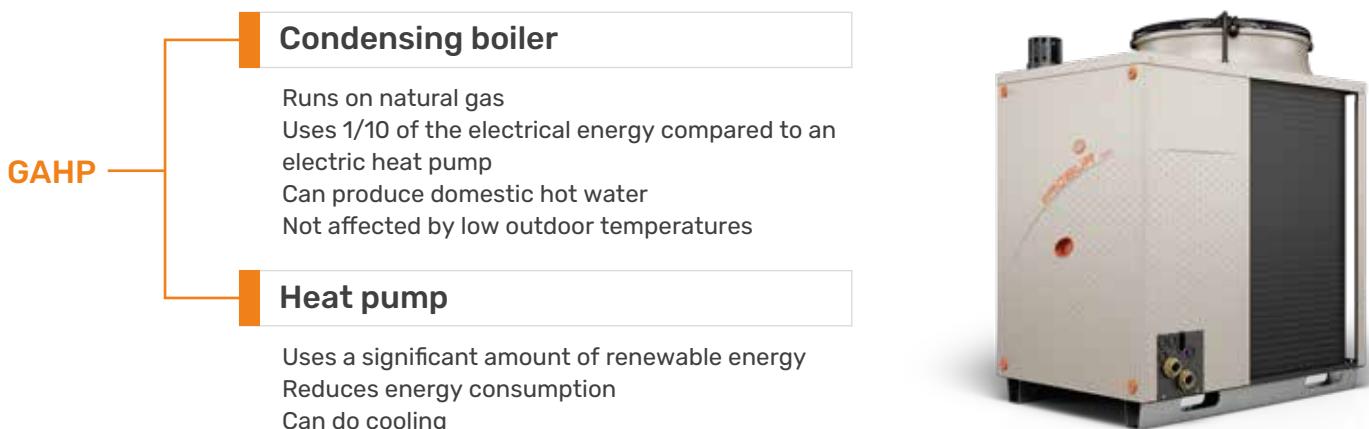
K18 the absorption heat pump for the residential market

GAHP GS the geothermal gas heat pump

GAHP WS the water-to-water heat pump for process applications

The best of both worlds.

Robur absorption heat pumps combine the advantages of the two most widespread heating technologies: condensing boilers and heat pumps.



Renewable energies.

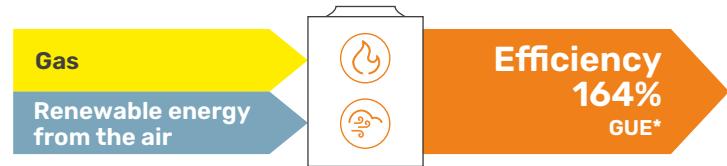
Robur heat pumps are available in 3 versions:

-  **AEROTHERMAL:** recovers heat from the outside air, which is always available even at low temperatures
-  **GEOTHERMAL:** capable of recovering the heat present in the ground
-  **HYDROTHERMAL:** recovers heat from water in reservoirs and both surface and underground aquifers

Energy balances of the three types of GAHP gas absorption heat pumps.

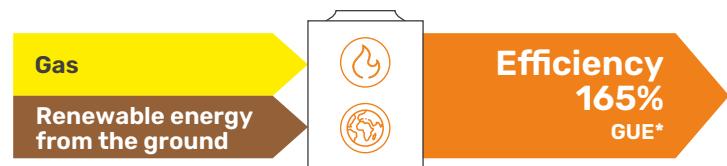
GAHP A

Gas and aerothalmal renewable energy absorption heat pump
Operating conditions A7 W35
(Air temperature = 7 °C
Hot water outlet temperature = 35 °C)



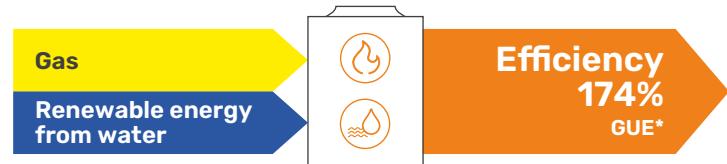
GAHP GS

Gas and geothermal renewable energy absorption heat pump
Operating conditions B0 W35
(Cold water inlet temperature = 0 °C
Hot water outlet temperature = 35 °C)



GAHP WS

Gas and hydrothermal renewable energy absorption heat pump
Operating conditions W10 W35
(Cold water inlet temperature = 10 °C
Hot water outlet temperature = 35 °C)



*The efficiency expressed as GUE of a GAHP should not be confused with the COP of electric heat pumps. To compare the values correctly, multiply the GUE by 2.5.

Advantages of GAHP heat pumps

1 Maximum efficiency with no electricity use

Gas + Renewable energies

Up to 174% efficiency

A rational use of energy brings the best results in terms of performance. By using heat that is present in large quantities in nature (air, ground, water) and a primary source such as natural gas, GAHP absorption heat pumps deliver high performance with up to 174% efficiency.

2 Hot water no matter what, even at -20°C

65 °C for heating 

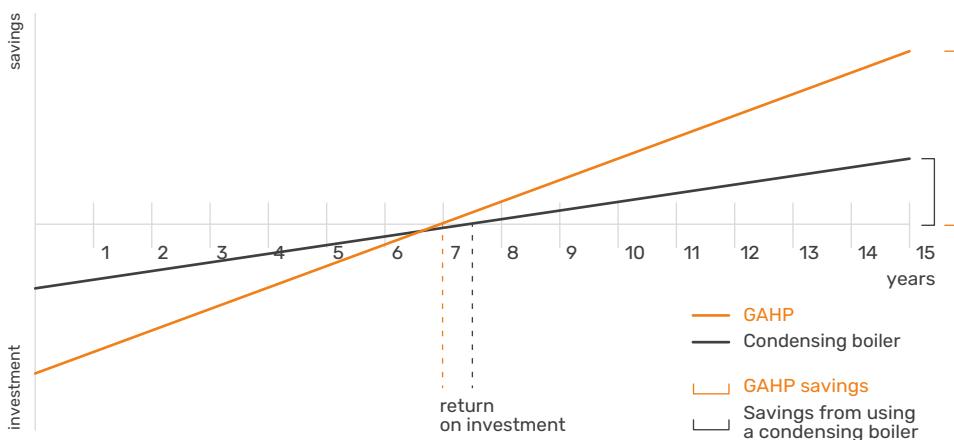
70 °C for domestic hot water 

Thanks to the special features of the thermodynamic cycle, the performance of GAHP is barely affected by outdoor climatic conditions. This results in hot water production up to 70 °C even in extremely cold climates.

3 Real savings

-50% heating costs

The achievable economic result of the high thermal efficiency of GAHP over the whole lifetime of the system highlights the convenience compared to condensing boiler technology.



Fact: A state-of-the-art condensing boiler can achieve a maximum efficiency of 109%.

4 Perfect for integration

Plant and building energy class renovation

Integrating an existing installation with GAHPs enables the entire installation to have its energy efficiency upgraded. Integrating a condensing boiler system with GAHPs is an advantageous choice from an energy, ecological and economic point of view.

GAHPs can improve a residential building performance and are a choice which can raise property value, helping to increase its value per square metre.

5 Certified data

GAHPs are recognised and supported by the European Commission within the 7th Framework Programme for Research and Technological Development. The declared performances are certified by international bodies to guarantee and protect consumers.

6 Only natural refrigerants

F-Gas free and zero GWP

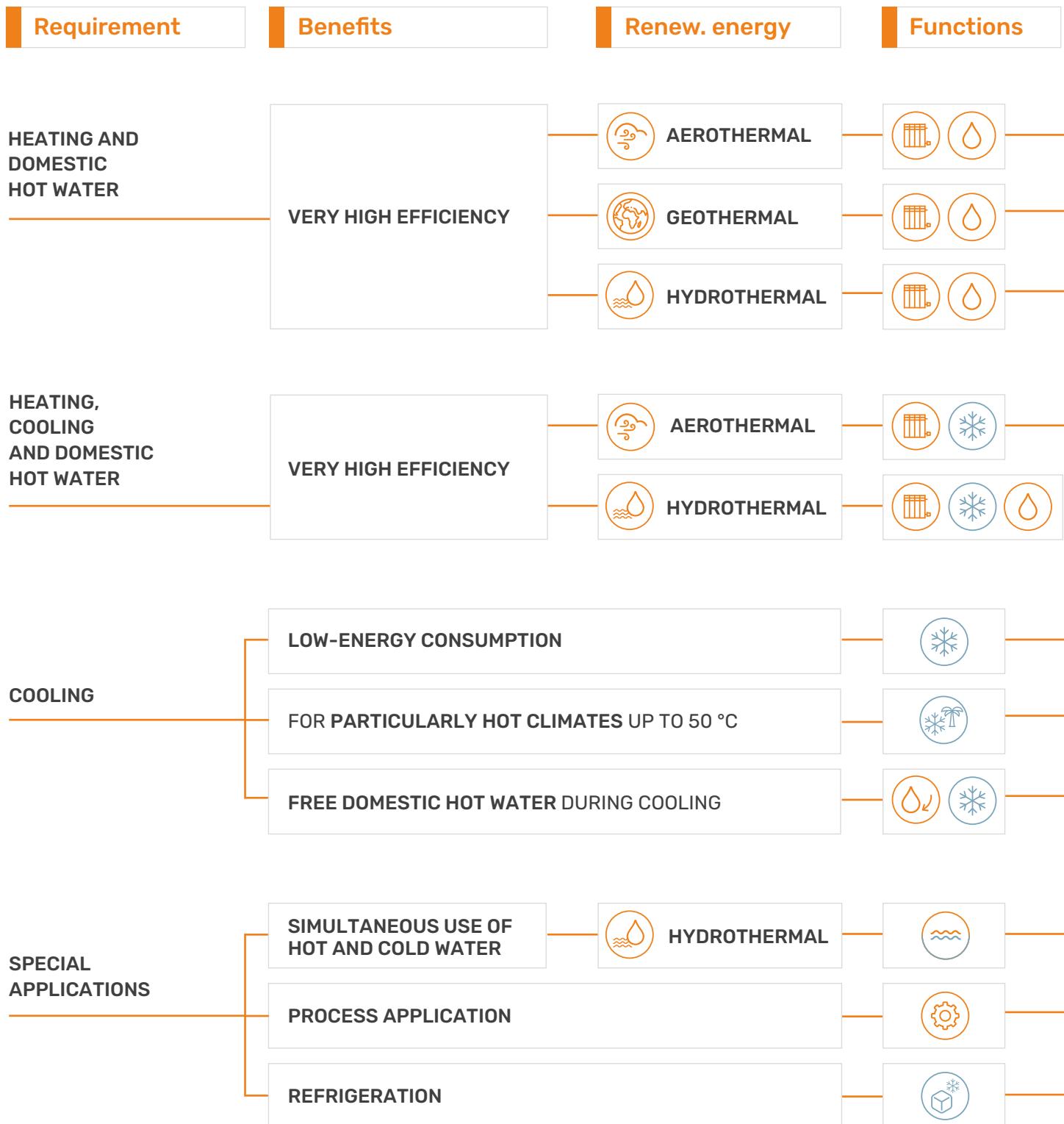
Because they use natural gas and renewable energy. For every equivalent kW of natural gas used, each GAHP adds 0,6 kW of renewable energy.

By using a natural refrigerant (ammonia), which is not subject to restrictions and declaration requirements, GAHP has a near-zero impact on global warming, solving the problem of HFCs. They are also exempt from F-Gas regulation.

The Joint Research Centre - European Commission, in a study on different cooling technologies, has highlighted that the GAHP heat pump is the technology with the lowest overall environmental impact in terms of emissions harmful to human health (NOx, PM, VOC, COx).

Abso Pro

Selection guide



Legend

ROBUR products

GAHP A gas and aerothermal renewable energy absorption heat pump page 22

GAHP GS gas and geothermal renewable energy absorption heat pump page 28

GAHP WS gas and hydrothermal renewable energy absorption heat pump page 31

GAHP AR reversible gas and aerothermal renewable energy absorption heat pump page 25

GAHP WS gas and hydrothermal renewable energy absorption heat pump page 31

GA ACF gas absorption chiller page 39

GA ACF HT gas absorption chiller for high ambient temperatures page 41

GA ACF HR gas absorption chiller-heater with free heat recovery page 36

GAHP WS gas and hydrothermal renewable energy absorption heat pump page 31

GA ACF TK gas absorption chiller page 41

GA ACF LB gas absorption chiller for negative temperature water production page 41



Cooling



Space heating



Domestic hot water



Domestic hot water from free heat recovery



Simultaneous use of hot and cold water



Process applications



Refrigeration



Cooling for tropical climates



Aerothermal renewable energy



Geothermal renewable energy



Hydrothermal renewable energy

Overview | Abso Pro Range

The professional line that has become synonymous with cutting-edge technology for space heating, cooling and domestic hot water production. High-value added solutions powered by natural gas and renewable energy, dedicated to condominiums, hotels, companies, offices, public and commercial spaces. They offer **savings of up to 50%** compared to boilers, **thermal efficiency of up to 174% and a reduction of up to 86% of the electricity requirement** compared to electric heat pumps. Serving the well-being of people and the planet for over 30 years.

[See more on robur.com](http://robur.com)

GAHP Heat pumps

A range of gas and renewable energy absorption heat pumps for heating, cooling and domestic hot water production, in three different types: aerothalermal, geothermal and hydrothermal.



GA Chillers

Chillers and absorption chiller-heaters to simultaneously cool and also produce free domestic hot water at the same time. This range guarantees a consistent reduction of electricity requirements compared to electrical systems.



AY Boilers

Outdoor condensing boilers for heating and domestic hot water production up to 80 °C.

They're an ideal complement to heat pumps and absorption chillers for air conditioning in any environment.



GITIÉ Integrated thermal packages

Integrated multi-service thermal packages with absorption heat pump or chiller and condensing boiler. A compact system characterized by high efficiency and power in smaller spaces.

Totally integrated, tested and customised for the customer's specific space heating, cooling and high domestic hot water production needs.



LINK

Complete all-in-one solutions – including high power, for heating, cooling and domestic hot water – ready to be installed. Systems that are fully customisable to the needs of the project, specifically tested before installation, characterised by maximum flexibility of combinations, efficiency and performance.



GAHP

Gas and renewable energy
absorption heat pump

Super-efficient technology today, looking ahead to tomorrow. Inspired by an idea of Albert Einstein and Leo Szilard, GAHP absorption heat pumps combine the use of natural gas with renewable energy from air, ground and water for maximum efficiency heating with efficiencies of up to 174%. A technology capable of driving towards de-carbonisation through a real and immediately available proposal. It's a complete product that produces savings for all environments.

Efficient.
Naturally.

GAHP A

Modulating condensing gas and aerothermal renewable energy absorption heat pump

High-efficiency heating and domestic hot water production.



	Efficiency 164%
	Savings up to 40%

	Water temperature up to 70 °C
	Air temperature down to -30 °C

	Refrigerant natural
	F-Gas exempt

Advantages

- Exceeds a thermal efficiency (GUE) by 164%⁽¹⁾ due to the use of aerothermal renewable energy
- Saves up to 40% on heating costs compared to the best condensing boilers
- Increases the total efficiency of the system when integrated with boilers with lower energy performance
- Enhances the value of the property by increasing its energy performance
- At -7 °C it guarantees an efficiency of 154%. This avoids the need for back-up systems (heating elements), which reduce seasonal performance coefficients and increase consumption
- It is environmentally friendly and exempt from F-Gas regulations as it does not use fluids that cause climate change (HFCs), but only natural refrigerants that are not subject to restrictions and declaration requirements

⁽¹⁾GUE – Gas Utilization Efficiency – equivalent to COP 4,10 calculated with a 2.5x energy conversion factor.

Incentives



Local green incentives

Models

Standard

Indoor

Outdoor

Low-noise

Outdoor

Applications

- Ideal for heating new or existing buildings with low-, medium- and high-temperature systems.



Outdoor in residential and large industrial buildings



Indoor in central heating plant

Technical data

HEATING MODE			GAHP A Standard	GAHP A Low-noise	GAHP A Indoor
Seasonal space heating energy efficiency class (ErP) medium-temperature application (55 °C)			A+	A+	A+
Heat output for each unit	Outdoor temperature/ Water outlet temperature	A7W35 A7W50	kW kW	41,3 38,3	41,3 38,3
GUE efficiency	Outdoor temperature/ Water outlet temperature	A7W35 A7W50	% %	164 152	164 152
Heat input	real		kW	25,2	25,2
Hot water outlet temperature	maximum for heating maximum for DHW		°C °C	65 70	65 70
Hot water inlet temperature	maximum for heating maximum for DHW		°C °C	55 60	55 60
Heating water flow	nominal		l/h	2.500	2.500
Pressure drop heating mode	nominal water flow (A7W50)		bar	0,31 ⁽¹⁾	0,31 ⁽¹⁾
Ambient air temperature (dry bulb)	maximum minimum		°C °C	45 -15 ⁽²⁾	45 -15 ⁽²⁾
ELECTRICAL SPECIFICATIONS					
Power supply	voltage frequency		V Hz	230 50	230 50
Electrical power absorption	nominal minimum		kW	0,84 ⁽³⁾ -	0,77 ⁽³⁾ 0,50 ⁽³⁾
Degree of protection	IP		-	X5D	X5D
INSTALLATION DATA					
Gas consumption	G20 natural gas (nominal) G30 (nominal) G31 (nominal)		m³/h kg/h kg/h	2,72 ⁽⁵⁾ 2,03 ⁽⁶⁾ 2,00 ⁽⁶⁾	2,72 ⁽⁵⁾ 2,03 ⁽⁶⁾ 2,00 ⁽⁶⁾
Sound pressure Lp at 5 metres (max)			dB(A)	57,6 ⁽⁷⁾	52,0 ⁽⁷⁾
Sound pressure Lp at 5 metres (min)			dB(A)	-	49,0 ⁽⁷⁾
Water fitting	type thread		- "	F 11/4	F 11/4
Gas connection	type thread		- "	F 3/4	F 3/4
Flue gas exhaust	diameter (Ø)		mm	80	80
Dimensions	width depth		mm	854 ⁽⁸⁾ 1.260	854 ⁽⁸⁾ 1.260
Weight	height in operation		mm kg	1.445 ⁽⁸⁾ 390	1.540 400
					917 1.292
					1.580 405

⁽¹⁾ For flows other than nominal see Design Manual, Pressure losses Paragraph.

⁽²⁾ As an option, a version for operation down to -30 °C is available.

⁽³⁾ ±10% depending on power voltage and absorption tolerance of electric motors.

⁽⁴⁾ Value stated without air ducting. ±10% according to the power supply voltage and tolerance on electrical motors consumption.

⁽⁵⁾ PCI (G20) 34,02 MJ/m³ (15 °C - 1013 mbar).

⁽⁶⁾ PCI (G30/G31) 46,34 MJ/kg (15 °C - 1013 mbar).

⁽⁷⁾ Maximum sound pressure levels in free field, with directionality factor 2, obtained from the sound power level in compliance with standard EN ISO 9614. Data referred to 50 °C outlet temperature.

⁽⁸⁾ Overall dimensions excluding flue gas exhaust.

GAHP AR

Reversible gas and hydrothermal renewable energy absorption heat pump

High-efficiency gas heating and cooling with minimal electrical requirement.



Efficiency 150%
Electricity -86%
Hot water up to 60 °C

Cold water down to 7 °C
Heating and cooling all gas-powered

Refrigerant natural
F-Gas exempt

Advantages

- Exceeds a thermal efficiency (GUE) by 150%⁽¹⁾ thanks to the use of aerothermal renewable energy
- Saves up to 30% on heating compared to the best condensing boilers
- Enhances the value of the property by increasing its energy performance
- Reduces electricity requirements by up to 86% through the use of natural gas
- It is environmentally friendly and exempt from F-Gas regulations as it does not use fluids that cause climate change (HFCs), but only natural refrigerants that are not subject to restrictions and declaration requirements

⁽¹⁾GUE – Gas Utilization Efficiency – equivalent to COP 3,75 calculated with a 2.5x energy conversion factor.

Incentives



Local green incentives

Models

Standard

Outdoor



Low-noise

Outdoor



Applications

- Ideal for heating and cooling new or existing buildings where there is limited electrical availability or where there is no intention to increase the existing electrical requirement.



Application in summer and winter operation with underfloor heating system, fan coils

Technical data

HEATING MODE

Seasonal space heating energy efficiency class (ErP) medium-temperature application (55 °C)				GAHP AR Standard	GAHP AR Low-noise
				A+	
Heat output for each unit	Outdoor temperature/ Water outlet temperature	A7W35	kW	37,8	
		A7W50	kW	35,3	
GUE efficiency	Outdoor temperature/ Water outlet temperature	A7W35	%	150	
		A7W50	%	140	
Heat input	real		kW	25,2	
Hot water outlet temperature	maximum		°C	60	
Hot water inlet temperature	maximum		°C	50	
Heating water flow	nominal		l/h	3.040	
Pressure drop heating mode	at nominal water flow		bar	0,29 ⁽¹⁾	
Ambient air temperature (dry bulb)	maximum		°C	35	
	minimum		°C	-20	

COOLING MODE

Cooling output for each unit	Outdoor temperature/ Water outlet temperature	A35W7	kW	16,9
GUE efficiency	Outdoor temperature/ Water outlet temperature	A35W7	%	67
Cold water temperature (inlet)	maximum		°C	45
	minimum		°C	8
Cold water flow	nominal		l/h	2.900
Internal pressure drop	at nominal water flow		bar	0,31 ⁽¹⁾
Outdoor temperature	maximum		°C	45
	minimum		°C	0

ELECTRICAL SPECIFICATIONS

Power supply	voltage	V	230	
	frequency	Hz	50	
Electrical power absorption	nominal	kW	0,84 ⁽²⁾	0,87 ⁽²⁾
Degree of protection	IP	-		X5D

INSTALLATION DATA

Gas consumption	G20 natural gas (nominal)	m³/h	2,72 ⁽³⁾	
	G30 (nominal)	kg/h	2,03 ⁽⁴⁾	
	G31 (nominal)	kg/h	2,00 ⁽⁴⁾	
Sound pressure Lp at 5 metres (max)		dB(A)	57,6 ⁽⁵⁾	53,0 ⁽⁵⁾
Water fitting	type	-	F	
	thread	"	1 1/4	
Gas connection	type	-	F	
	thread	"	3/4	
Flue gas exhaust	diameter (Ø)	mm	80	
	width	mm	850	
Dimensions	depth	mm	1.230	
	height	mm	1.445 ⁽⁶⁾	1.540 ⁽⁶⁾
Weight	in operation	kg	380	390

⁽¹⁾ For flows other than nominal see Design Manual, Pressure losses Paragraph.

⁽²⁾ ±10% according to the power supply voltage and tolerance on electrical motors consumption. Measured at outdoor temperature of 30 °C.

⁽³⁾ PCI (G20) 34,02 MJ/m³ (15 °C - 1013 mbar).

⁽⁴⁾ PCI (G30/G31) 46,34 MJ/kg (15 °C - 1013 mbar).

⁽⁵⁾ Maximum sound pressure levels in free field, with directionality factor 2, obtained from the sound power level in compliance with standard EN ISO 9614.

⁽⁶⁾ Overall dimensions excluding flue gas exhaust.

GAHP GS

Modulating condensing gas and geothermal renewable energy absorption heat pump

High-efficiency heating and domestic hot water production in systems using geothermal renewable energy.



	Efficiency 165%
	Geothermal probe cost -50%
	Electricity consumption very low

	F-Gas exempt
	Refrigerant natural

Advantages

- Exceeds a thermal efficiency (GUE) by 165%⁽¹⁾, thanks to the use of renewable geothermal energy
- More than 50% cost savings on geothermal probes compared to electric heat pumps
- An efficient solution for domestic hot water production as well
- Saves up to 40% on heating costs compared to the best condensing boilers
- Enhances the value of the property by increasing its energy performance
- Minimises the need for electricity, thanks to the use of natural gas
- It is environmentally friendly and exempt from F-Gas regulations as it does not use fluids that cause climate change (HFCs), but only natural refrigerants that are not subject to restrictions and declaration requirements

⁽¹⁾GUE – Gas Utilization Efficiency – equivalent to COP 4,13 calculated with a 2.5x energy conversion factor.

Incentives



Local green incentives

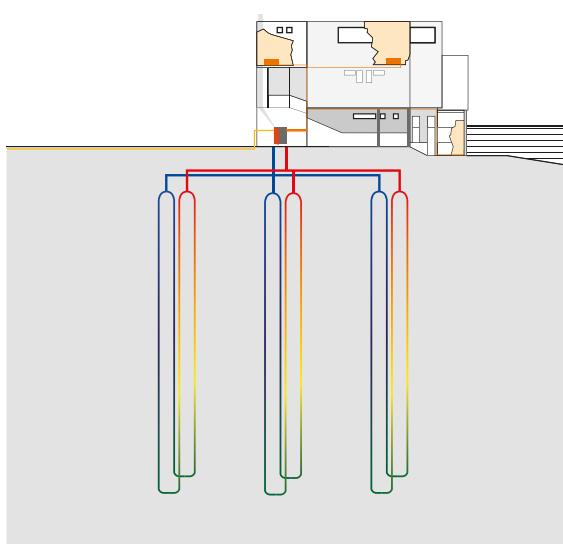
Models

Indoor

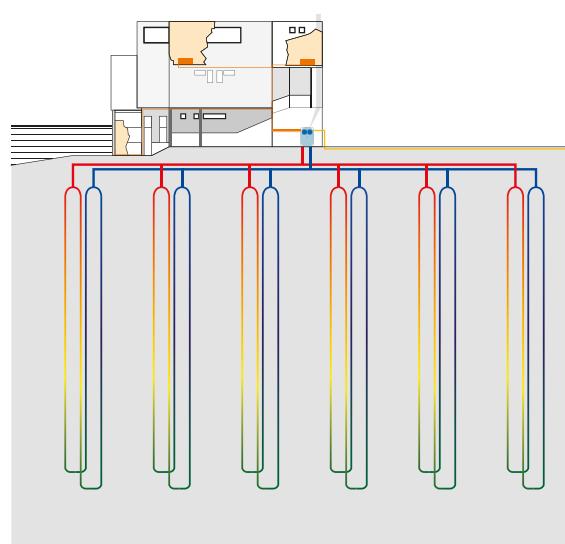
Outdoor

Applications

- Ideal for heating and domestic hot water production in new or existing buildings
- Enables cooling in 'free-cooling' mode (burner switched off) and active cooling (burner switched on)



GAHP GS gas absorption heat pump
3 125-metre probes



Electrical heat pump
6 125-metre probes

*Indicative example of application of a geothermal heating system of about 40 kW
The actual length of the probes depends on the conformation of the terrain and the conditions of use of the geothermal heat pump*

Technical data

HEATING MODE

Seasonal space heating energy efficiency class (ErP) medium-temperature application (55 °C)				GAHP GS A++
Heat output for each unit	Evaporator inlet temperature/ Delivery temperature	BOW35 kW	41,6	
GUE efficiency	Evaporator inlet temperature/ Delivery temperature	BOW35 %	165	
Heat input	real	kW	25,2	
Hot water outlet temperature	maximum for heating maximum for DHW	°C	65 70	
Hot water inlet temperature	maximum for heating maximum for DHW	°C	55 60	
Heating water flow	nominal	l/h	3.170	
Pressure drop heating mode	at nominal water flow (BOW50)	bar	0,49 ⁽¹⁾	
Ambient air temperature (dry bulb)	maximum minimum	°C	45 0 ⁽²⁾	

RENEWABLE SOURCE OPERATING CONDITIONS

Power recovered from renewable source	Evaporator inlet temperature/ Delivery temperature	BOW35 kW	16,4
Renewable source water return temperature	maximum	°C	45
Renewable source delivery water temperature	minimum	°C	-5
Renewable source water flow rate (with 25% glycol)	nominal (BOW50)	l/h	3.020
Renewable source pressure drop	at nominal water flow	bar	0,51 ⁽¹⁾

ELECTRICAL SPECIFICATIONS

Power supply	voltage	V	230
	frequency	Hz	50
Electrical power absorption	nominal	kW	0,41 ⁽³⁾
Degree of protection	IP	-	X5D

INSTALLATION DATA

Gas consumption	G20 natural gas (nominal) G30 (nominal) G31 (nominal)	m³/h	2,72 ⁽⁴⁾ 2,03 ⁽⁵⁾ 2,00 ⁽⁵⁾
Sound pressure Lp at 5 metres (max)		dB(A)	44,1 ⁽⁶⁾
Water fitting	type thread	- "	F 1 1/4
Gas connection	type thread	- "	F 3/4
Safety valve outlet duct fitting		"	1 1/4 ⁽⁷⁾
Flue gas exhaust	diameter (Ø)	mm	80
Dimensions	width depth height	mm	848 ⁽⁸⁾ 690 1.278
Weight	in operation	kg	300

⁽¹⁾ For flows other than nominal see Design Manual, Pressure losses Paragraph.

⁽²⁾ Data referred to the indoor version. For the outdoor version, the minimum ambient air temperature is -15 °C. A special outdoor version is available as an option for operation down to -30 °C.

⁽³⁾ ±10% depending on power voltage and absorption tolerance of electric motors.

⁽⁴⁾ PCI (G20) 34,02 MJ/m³ (15 °C - 1013 mbar).

⁽⁵⁾ PCI (G30/G31) 46,34 MJ/kg (15 °C - 1013 mbar).

⁽⁶⁾ Maximum sound pressure levels in free field, with directionality factor 2, obtained from the sound power level in compliance with standard EN ISO 9614: C type installation.

⁽⁷⁾ Indoor version only.

⁽⁸⁾ Overall dimensions excluding flue gas exhaust.

GAHP WS

Modulating condensing gas and hydrothermal renewable energy absorption heat pump

High-efficiency heating and cooling and domestic hot water production in systems using hydrothermal renewable energy. Simultaneous use of hot and cold water.



Efficiency 174%
Overall thermal efficiency 248%
Electricity consumption very low

F-Gas exempt
Refrigerant natural

Advantages

- Exceeds a thermal efficiency (GUE) by 248%⁽¹⁾, in the case of simultaneous use of hot and cold water
- Thermal efficiency (GUE) of 174%⁽²⁾, using more than 50% hydrothermal renewable energy
- Efficient solution for domestic hot water production as well
- Saves up to 50% on heating costs compared to the best condensing boilers
- Minimises electricity requirements by using natural gas
- It is environmentally friendly and exempt from F-Gas regulations as it does not use fluids that cause climate change (HFCs), but only natural refrigerants that are not subject to restrictions and declaration requirements

⁽¹⁾GUE - Gas Utilization Efficiency - equivalent to COP 6,20 calculated with a 2.5x energy conversion factor.

⁽²⁾GUE - Gas Utilization Efficiency - equivalent to COP 4,35 calculated with a 2.5x energy conversion factor.

Incentives



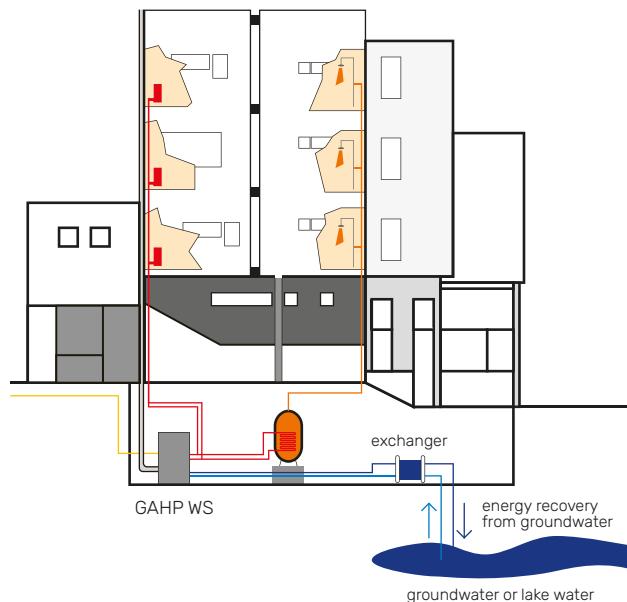
Local green incentives

Models

Indoor

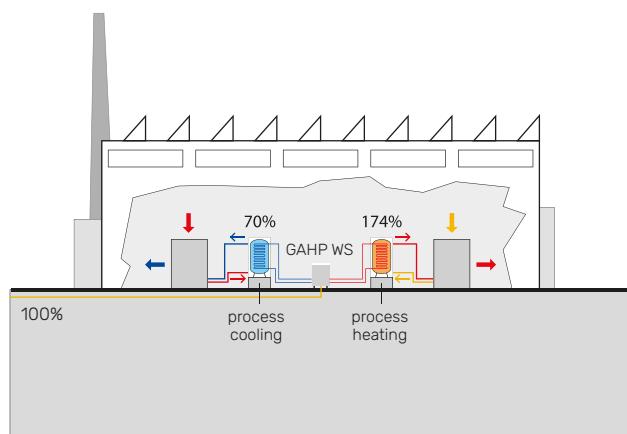
Outdoor

Applications



Heating, cooling and domestic hot water production

- Ideal for heating and domestic hot water production in new or existing buildings
- Production of cold water for cooling in summer, pre-heating of domestic hot water or production of hot water for other uses (e.g. swimming pool heating)



Simultaneous use of hot and cold water

- Simultaneous production of heating and cooling for process plants (hospitals, production cycles or liquid ring systems)
- Thermal energy added to the cooling energy produced at the same time gives an overall efficiency of 248%

gas thermal input	100%
heating	174%
cooling	74%
total efficiency	248%

Technical data

HEATING MODE

Seasonal space heating energy efficiency class (ErP) medium-temperature application (55 °C)				GAHP WS A++
Heat output for each unit	Evaporator inlet temperature/ Delivery temperature	W10W35 W10W50	kW kW	43,9 41,6
GUE efficiency	Evaporator inlet temperature/ Delivery temperature	W10W35 W10W50	% %	174 165
Heat input	real		kW	25,2
Hot water outlet temperature	maximum for heating maximum for DHW		°C °C	65 70
Hot water inlet temperature	maximum for heating maximum for DHW		°C °C	55 60
Heating water flow	nominal		l/h	3.570
Pressure drop heating mode	at nominal water flow (W10W50)		bar	0,57 ⁽¹⁾
Ambient air temperature (dry bulb)	maximum minimum		°C °C	45 0 ⁽²⁾

RENEWABLE SOURCE OPERATING CONDITIONS

Power recovered from renewable source	Evaporator inlet temperature/ Delivery temperature	W10W35 W10W50	kW kW	18,7 16,6
Renewable source water return temperature	maximum		°C	45
Renewable source delivery water temperature	minimum		°C	3
Renewable source water flow	nominal (W10W50)		l/h	2.850
Renewable source pressure drop	at nominal water flow		bar	0,38 ⁽³⁾

ELECTRICAL SPECIFICATIONS

Power supply	voltage	V	230
	frequency	Hz	50
Electrical power absorption	nominal	kW	0,41 ⁽³⁾
Degree of protection	IP	-	X5D

INSTALLATION DATA

Gas consumption	G20 natural gas (nominal) G30 (nominal) G31 (nominal)	m³/h kg/h kg/h	2,72 ⁽⁴⁾ 2,03 ⁽⁵⁾ 2,00 ⁽⁵⁾
Sound pressure Lp at 5 metres (max)		dB(A)	44,1 ⁽⁶⁾
Water fitting	type thread	- "	F 1 1/4
Gas connection	type thread	- "	F 3/4
Safety valve outlet duct fitting		"	1 1/4 ⁽⁷⁾
Flue gas exhaust	diameter (Ø)	mm	80
Dimensions	width depth height	mm mm mm	848 ⁽⁸⁾ 690 1.278
Weight	in operation	kg	300

⁽¹⁾ For flows other than nominal see Design Manual, Pressure losses Paragraph.

⁽²⁾ Data referred to the indoor version. For the outdoor version, the minimum ambient air temperature is -15 °C. A special outdoor version is available as an option for operation down to -30 °C.

⁽³⁾ ±10% depending on power voltage and absorption tolerance of electric motors.

⁽⁴⁾ PCI (G20) 34,02 MJ/m³ (15 °C - 1013 mbar).

⁽⁵⁾ PCI (G30/G31) 46,34 MJ/kg (15 °C - 1013 mbar).

⁽⁶⁾ Maximum sound pressure levels in free field, with directionality factor 2, obtained from the sound power level in compliance with standard EN ISO 9614; C type installation.

⁽⁷⁾ Indoor version only.

⁽⁸⁾ Overall dimensions excluding flue gas exhaust.

GA

Gas absorption chiller

Cooling that saves you money, even in electricity use. Gas absorption chillers and chiller-heaters, HFC-free, which guarantee operational continuity and reduced maintenance as they do not use compressors. From cooling in places with limited availability of electricity, to particularly hot climates or for the production of cooling and free domestic hot water at the same time. A complete and trustworthy range that can also be managed remotely.

The cold
born
of flames.

GA ACF HR

Gas absorption chiller-heater with heat recovery

Cooling and simultaneous production of free domestic hot water thanks to heat recovery.



Total efficiency 180%
Production of free hot water up to 75° C while in use

Electricity -86%
F-Gas exempt

Refrigerant
natural

Advantages

- During cooling operation, free hot water up to 75°C is available for pre-heating and domestic hot water production
- Reduces electricity requirements by up to 86% through the use of natural gas
- It is environmentally friendly and exempt from F-Gas regulations as it does not use fluids that cause climate change (HFCs), but only natural refrigerants that are not subject to restrictions and declaration requirements

Models

Standard

Outdoor

Low-noise

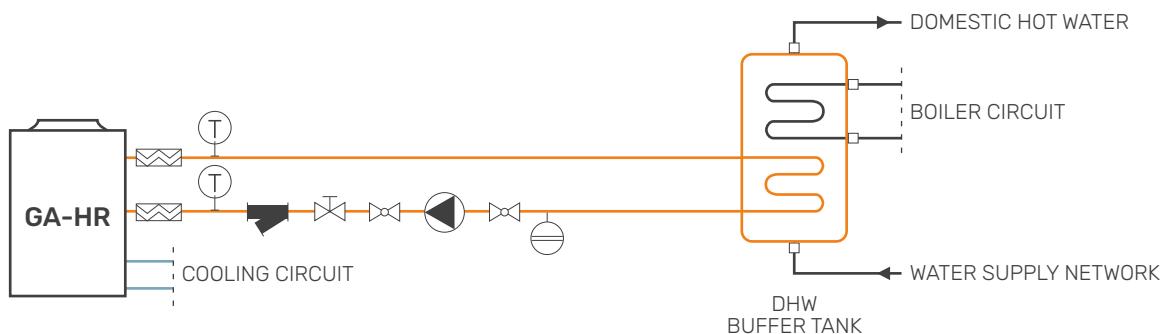
Outdoor

Applications

- Ideal for hotels, offices, shopping centres, wellness and sports centres requiring cooling in the absence or insufficient electrical supply
- Can be used in post-heating circuits connected to air handling units

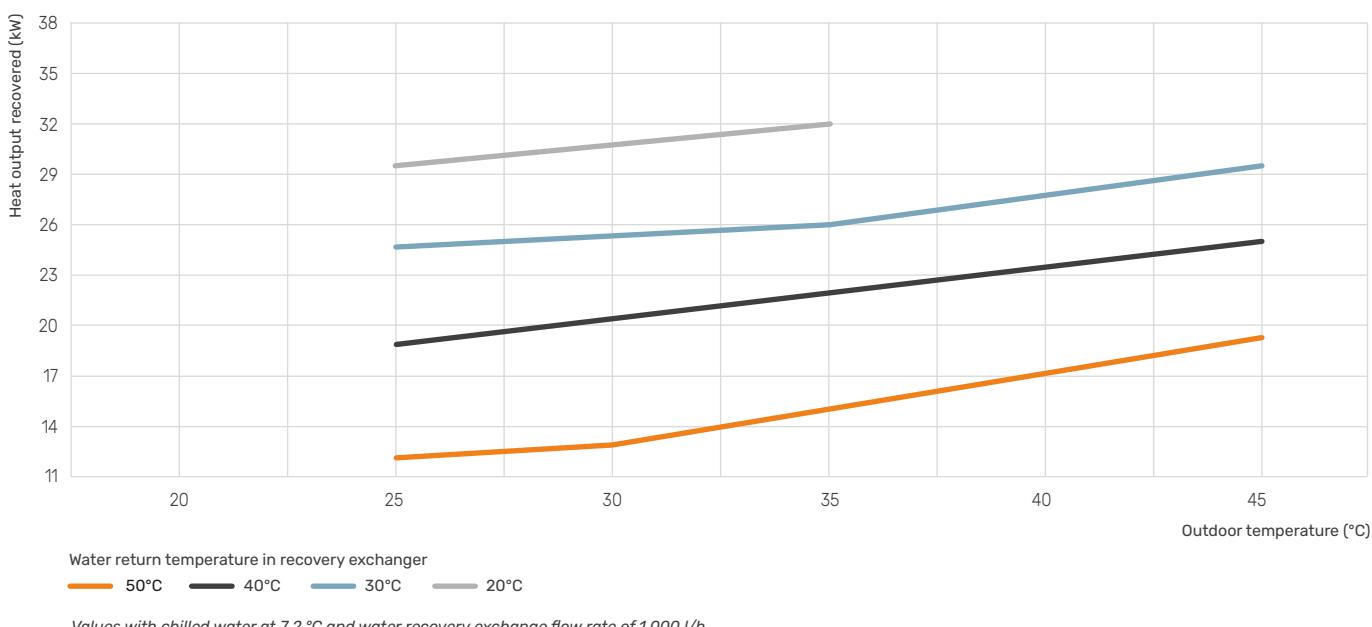
For the production of domestic hot water, different system solutions can be used, such as double coil buffer tanks or several tanks with dedicated preheating buffer tanks.

In both cases, the system must include the use of a support boiler, to guarantee the supply of domestic hot water even during the period of non-use or shutdown of the GAHP HR unit.



Performance

Free heat output recovery in cooling



Technical data

COOLING MODE			ACF HR Standard	ACF HR Low-noise
Cooling output for each unit	Outdoor temperature/ Water outlet temperature	A35W7	kW	17,7
Heat input	real		kW	25,0
Cold water temperature (outlet)	minimum		°C	3 ⁽¹⁾
Cold water temperature (inlet)	maximum		°C	45
Cold water flow	minimum		°C	8
Internal pressure drop	nominal		l/h	2.770
Outdoor temperature	at nominal water flow		bar	0,29 ⁽²⁾
	maximum		°C	45
	minimum		°C	0

RECOVERY CIRCUIT OPERATION

Recovery unit heat output	Outdoor temperature/ Inlet temperature/ 1000 l/h water flow	A35W40	kW	21,0
Hot water temperature (inlet)	nominal		°C	40
Hot water temperature (outlet)	nominal		°C	58
Hot water flow	nominal		l/h	1.000
Total GUE (40 °C inlet temperature)	Outdoor temperature/ Inlet temperature/ 1000 l/h water flow	A35W7	%	155

ELECTRICAL SPECIFICATIONS

Power supply	voltage	V	230	
	frequency	Hz	50	
Electrical power absorption	nominal	kW	0,82 ⁽³⁾	0,87 ⁽³⁾
Degree of protection	IP	-		X5D

INSTALLATION DATA

Gas consumption	G20 natural gas (nominal)	m³/h	2,68 ⁽⁴⁾	
	GPL G30/G31 (nominal)	kg/h	1,97 ⁽⁵⁾	
Sound pressure Lp at 5 metres (max)		dB(A)	57,6 ⁽⁶⁾	53,0 ⁽⁶⁾
Maximum water pressure in operation		bar	4,0	
Water fitting	type	-	F	
	thread	"	1 1/4	
Gas connection	type	-	F	
	thread	"	3/4	
Dimensions	width	mm	850	
	depth	mm	1.230	
	height	mm	1.445	1.540
Weight	in operation	kg	390	

⁽¹⁾ To be set (on demand) during the first start-up. Default Minimum Temperature = 4,5 °C.

⁽²⁾ For flows other than nominal see Design Manual, Pressure losses Paragraph.

⁽³⁾ ±10% according to the power supply voltage and tolerance on electrical motors

consumption. Measured at outdoor temperature of 30 °C.

⁽⁴⁾ PCI (G20) 34,02 MJ/m³ (15 °C ~ 1013 mbar).

⁽⁵⁾ PCI (G30/G31) 46,34 MJ/kg (15 °C - 1013 mbar).

⁽⁶⁾ Maximum sound pressure levels in free field, with directionality factor 2, obtained from the sound power level in compliance with standard EN ISO 9614.

GA ACF

Gas absorption chiller

Low-energy consumption cooling.



Electricity
-86%

Refrigerant
natural

F-Gas
exempt

Advantages

- Reduces electricity requirements by up to 86% through the use of natural gas
- It is environmentally friendly and exempt from F-Gas regulations as it does not use fluids that cause climate change (HFCs), but only natural refrigerants that are not subject to restrictions and declaration requirements
- Independent and modular, ensuring continuity of service to condition only when and how much is needed
- Low maintenance (no compressors)

Models

Standard

Outdoor



Low-noise

Outdoor



Applications

- Ideal for cooling especially where the availability of electricity is expensive or limited

Technical data

COOLING MODE

			ACF Standard	ACF Low-noise
Cooling output for each unit	Outdoor temperature/ Water outlet temperature	A35W7	kW	17,7
Heat input	real		kW	25,0
Cold water temperature (outlet)	minimum		°C	3 ⁽¹⁾
Cold water temperature (inlet)	maximum		°C	45
Cold water temperature (inlet)	minimum		°C	8
Cold water flow	nominal		l/h	2.770
Internal pressure drop	at nominal water flow		bar	0,29 ⁽²⁾
Outdoor temperature	maximum		°C	45
Outdoor temperature	minimum		°C	0

ELECTRICAL SPECIFICATIONS

	voltage	V	230
Power supply	frequency	Hz	50
Electrical power absorption	nominal	kW	0,82 ⁽³⁾ 0,87 ⁽³⁾
Degree of protection	IP	-	X5D

INSTALLATION DATA

Gas consumption	metano G20 (nominale)	m³/h	2,68 ⁽⁴⁾
	GPL G30/G31 (nominale)	kg/h	1,97 ⁽⁵⁾
Sound pressure Lp at 5 metres (max)		dB(A)	57,6 ⁽⁶⁾ 53,0 ⁽⁶⁾
Maximum water pressure in operation		bar	4,0
Water fitting	type	-	F
	thread	"	11/4
Gas connection	type	-	F
	thread	"	3/4
Dimensions	width	mm	850
	depth	mm	1.230
	height	mm	1.445 1.540
Weight	in operation	kg	360

⁽¹⁾ To be set (on demand) during the first start-up. Default Minimum Temperature = 4,5 °C.

⁽²⁾ For flows other than nominal see Design Manual, Pressure losses Paragraph.

⁽³⁾ ±10% according to the power supply voltage and tolerance on electrical motors consumption. Measured at outdoor temperature of 30 °C.

⁽⁴⁾ PCI (G20) 34,02 MJ/m³ (15 °C - 1013 mbar).

⁽⁵⁾ PCI (G30/G31) 46,34 MJ/kg (15 °C - 1013 mbar).

⁽⁶⁾ Maximum sound pressure levels in free field, with directionality factor 2, obtained from the sound power level in compliance with standard EN ISO 9614.

GA ACF special versions

Gas absorption chiller

Process, refrigeration and cooling applications in particularly hot climates.



Electricity
-86%

Refrigerant
natural

F-Gas
exempt

Advantages

- Reduces electricity requirements by up to 86% through the use of natural gas
- It is environmentally friendly and exempt from F-Gas regulations as it does not use fluids that cause climate change (HFCs), but only natural refrigerants that are not subject to restrictions and declaration requirements
- Independent and modular, ensuring continuity of service to condition only when and how much is needed
- Low maintenance (no compressors)

Models

Standard

Outdoor

Low-noise

Outdoor

Applications

TK Version

- Process cooling (e.g. greenhouses, mould cooling or in the production cycle, curing rooms)
- Cooling of temperature-controlled rooms all year round (metrology rooms, datacenter, labs)
- Cooling of rooms with a high thermal load with the need for cooling even in cold seasons

HT Version

- Cooling of civil, commercial and industrial environments in areas and climatic zones with outdoor temperatures of up to 50 °C

LB Version

- Cooling of rooms which require internal temperatures in accordance with hygiene standards to be maintained
- Refrigeration of food storage rooms and counters
- Process cooling in plants requiring negative fluid temperatures down to -10 °C

Technical data

COOLING MODE		A35W7	kW	17,7	17,1	--	ACFTK Low-n.	ACF HT Low-n.	ACF HT Low-n.	ACFLB Low-n.	ACFLB Low-n.
Cooling output for each unit	Outdoor temperature/ Water outlet temperature	A35W-5	kW	--							13,3
Heat input	real		kW			25,0					
Cold water temperature (outlet)	minimum		°C	3 ⁽¹⁾	5	-10					
Cold water temperature (inlet)	maximum		°C		45						
	minimum		°C		8	-7					
Cold water flow	nominal		l/h	2.770	2.675	2.600					
Internal pressure drop	at nominal water flow		bar	0,29 ⁽²⁾		0,42 ⁽²⁾					
Outdoor temperature	maximum		°C	45	50	45					
	minimum		°C	-12		0					

ELECTRICAL SPECIFICATIONS

Power supply	voltage	V	230								
	frequency	Hz		50							
Electrical power absorption	nominal	kW	0,82 ⁽³⁾	0,87 ⁽³⁾	0,82 ⁽³⁾	0,87 ⁽³⁾	0,82 ⁽³⁾	0,87 ⁽³⁾			
Degree of protection	IP	-			X5D						

INSTALLATION DATA

Gas consumption	G20 natural gas (nominal)	m³/h	2,68 ⁽⁴⁾								
	GPL G30/G31 (nominal)	kg/h	1,97 ⁽⁵⁾						1,94 ⁽⁵⁾		
sound pressure Lp at 5 metres (max)		dB(A)	57,6 ⁽⁶⁾	53,0 ⁽⁶⁾	57,6 ⁽⁶⁾	53,0 ⁽⁶⁾	57,6 ⁽⁶⁾	53,0 ⁽⁶⁾			
Water fitting	type	-			F						
	thread	"			1 1/4						
Gas connection	type	-			F						
	thread	"			3/4						
Dimensions	width	mm			850						
	depth	mm			1.230						
	height	mm	1.445	1.540	1.445	1.540	1.445	1.540			

⁽¹⁾ To be set (on demand) during the first start-up. Default Minimum Temperature = 4,5 °C.

⁽²⁾ For flows other than nominal see Design Manual, Pressure losses Paragraph.

⁽³⁾ ±10% according to the power supply voltage and tolerance on electrical motors consumption. Measured at outdoor temperature of 30 °C.

⁽⁴⁾ PCI (G20) 34,02 MJ/m³ (15 °C - 1013 mbar).

⁽⁵⁾ PCI (G30/G31) 46,34 MJ/kg (15 °C - 1013 mbar).

⁽⁶⁾ Maximum sound pressure levels in free field, with directionality factor 2, obtained from the sound power level in compliance with standard EN ISO 9614.



AY condensing

Condensing boiler

The Robur AY series condensing boiler is the ideal complement to gas absorption heat pump solutions. It's a reliable and easy-to-install all-round compatibility, it can easily power underfloor heating systems or the more classic radiators. It provides peak power where climatic or economic conditions make it convenient and provides domestic hot water production.

**Three
condensation
sizes for the
best possible
integration.**

AY condensing

Outdoor modulating condensing
boilers

Heating and domestic hot water
production.
An ideal complement to absorption
solutions in any environment.



	Integration Robur absorption solutions
	Hot water up to 80 °C

	3 heat output options up to 100 kW
	Installation for outdoor temperatures down to -25 °C

Advantages

- Ideal for thermal integration of Robur absorption solutions
- Provides optimal peak heat output where climatic or economic conditions make it convenient
- 3 different sizes of modulating boiler output can be chosen
- They are designed for outdoor installation for outdoor temperatures down to -25 °C

Incentives



Local green incentives

Models

Standard

Outdoor	
---------	--

Technical data

HEATING MODE

			AY 35	AY 50	AY 100
Seasonal space heating energy efficiency class (ErP)			A	-	-
Heat input	nominal (1013 mbar - 15 °C) ⁽¹⁾	kW	34,0	50,0	99,8
	minimum ⁽¹⁾	kW	4,1	5,0	
Operating point 80/60	Nominal heat input	effective power kW	33,4	49,2	98,4
Operating point 50/30	Nominal heat input	efficiency %	98,2	98,4	98,5
Operating point Tr = 30 °C	Heat input 30%	efficiency %	106,4	106,8	
Ambient air temperature (dry bulb)	maximum	°C		45	
	minimum	°C		-15	

ELECTRICAL SPECIFICATIONS

Power supply	voltage	V	230		
	frequency	Hz		50	
Electrical power absorption	nominal	kW	0,22	0,25	0,49

INSTALLATION DATA

Gas consumption	G20 natural gas (nominal)	m³/h	3,60	5,29	10,58
	G30 (nominal)	kg/h	2,68	3,94	7,88
	G31 (nominal)	kg/h	2,64	3,88	7,77
Water fitting	type	-		F	
	thread	"		11/4	11/2
Gas connection	type	-		M	
	thread	"		3/4	1
Circulating pump data	residual pressure head at nominal flow rate	boiler only	bar	0,44	
	nominal flow at the maximum available head		l/h	2.600	2.350
Expansion tank volume		l		10	
Dimensions	width	mm		465	720
	depth	mm		575	
	height	mm		1.184	
Weight	in operation	kg	80	90	134

⁽¹⁾ Relative to NCV (net calorific value)

GITIÉ

Integrated thermal packages

The GITIÉ integrated multi-service packages for outdoor installation combine the winning features of two technologies: the gas and aerothermal renewable energy absorption heat pump (or the chiller) and the condensing boiler. GITIÉ products are ideal for installation in residential, industrial, commercial and hospitality buildings, and can provide up to 3 services: high-efficiency heating, domestic hot water production up to 80 °C and cooling with minimal electrical requirements. The range is available in 3 preassembled models ready for simple and safe installation.

GITIÉ: up to
3 functions
in one
convenient
product.

GITIÉ AHAY

Integrated multi-service package for outdoor use

System consisting of gas and aerothermal renewable energy absorption **heat pump** and outdoor **condensing boiler**

Heating and domestic hot water production.



Heat pump thermal efficiency 164%
Hot water for heating up to 65° C
Domestic hot water up to 80° C

Refrigerant natural
F-Gas exempt
Electricity consumption very low

Advantages

- Totally integrated, tested package, customised to the customer's needs
- Greatly simplifies the implementation of the system, as the heat pump and boiler hybrid system is already preassembled in a single unit
- Up to 40% savings compared to boilers
- It is environmentally friendly and exempt from F-Gas regulations as it does not use fluids that cause climate change (HFCs), but only natural refrigerants that are not subject to restrictions and declaration requirements
- Available in 2 different boiler heat outputs (35kW and 50kW)

Incentives



Local green incentives

GITIÉ ARAY

Integrated multi-service package for outdoor use

System consisting of reversible gas and aerothermal renewable energy absorption **heat pump** and outdoor **condensing boiler**

Heating, domestic hot water production and cooling.



Heat pump thermal efficiency
150%

Hot water for heating
up to 60° C

Cold water for cooling
down to 7° C

Domestic hot water
up to 80° C

Refrigerant
natural

Electricity consumption
very low

Advantages

- Totally integrated, tested package, customised to the customer's needs
- Greatly simplifies the implementation of the system, as the heat pump and boiler hybrid system is already preassembled in a single unit
- Up to 40% savings compared to boilers
- It is environmentally friendly and exempt from F-Gas regulations as it does not use fluids that cause climate change (HFCs), but only natural refrigerants that are not subject to restrictions and declaration requirements
- Available in 2 different boiler heat outputs (35kW and 50kW)

Incentives



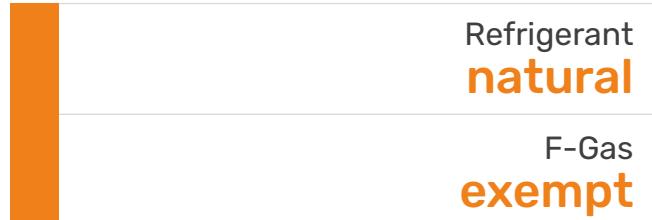
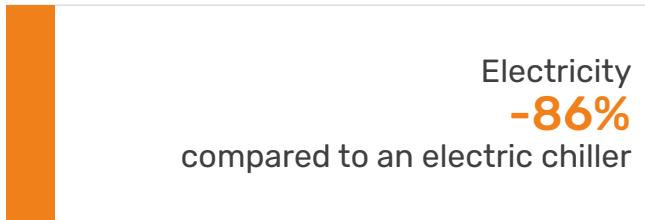
Local green incentives

GITIÉ ACAY

Integrated multi-service package for outdoor use

System consisting of gas absorption **chiller** and outdoor **condensing boiler**

Heating, domestic hot water production and cooling with minimal electrical draw.



Advantages

- Totally integrated, tested package, customised to the customer's needs
- Greatly simplifies the implementation of the system, as the heat pump and boiler hybrid system is already preassembled in a single unit
- It is environmentally friendly and exempt from F-Gas regulations as it does not use fluids that cause climate change (HFCs), but only natural refrigerants that are not subject to restrictions and declaration requirements
- Provides cooling energy where the availability of electricity is limited or very expensive
- Available in 2 different boiler heat outputs (35kW and 50kW)

Incentives



Local green incentives

Models

Standard

- 2-pipe
- 4-pipe
- with circulation pump



Low-noise

- 2-pipe
- 4-pipe
- with circulation pump



Applications

- Residential, industrial, commercial and accommodation buildings
- Energy renovation of both new and existing buildings with low-temperature (underfloor heating and fan coils) or high-temperature (radiators) distribution systems



Equipment and accessories

All Gitié units are equipped with the following components:

- Service plate for hydraulic and gas connections external to the unit
- Electrical panel prepared for:
 - connection of external operating consents (room thermostating, time programming, etc.).
 - connection to the Direct Digital Controller (optional)
- Base made of steel beams for supporting the unit and for possible handling

Low-noise version

Version equipped with a low-noise fan and internal shrouding in sound-absorbing casing. Ideal for installations in areas where special attention is paid to limiting noise emissions.

The units can be equipped as detailed below:

Gitié AHAY integrated package version

Version	Boiler	Pipes	Hydraulic circuit	Fan
AHAY35/4	AY 35	4	independent	standard
AHAY35/4 S1	AY 35	4	independent	low-noise S1
AHAY35/2	AY 35	2	single	standard
AHAY35/2 S1	AY 35	2	single	low-noise S1
AHAY50/4	AY 50	4	independent	standard
AHAY50/4 S1	AY 50	4	independent	low-noise S1
AHAY50/2	AY 50	2	single	standard
AHAY50/2 S1	AY 50	2	single	low-noise S1

Gitié ARAY integrated package version

Version	Boiler	Pipes	Hydraulic circuit	Simultaneous operation	Fan
ARAY35/4	AY 35	4	independent	yes	standard
ARAY35/4 S	AY 35	4	independent	yes	low-noise S
ARAY35/2	AY 35	2	single	yes	standard
ARAY35/2 S	AY 35	2	single	yes	low-noise S
ARAY50/4	AY 50	4	independent	no ⁽¹⁾	standard
ARAY50/4 S	AY 50	4	independent	no ⁽¹⁾	low-noise S
ARAY50/2	AY 50	2	single	no ⁽¹⁾	standard
ARAY50/2 S	AY 50	2	single	no ⁽¹⁾	low-noise S

⁽¹⁾ In 2 pipe versions operation may only be simultaneous when the GAHP-AR unit operates in heating mode.

Gitié ACAY integrated package version

Version	Boiler	Pipes	Hydraulic circuit	Simultaneous operation	Fan
ACAY35/4	AY 35	4	independent	yes	standard
ACAY35/4 S	AY 35	4	independent	yes	low-noise S
ACAY35/2	AY 35	2	single	yes	standard
ACAY35/2 S	AY 35	2	single	yes	low-noise S
ACAY50/4	AY 50	4	independent	no	standard
ACAY50/4 S	AY 50	4	independent	no	low-noise S
ACAY50/2	AY 50	2	single	no	standard
ACAY50/2 S	AY 50	2	single	no	low-noise S

All the Gitié models can be made with 35kW or 50kW boilers while maintaining the same physical footprint.

Technical data

HEATING MODE ⁽¹⁾		GITIÉ AHAY35	GITIÉ ARAY35	GITIÉ ACAY35
Seasonal space heating energy efficiency class (ErP) medium-temperature application (55 °C)		A++	A+	A
Heat output (A7W35)	kW	77,7	74,2	--
GUE efficiency (A7W35)	%	131	125	--
Heat output (A7W50)	kW	74,7	71,7	--
GUE efficiency (A7W50)	%	126	121	--
Condensing boiler heat output (operating point 80/60 °C)	kW	33,4	33,4	33,4
Condensing boiler efficiency (operating point 50/30 °C)	%	106,4	106,4	106,4
Maximum hot water outlet temperature for space heating/domestic hot water	°C	65/80	60/80	80/80
Maximum hot water inlet temperature for space heating/domestic hot water	°C	55/70	50/70	70/70
Ambient air temperature (dry bulb)	maximum	°C	40	45
	minimum	°C	-15 ⁽²⁾	-15 ⁽²⁾
				-15 ⁽²⁾

COOLING MODE

Cooling output (A35/W7)	kW	--	16,9	17,72
GUE efficiency	%	--	67	71
Minimum cold water outlet temperature	°C	--	3	3
Maximum/minimum cold water inlet temperature	°C	--	45/6	45/6
Ambient air temperature (dry bulb)	maximum	°C	--	45
	minimum	°C	--	0
				0

BURNER SPECIFICATIONS

Maximum heat input		kW	59,2	59,2	59,0
Maximum gas consumption	natural gas G20 ⁽³⁾	m ³ /h	6,32	6,32	6,28
	LPG ⁽⁴⁾	kg/h	4,71	4,71	4,65

ELECTRICAL SPECIFICATIONS

Voltage			230V - 50Hz		
Nominal eletrical power absorption ⁽⁵⁾	standard version ⁽⁶⁾	kW	1,19	1,19	1,17
	low-noise version ⁽⁷⁾ fan at maximum/minimum speed	kW	1,12/0,85	1,22	1,22

INSTALLATION DATA

Weight in operation	standard version ⁽⁶⁾	kg	477	467	447
	low-noise version	kg	487	477	457
	standard version ⁽⁶⁾	dB(A)	57,6	57,6	57,6
Sound pressure Lp at 5 metres ⁽⁸⁾ in free field, with directionality factor 2	low-noise version ⁽⁷⁾ fan at maximum speed	dB(A)	52,0	53,0	53,0
	low-noise version ⁽⁷⁾ fan at minimum speed ⁽⁹⁾	dB(A)	49,0	--	--
Fittings	water outlet/inlet (4 pipes version)	" F	1 1/4	1 1/4	1 1/4
	water outlet/inlet (2 pipes version)	" F	1 1/4	1 1/4	1 1/4
	gas	" M	3/4	3/4	3/4
	absorption unit flue gas exhaust	mm	80	80	--
	boiler unit flue gas exhaust	mm	80	80	80
Degree of protection	IP	-	X5D	X5D	X5D

Dimensions ⁽¹⁰⁾	width	mm	1425	1425	1425
	depth	mm	1260	1260	1260
	standard version height	mm	1445	1445	1445
	low-noise version height	mm	1540	1540	1540

⁽¹⁾ Nominal conditions according to EN 12309.

⁽²⁾ Also available on demand for lower temperatures.

⁽³⁾ PCI 34,02 MJ/m³ (9,45 kWh/m³) a 15 °C - 1013 mbar.

⁽⁴⁾ PCI 46,34 MJ/kg (12,87 kWh/kg) a 15 °C - 1013 mbar.

⁽⁵⁾ ±10% depending on power voltage and absorption tolerance of electric motors.

⁽⁶⁾ Gitié AHAY standard version: energy efficiency class A+.

⁽⁷⁾ Low-noise version with high-efficiency modulating fan for lower noise emission.

⁽⁸⁾ Sound power level Lw AHAY standard version dB(A) 79,6, silenced version with fan at maximum speed dB(A) 74,0 and at minimum speed dB(A) 71,0; ARAY standard version dB(A) 79,6, silenced version dB(A) 75,0; ACAY standard version dB(A) 79,6, silenced version dB(A) 75,0, values detected in compliance with the intensity measurement methodology set forth by standard EN 9614.

⁽⁹⁾ Values (AHAY low-noise version with fan at minimum speed) provided for comparison with manufacturers who declare the sound pressure in partial load conditions.

⁽¹⁰⁾ Dimensions do not include flue gas exhaust.

HEATING MODE ⁽¹⁾

		GITIÉ AHAY50	GITIÉ ARAY50	GITIÉ ACAY50
Seasonal space heating energy efficiency class (ErP) medium-temperature application (55 °C)		--	A+	A
Heat output (A7W35)	kW	94,8	91,3	--
GUE efficiency (A7W35)	%	126	121	--
Heat output (A7W50)	kW	91,8	88,8	--
GUE efficiency (A7W50)	%	122	118	--
Condensing boiler heat output (operating point 80/60 °C)	kW	49,2	49,2	49,2
Condensing boiler efficiency (operating point 50/30 °C)	%	106,8	106,8	106,8
Maximum hot water outlet temperature for space heating/domestic hot water	°C	65/80	60/80	80/80
Maximum hot water inlet temperature for space heating/domestic hot water	°C	55/70	50/70	70/70
Ambient air temperature (dry bulb)	maximum	40	45	45
	minimum	°C	-15 ⁽²⁾	-15 ⁽²⁾

COOLING MODE

Cooling output (A35W7)	kW	--	16,9	17,72
GUE efficiency	%	--	67	71
Minimum cold water outlet temperature	°C	--	3	3
Maximum/minimum cold water inlet temperature	°C	--	45/6	45/6
Ambient air temperature (dry bulb)	maximum	°C	--	45
	minimum	°C	--	0

BURNER SPECIFICATIONS

Maximum heat input	kW	75,2	75,2	75,0
Maximum gas consumption	Natural gas G20 ⁽³⁾	m ³ /h	8,01	8,01
	LPG ⁽⁴⁾	kg/h	5,97	5,97

ELECTRICAL SPECIFICATIONS

Voltage	230V - 50Hz			
Nominal electrical power absorption ⁽⁵⁾	standard version ⁽⁶⁾	kW	1,22	1,22
	low-noise version ⁽⁷⁾ fan at maximum/minimum speed	kW	1,15/0,88	1,25

INSTALLATION DATA

Weight in operation	standard version ⁽⁶⁾	kg	490	480	460
	low-noise version	kg	500	490	470
Sound pressure Lp at 5 metres ⁽⁸⁾ in free field, with directionality factor 2	standard version ⁽⁶⁾	dB(A)	57,6	57,6	57,6
	low-noise version ⁽⁷⁾ fan at maximum speed	dB(A)	52,0	53,0	53,0
	low-noise version ⁽⁷⁾ fan at minimum speed ⁽⁹⁾	dB(A)	49,0	--	--
Fittings	water outlet/inlet (4 pipes version)	" F	1 1/4	1 1/4	1 1/4
	water outlet/inlet (2 pipes version)	" F	1 1/4	1 1/4	1 1/4
	gas	" M	¾	¾	¾
	absorption unit flue gas exhaust	mm	80	80	--
Degree of protection	boiler unit flue gas exhaust	mm	80	80	80
		IP	X5D	X5D	X5D
Dimensions ⁽¹⁰⁾	width	mm	1425	1425	1425
	depth	mm	1260	1260	1260
	standard version height	mm	1445	1445	1445
	low-noise version height	mm	1540	1540	1540

⁽¹⁾ Nominal conditions according to EN 12309.

⁽²⁾ Also available on demand for lower temperatures.

⁽³⁾ PCI 34,02 MJ/m³ (9,45 kWh/m³) a 15 °C - 1013 mbar.

⁽⁴⁾ PCI 46,34 MJ/kg (12,87 kWh/kg) a 15 °C - 1013 mbar.

⁽⁵⁾ ±10% depending on power voltage and absorption tolerance of electric motors.

⁽⁶⁾ Gitié AHAY standard version: energy efficiency class A+.

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⁽⁸⁾ Sound power level Lw AHAY standard version dB(A) 79,6, silenced version with fan at maximum speed dB(A) 74,0 and at minimum speed dB(A) 71,0; ARAY standard version dB(A) 79,6, silenced version dB(A) 75,0; ACAY standard version dB(A) 79,6, silenced version dB(A) 75,0, values detected in compliance with the intensity measurement methodology set forth by standard EN 9614.

⁽⁹⁾ Values (AHAY low-noise version with fan at minimum speed) provided for comparison with manufacturers who declare the sound pressure in partial load conditions.

⁽¹⁰⁾ Dimensions do not include flue gas exhaust.

LINK

**LINK gives you infinite
combinations of heating,
cooling and domestic
hot water**

Robur LINK preassembled packages are the complete all-in-one solutions for heating, cooling and domestic hot water production and are ready to be installed. Maximum customisation is guaranteed by a dedicated assembly line which combines gas and renewable energy absorption heat pumps with condensing boilers and chillers (depending on functional requirements) which bring together efficiency and maximum ease of installation in a single product. Take a look at the Robur LINK products to find the best one for your project.

**Modularity,
functionality
and efficiency.
Here's the
right LINK.**

Multiple preassembled packages for heating, domestic hot water production and cooling. In a word: LINK.

The thermal energy requirements for heating, domestic hot water and cooling are typically never equal and balanced in cooling systems. In addition, the power draws are never constant, but follow very different load profiles.

That's why we created LINK. They are factory preassembled systems made up of groups of heat pumps, condensing boilers and chillers. They are appropriately mounted on a single supporting structure, hydraulically and electrically wired to form a true outdoor thermo-cooling plant best suited to the energy requirements of the system.

There are many possible combinations with a range of fittings and versions:

LINK, heating-only heat pumps

For a modular heating and domestic hot water production system

LINK, reversible heat pumps

For a modular heating and cooling system

LINK, mixed heat pump and condensing boilers

For a modular HYBRID heating and domestic hot water production system

LINK, mixed heat pump and chillers

For a system with the most appropriate ratio of heat output to cooling output

LINK, heat pumps, boilers and chillers

For systems requiring heating/cooling and domestic hot water output to be separate

LINKs can be "customised" according to different system requirements:

Water circuits	2-, 4-, and 6 pipes
Fan model	Standard or Low-noise
Water circulation	with independent standard or oversize circulation pumps (one for each installed unit) or without circulation pumps on board

All LINKS have the following characteristics:

- They are equipped with their **own electrical panel** to which all mounted units are connected. The power supply and remote control are connected at a single point
- They are equipped with **2"-diameter stainless steel manifolds**, protected by closed-cell insulation and aluminium foil for hydraulic connection to the system. Available in 2-,4-, and 6-pipes versions (1, 2 or 3 independent water circuits)
- They are built on a **base consisting of steel C-beams** of various lengths depending on the number and type of units installed, with steel crossbeams designed to receive anti-vibration supports (available as accessories)
- They are equipped with an **exhaust manifold for flue gas condensate** (for models using GAHP A, GAHP GS, GAHP WS absorption heat pumps and AY boilers)
- The assembled units can be equipped with **their own high-efficiency circulation pump, check valve** and connections to the main manifold, suitably protected from weathering

Customised LINK examples

1 GAHP AR + 1 AY35/4 boiler

For heating and cooling services on one circuit and domestic hot water production on the other.

It is possible to have the AY35 boiler diverted to the heating circuit to supplement the heat output of the heat pump in winter when it has satisfied the domestic hot water function (DDC and RB100 control systems must be used).

The number of heat pumps and boilers mounted on the LINK can be increased to obtain a higher total output.



1 GAHP A + 1 AY100/2 boiler

LINK for high-efficiency heating only, consisting of a hybrid heat pump and condensing boiler system. An efficient and at the same time cost-effective option in which the heat pump carries out the base-load with maximum efficiency and the modulating boiler takes care of meeting peak demands.

The heat pump will never be switched off, even in very cold climatic conditions, as its efficiency is always higher than that of the condensing boiler.

The number of heat pumps and boilers mounted on the LINK can be increased to obtain a higher total output.



1 GAHP AR + 1 ACF + 1 AY50/4

For heating and cooling services on one circuit and domestic hot water production on the other. Compared to the previous option, this LINK provides equal heating and cooling capacity, with a higher domestic hot water production capacity.

The heating and cooling capacities can be adjusted independently according to the load profile of the system by adding reversible heat pumps and chillers. The domestic hot water production part can also be modulated as required.



2 GAHP A

LINK consisting of 2 (or more) absorption heat pumps, for heating and, if necessary, domestic hot water production. They're factory-assembled, electrically and hydraulically connected on a steel base to form a high-efficiency modular thermal unit for outdoor installation.

It is possible to create a LINK with a higher thermal output by adding appropriate modules.



1 GAHP AR + 1 ACF

Link consisting of a reversible heat pump and a gas chiller, for heating and cooling, with equal heating and cooling capacities.

It is possible to create a Link with a higher heating and cooling capacity by adding the appropriate modules.



2 GAHP AR

Link consisting of two reversible absorption heat pumps factory-assembled, electrically and hydraulically connected on a steel base to form a modular thermal-cooling unit for (alternating) gas heating and cooling services, for outdoor installation.

It is possible to create a Link with a higher heating and cooling capacity by adding the appropriate modules.



**Contact the Robur sales network
for all your configuration needs.**

Unit controls and accessories

**Robur
technology
at your
command.**

Unit controls and accessories

DDC	Direct Digital Controller
	<p><i>For efficient and optimised management and diagnostics of all Robur absorption units and condensing boilers for integration</i></p>
Functions	<p>The direct digital controller is an optional accessory.</p>
<ul style="list-style-type: none">• Control the operation of heating/cooling units (up to 16 units, extendable to 48 using up to 3 DDCs connected together).• Regulates and controls separable circuits for domestic hot water production and heating/cooling systems.• Optimised management of cascade operation of connected units on each configured circuit.• Monitoring of status, operating and fault conditions of controlled units with event history recording.• Setting the climatic curve for heating and cooling services in combination with the outdoor temperature probe (optional).• Possibility of interfacing via Modbus with other external management systems for displaying information and receiving operating settings.	

RB100	Robur Box 100
	<p><i>To manage the demand for heating, cooling and domestic hot water and their corresponding switching devices</i></p>
Functions	<p>The device is able to interface requests from the system with the DDC which it must be paired with.</p>
RB100 paired with the DDC: <ul style="list-style-type: none">• Manages service requests for heating, domestic hot water production and cooling.• Provides for the actuation of switching valves for supplying DHW buffer tank with domestic hot water or for the summer/winter change of seasons.• Handles unavailability reports of managed services.	

RB200	Robur Box 200
	<i>To manage mixed cooling systems, consisting of Robur absorption units and chillers and/or boilers from other manufacturers installed on the same system</i>
Functions	This device interfaces requests from a mixed system from the DDC, which it must be paired with and is capable to manage the activation of chillers and boilers from other manufacturers.
RB200 paired with the DDC:	
<ul style="list-style-type: none"> Allows you to interface with mixed air conditioning systems, i.e. consisting of Robur units and units from other manufacturers (boilers or chillers). Allows the actuation of switching valves for supplying DHW buffer tank with domestic hot water or for the summer/winter change of seasons. Manages reports of unavailability of services or alarms in connected components. Allows you to interface with system temperature probes (heating, cooling and separable domestic hot water). 	

CCI	Comfort Control Interface
	<i>An optional and alternative device to the Digital Control Panel for the modulation management of Robur absorption units</i>
Functions	An optional device for managing the modular operation of Robur GAHP A, GAHP GS and GAHP WS units.
<ul style="list-style-type: none"> Regulates in modulation the heat output of heating-only units (up to 3 units). Heating and domestic hot water functions are supported in combination with an external system controller. Monitors the status, operating and fault conditions of the controlled units with event history recording. Allows interfacing with other external management systems via Modbus. Requires an external system controller (which will provide the setpoint values). 	

See more on robur.com

Robur absorption unit accessories

Adjustment and Unit Controllers

Accessory	Single unit GAHP - GA - AY	Link GAHP - GA - AY
DDC - Direct Digital Controller (1 controller for up to 16 units on the same system)	●	●
RB100 - Robur Box 100	●	●
RB200 - Robur Box 200	●	●
CCI - Comfort Control Interface Unit modulation management via external controller	●	●
Shielded CAN bus cable for DDC connection to Robur units	●	●
DDC outdoor temperature probe	●	●

Please refer to the Design Manual for the selection of the most appropriate control command according to the system application.

Anti-vibration mounts

Accessory	Single unit GAHP - GA - AY	Link GAHP - GA - AY
Kit with 4 spring-loaded anti-vibration mounts for base frame	●	●
Kit with 6 spring-loaded anti-vibration mounts for base frame		●
Kit with 8 spring-loaded anti-vibration mounts for base frame		●
Kit with 10 spring-loaded anti-vibration mounts for base frame		●

Circulation pumps

Accessory	Single unit GAHP - GA - AY
High-efficiency modulating circulation pump	●
High-efficiency modulating circulation pump with oversized pressure head	●

Tanks and buffers

Accessory	Single unit GAHP - GA - AY	Link GAHP - GA - AY	GITIÉ
300 l thermal tank ErP energy class C	●	●	●
500 l thermal tank ErP energy class C	●	●	●
1000 l thermal tank		●	
300 l DHW buffer tank with oversized coil (without additional solar coil) ErP energy class C	●	●	●
500 l DHW buffer tank with oversized coil (without additional solar coil) ErP energy class D	●	●	●
500 l DHW buffer tank with oversized coil (with additional solar coil) ErP energy class D	●	●	●
750 l DHW buffer tank with oversized coil (with additional solar coil)		●	

System components

Accessory	Single unit GAHP - GA - AY	Link GAHP - GA - AY	GITIÉ
230V AC actuator for ON/OFF zone valves, 90 sec.	●	●	●
3-way zone ball valve 1"1/4	●	●	●
3-way zone ball valve 1"1/2	●	●	●
Air separator filter 1"1/4	●		●
Separator filter 1"1/4	●		●
Condensate discharge pump	●		●
Ammonia discharge kit ⁽¹⁾	●	●	
Flow regulation valve	●		●

⁽¹⁾For Indoor GAHP GS and GAHP WS

Special accessories for Gitié

Accessory	Gitié AHAY	Gitié ARAY	Gitié ACAY
LPG gas conversion kit	●	●	●
Kit with 6 spring-loaded anti-vibration mounts for base frame	●	●	●
High-efficiency modulating circulation pump*	●	●	●
High-efficiency modulating circulation pump with oversized pressure head*	●	●	●

*The circulation pumps with oversized pressure head are already factory-mounted on Gitié packages. The pumps can then be provided as accessories for the distribution circuits.

See more on robur.com

References

See more on robur.com

Our
success
stories.

Municipality of Milan

Italy

Plant renovation of the Via Amari building complex, headquarter of the Technical Office and the Maintenance Sector of the Municipality of Milano, Italy.

Customer needs

Renovate the plant asset, keep energy consumption monitored, increase energy efficiency and improve environmental comfort. These are the guidelines that prompted the Municipal Administration to intervene decisively in the plant efficiency of the Via Amari complex in Milano. A project that has changed the structure of the building's thermo-hydraulic systems, initially intended for heating only.

The client's needs were:

- Energetically renovate the building by integrating new technology with the existing system.
- Carry out a deep intervention on the structure, containing costs.
- Obtain excellent energy efficiency by avoiding too much electrical absorption.

Robur solution

- 12 Robur GAHP AR, reversible absorption heat pumps running on natural gas + renewable energy for heating and cooling.

Robur solution, compared to the previous heating system, guaranteed:

- 24% economic savings compared to the boiler + electric chiller solution.
- 140% average seasonal winter efficiency with significant savings in heating costs.
- The containment of the electrical commitment to only 12 kW against the 75 kW that would have been needed in the case of the installation of an electric chiller, reducing system costs and avoiding the installation of an electrical cabin.
- The elimination of expensive adaptation of the thermal power plant machine rooms, thanks to the external roof installation of the Robur units preassembled on the link.
- The reduction of the emission of 43,5 tons of CO₂.

"The Public Administration has the task of being a guide and showcase for innovation and energy efficiency. The Robur solutions are efficient and ecological. We have achieved savings on the bill of € 8.000 per year."

Giulio Campaiola, Municipality of Milan



Primary School Plaiddt

Germany

The school building in Plaiddt, near Koblenz has been built at the very beginning of the 20th Century in full compliance with the standards of that time: very high ceilings, large windows and poorly insulated walls, windows and doors.

Customer needs

Install a renewable energy source heating system.

Robur solution

- 1 Robur GAHP GS, condensing absorption heat pump powered by gas and geothermal renewable energy, for high efficiency heating.

In order to use renewable energy sources, Robur ground source gas absorption heat pumps have been installed in cooperation with the gas utility Energieversorgung Mittelrhein (EVM), running constantly year-round while the back-up boiler kicks in only during few coldest days. The total heating load of the building is approximately 90 kW. The existing heating system, that has been retrofitted, consisted of two electric heat pumps and cast-iron radiators with manual control valves.

The required outlet water temperature for heating has been reduced down to 40 °C even if it has not been necessary to replace the existing radiators. In order to increase the efficiency of the system, the system works with climatic curve.

E-ON Ruhrgas AG has measured the energy performance of the whole system. Data measured show an operating cost savings of 39% and a reduction of CO₂ emissions of 44% per year in comparison with the previous system made by 2 electric heat pumps. As the temperature of the ground source is almost constant and warm year-round as well as the outlet water temperature is low, a seasonal efficiency of 138% has been reported.

The efficiency measured in the field is fully consistent with the efficiency that could have been provided by the best geothermal electric heat pumps available in the market. The most important difference between the two heat pumps technologies (GAHP and EHP) is the amount of the capital investment for the geothermal system: as a matter of fact, GAHP can reduce this investment by 50% in comparison with the EHP which means, in this specific case, a reduction of the total borehole length of approximately 300 m.

Gas absorption heat pump can recover up to 40,9% of renewable energy (from the ground) and achieve a heating efficiency up to 169%.

Robur gas absorption heat pumps are the most beneficial heating system to improve the energy performance of the buildings with a consequent increase of the value of the building and are listed inside the German BAFA incentive program.



Open University Milton Keynes

United Kingdom

The Open University is a British public research university and the largest university in the UK by number of students, has its headquarters at Walton Hall in Milton Keynes, which is 80 km north of Central London, midway between Oxford and Cambridge.

The Open University in Milton Keynes is a 2.000 sq metre sustainable new-build development that forms part of the Walton Hall campus.

Customer needs

Sustainability and carbon reduction were the core requirement of the customer. The building is targeting a BREEAM Outstanding rating.

Robur solution

- 4 GAHP GS, condensing absorption heat pump powered by gas and geothermal renewable energy, for high efficiency heating.

The UK's largest closed loop ground source gas absorption heat pump installation is providing low carbon heat to The Open University in Milton Keynes. Robur gas absorption heat pumps work very effectively, contributing to the University's carbon reduction strategy.

Building 12 has been constructed as part of a wider campus development programme, ENER-G drilled 13 boreholes to a depth of 100+ metres to install a ground loop system that feeds four gas absorption heat pumps, with a combined capacity of 140 kW heat output. This is supplying the building's heating requirements and will achieve carbon dioxide savings of approximately 45% in comparison to a system heater via a condensing boiler.

"Sustainability and carbon reduction are at the core of our development principles and the heat pumps are working very effectively to deliver a plentiful source of low carbon heat. They contribute an important element to the University's carbon reduction strategy."

Alan Burrell, director of estates at The Open University



PORG Ostrava

Czech Republic

PORG Ostrava is a prestigious five-class elementary school and an eight-year grammar school located in Ostrava Vítkovice.

Customer needs

Energy renovation of the school building with modern technology using renewable energy at high heating efficiency.

Robur solution

- 3 GAHP A, condensing absorption heat pump powered by gas and aerothermal renewable energy, for high efficiency heating and domestic hot water production.
- 2 AY Condensing boilers for outdoor installation, for the production of hot water up to 80 °C.

The roof of the school kitchen building is equipped with a cascade of 3 ROBUR gas absorption heat pumps GAHP A HT S and 2 ROBUR AY Condensing boilers. The installation on the roof didn't require extensive construction adjustments and does not disturb the modern appearance of the building. Heat distribution is effectively ensured by the floor heating and low temperature radiators.

The cascade of multiple Robur units, the so-called link, are ready-to-use units, hydraulically and electrically interconnected, are easy to handle, simplify and speed up the installation, and allow an easy integration into existing heating system. The school of PORG Ostrava has also obtained funding from the European Community for the energy renovation of the building.



Residential building

Italy

The residential building consists of 15 houses divided between private apartments and commercial premises at ground floor.

Customer needs

The client had set itself the goal of identifying the solution that made it possible to create a building in energy class A/A1, with apartments characterized by elevate standard of comfort. The efficient solutions had to satisfy the heating request, cooling and production of domestic hot water.

Robur solution

- 6 GAHP AR, reversible absorption heat pumps running on natural gas + renewable energy for heating and cooling.
- 4 GA ACF, Gas absorption chiller for cooling with low electric energy consumption.
- 4 AY Condensing boilers for the production of domestic hot water.

The use of Robur solutions has made it possible to achieve a high energy class equal to classes A2/A3. GAHP heat pumps, thanks to the use of renewable energy, guarantee high thermal efficiencies, allowing users to save up to 30% on heating costs compared to the installation of traditional systems. In summer, gas absorption chillers ensure cooling, minimizing the electrical effort compared to the use of traditional electrical systems.

The individual units are preassembled and managed by a single control system that ensures maximum efficiency and modularity in terms of adapting the heating and cooling capacity to different needs of the building.

Another added value is the Robur remote monitoring system which allows the management, in real time, of the functionality of the individual units and a timely diagnosis to prevent any malfunctions and always provide maximum efficiency in terms of operations and performance.

"The building has been at full capacity for about two years and we were happy with the Robur choice because we have achieved the goals we wanted to achieve in terms of comfort and consumption".

Francesco Farinaro - Architectural Designer



Słupski Technology Incubator

Poland

Słupski Inkubator Technologiczny Center is dedicated to entrepreneurs which are in the start-up stage, as well as for existing companies in the stage of further development and planning to implement innovation. Słupski Inkubator contains an auditorium for 300 people, with full multimedia and technical equipment and a conference room for 100 people, with the possibility to divide into 3 separate smaller rooms.

Customer needs

The Investor's wish was to use modern and energy-saving solutions, which during operation will be both economical and do not require major maintenance activities.

Robur solution

- 9 Robur GAHP AR, reversible absorption heat pumps powered by gas and aerothermal renewable energy for high efficiency heating and cooling.
- 4 GA ACF, gas absorption chillers for cooling with low electric energy consumption.
- 1 GA ACF HR, gas absorption chiller with heat recovery for free production of DHW in cooling operation mode.
- 3 AY Condensing boilers, ideal complement to Robur high efficiency heating systems.

Robur GAHP devices were chosen primarily for their energy efficiency. Three sets of reversible gas absorption heat pumps Robur GAHP AR were installed, with a nominal heating capacity of 105,9 kW and a nominal cooling capacity of 51 kW each, a set consisting of 3 boilers with a capacity of 103,2 kW, a set of gas absorption chillers RTCF with a nominal cooling capacity of 52 kW and an RTHF set consisting of two gas absorption chillers and a gas absorption chiller-heater with a nominal cooling capacity of 52 kW and a heat recovery capacity of 21 kW. The devices supply exchangers in air handling units, radiator installation and fan coils.

During the heating season, the main source are the GAHP AR pumps. During periods of peak, the heating power is supplemented by the outdoor AY boilers. In summer, the heat pumps work in cooling mode, and the cooling peak demand is supplemented by the GA ACF chillers. In addition, there is a free production of hot domestic water thanks to the heat recovery of the GA ACF HR.

The forecasted gas consumption at the beginning of the project was 67.254 m³ but the real yearly consumption recorded after the installation was even better, 66.519 m³.

Credits To Gazuno



Carrefour

38 points of sales

Large surfaces, large volumes, large operating costs, perhaps not surprisingly it is called "Large Distribution". For several years, Carrefour has multiplied its initiatives to reduce the impact of its activities in favour of the environment. Numerous activities were thus implemented to optimize the energy efficiency of the points sale, starting from the reduction of energy consumption of the air conditioning systems.

Customer needs

The Energy Office of Carrefour had the goal to find effective and simple plant solutions to significantly reduce the "energy bill".

Robur solution

- 28 GAHP A, Gas Absorption Heat Pumps + renewable energy for heating purpose.
- 6 GAHP AR, reversible Gas Absorption Heat Pumps + renewable energy for heating and cooling.
- 107 AY condensing boilers for heating integration.
- 3 GA ACF, Gas Absorption Chillers for cooling.

"With the aim of significantly reducing the energy bill, we have chosen Robur gas absorption heat pumps. And we are fully satisfied."

Alfio Fontana, Carrefour



EXAMPLE - POINT OF SALE 1

After the first year of operation of the plant, the savings verified by Carrefour are more than satisfactory especially when compared with a point of sale with similar heating requirements but air-conditioned with a traditional system with boiler and electric chiller.

Robur solution has achieved annually:

- Cost saving of about € 13,000/season.
- Savings of 26,4 Tons of Oil Equivalent.
- Reduction of the emission of 58 tons of CO₂.

Comparison of gas consumption for heating

POINT OF SALES WITH	NOV/DEC m ³ NATURAL GAS	JAN m ³ NATURAL GAS	FEB m ³ NATURAL GAS	MAR m ³ NATURAL GAS	APR m ³ NATURAL GAS	SEASON m ³ NATURAL GAS
Boilers	24.840	17.753	16.445	9.530	2.990	71.558
Robur Gas Absorption Heat Pumps	15.123	8.877	8.222	4.778	1.500	38.500
Gas saving achieved by Robur GAHP	39%	50%	50%	49,9%	49,8%	46%

EXAMPLE - POINT OF SALE 2

At the end of the winter season, the final balance of the natural gas consumption of the store was equal to -44%, in line with the savings expectations for a payback time of the investment equal to only 3 years.

ANNUAL CONSUMPTION BEFORE RENOVATION m ³ NATURAL GAS (OCT-APR)	ANNUAL CONSUMPTION AFTER RENOVATION m ³ NATURAL GAS (OCT-APR)	PAYBACK OF THE INVESTMENT YEARS
48.000	27.000	3
Savings achieved with Robur Heat Pumps		44%

Funghi Valentina - Mushroom Agricultural Company

Italy

A mushroom cultivation requires precise and constant thermo-hygrometric conditions.

Customer needs

Inside the greenhouses of Funghi Valentina, which has been one of the most important Italian companies in the sector since 1980, dedicated to the cultivation of champignons, an automatic adjustment system constantly monitors temperature, relative humidity, oxygen and carbon dioxide content. Since the air of renewal may have excessive moisture contents for the growth process, it was essential to have cooling energy even in winter, in order to promptly check the temperature parameter and bring the internal environmental humidity to the expected values.

Robur solution

For heating, cooling and process application:

- 10 GAHP WS, Gas Absorption Heat Pumps + hydrothermal renewable energy.
- 49 GA ACF TK, Gas Absorption Chillers for controlled temperature.
- 3 GA ACF HR, Gas Absorption Chillers with heat recovery.

The GAHP heat pumps, while producing cooling energy useful for the mushroom production process, supply free thermal power for the heating of warehouses and offices and at the same time hot water useful for washing products and equipment. During the production of chilled water, the refrigerator groups with heat recovery also produce free heat recovery power for the post-heating coils of the air handling units to check the thermo-hygrometric conditions.

The effectiveness of the technological solution adopted, with final savings data confirmed over the seasons, convinced the client to choose Robur technology several times for the plant extensions and renewals.

The advantages were multiple and concrete. First of all, the electricity commitment has been greatly reduced: in fact, the entire Robur system absorbs only 50 kW of electrical power with a saving of over 300 kW compared to what would have been needed in the event of the installation of electric refrigeration units. At the same time, the high modularity of the system guarantees a constant and fundamental reliability, adapting the power supplied to the actual requests of the systems. Also important is the savings on operating costs, quantifiable in about 20% compared to an alternative electrical solution.



ECONOMIC COMPARISON		Robur	Electric chiller and boiler
Electricity consumed	kWh	300.000	2.400.000
Cost of electricity	€	55.000	440.000
Increase in kW used	kW	50	350
Seasonal natural gas consumption	m³	900.000	--
Seasonal natural gas consumption for post-heating	m³	free	170.000
Seasonal natural gas cost	€	360.000	70.000
Summary of annual management costs	€	415.000	510.000
Saving achieved by the Robur system vs. electric cooler	€		95.000

"I have confirmed Robur's choice over the years: reliability, quality, modularity ensures the continuity of service that makes us sleep peacefully. I have no doubts: I recommend Robur".

Oriano Borghi, owner of Funghi Valentina

Barbados Ice Cream Company Ltd.

Barbados

The BICO LTD, Barbados Ice Cream Company Ltd. is the leading Barbadian manufacturer of frozen desserts. The company, located near the Harbour Port Office Park in Bridgetown, was started in December 1901, as the Barbados Ice Company Limited, which made ice, and started making ice cream in 1949.

Customer needs

Cooling for offices and warehouse, cooling for industrial process and domestic hot water.

Robur solution

- 6 GA ACF HR, gas absorption chillers with heat recovery for free production of DHW in cooling operation mode.
- 3 GA ACF LB, gas absorption chillers for industrial refrigeration.

BICO LTD, during retrofit works, decided to adopt ROBUR units to supply the need of comfort cooling of the offices and of the warehouse, freezing ice cream mix and cooling of the pasteurizing mixing tanks. Free heat recovery hot water is used for cleaning items inside the facility.

The contractor was familiar with Robur products having used them on previous applications and happy with outcome. The customer liked very much the support received from Robur and quick turnaround of parts.

"I would recommend Robur units, especially in areas of high electric rates and low natural gas rates".

Grantley Parris - HEG Engineering Services - St. Michael, Barbados



NY Department of Sanitation

USA

The New York City Department of Sanitation is the largest sanitation department in the world. The project, comprised of two buildings situated along a common service road, houses the sanitation vehicle garage and maintenance facilities.

Customer needs

Main customer need was cooling for internal offices at low energy consumption. The heating, ventilation and cooling system design requirements called for the induction of clean air at locations where personnel occupy the building, and for removal of the contaminated air away from the employees.

Robur solution

- 30 GA ACF, Gas Absorption Chillers.

The design effort focused not only on meeting and exceeding the client's performance requirements, but also on minimizing energy use and simplifying the system's components, operation, and maintenance. At the client's request, the project avoided specifying overly complex and costly components, such as heat recovery features or fully automated control systems.

Four modes of the facility's operation that called for different settings of the HV system were defined. The modes vary depending on the occupancy levels, presence or absence of running engines, and the quality of the indoor air. For each mode of the garage operation, there is a dedicated system setting that provides required environmental conditions while minimizing energy use. This approach reduced both the first cost of the system and the energy consumption. The system consists of relatively simple and low-maintenance supply and exhaust fans that operate at different air exchange volumes, depending on the garage operation mode.

Major benefits are: healthy and comfortable environment, optimize ventilation, low first cost, low energy use, high reliability, minimize maintenance and service.



Palm House at Książ Castle

Poland

Palm House was built in the surrounding area of the castle Ksiaz. With a surface of 1900 square meters, in addition to the palm house, includes areas of greenhouse, Japanese-style garden, fruit-vegetable garden, the area for cultivating shrubs and a rosarium. Currently the Palm House has about 80 species of plants from all over the world.

Customer needs

Providing an adequate microclimate for plants in the Palm House both in the case of heating and cooling.

Robur solution

- 15 GAHP AR, reversible absorption heat pump powered by gas and aerothermal renewable energy, for high efficiency heating and cooling.
- 10 GAHP A, condensing absorption heat pump powered by gas and aerothermal renewable energy, for high efficiency heating and domestic hot water production.
- 20 AY condensing boilers for outdoor installation.

The investors decided to choose the Robur system due to the lowest operating costs of all possible solutions available on the market. In addition, it is possible to cool the facility through the use of gas. Additional advantages are the cascading of the sets, reducing the risk of system failure, as well as the removal of the installation outside the historic building and the removal of chimneys, which resulted in an increase in the aesthetic value of the building. The heating power involved is 1,6 MW, the cooling power is 253,5 kW.

Heat pumps provide plants in the Palm House with a suitable microclimate. The heat is transferred through heat exchangers. One of the sets of boilers is made in a 4-pipe version, with a separate boiler for the production of domestic hot water.

"We considered various technologies. The chosen one, Robur solutions, convinced us because it was ecological and have the highest world's technological standard in terms of source of energy. This investment was definitely worth it, also in terms of preserving the cultural heritage of our city"

Zbigniew Mudy – Director/Manager



Order of Saint John of God Buda Hospital

Hungary

The Buda Hospital of the Hospitaller Order of Saint John of God, established in 1806, has been providing health care services to sick people from all over Hungary for over 210 years now. This is the largest Centre of the Hospitaller Order in Hungary.

Customer needs

Energy system modernization using heating and cooling technology at high efficiency.

Robur solution

The Buda Hospital of the Hospitaller Order of Saint John of God in Budapest choose Robur products:

- 32 GAHP AR, reversible absorption heat pump powered by gas and air source renewable energy, for high efficiency heating and cooling.
- 15 AY condensing boilers for heating integration.

This allows the heating and cooling of the entire building at high efficiency thanks to the utilization of aerothermal renewable energy.



Continuous innovation. See the entire range.

The world of Robur doesn't end here. Here is our complete heating and cooling product range.

In addition to the solutions offered by the Abso Pro range, learn more about the high-performance of our K18 gas absorption heat pump for the residential sector and our Classic Line, a long-standing leader in the heating sector for industrial, warehouses and commercial buildings. We have a complete range of air heaters, wall-mounted boilers, evaporative coolers, gas-fired convectors and air curtains.

Our sales team is at your complete disposal for any information or further explanations.

The Robur team

**Explore our world on
robur.com
or drop us a line at
export@robur.it**

They're round out the offer. Robur products at your service.

K18 Heat Pumps

Condensing absorption heat pumps which use renewable aerothermal energy.

The perfect range for high-efficiency heating and domestic hot water production.



Gas-fired unit heaters

A complete range of solutions for heating (including condensing ones) warehouses, commercial and industrial buildings efficiently and modularly.



Wall-mounted Condensing Boilers

Ideal for heating environments and the production of domestic hot water with the best cost-performance ratio.



Individual Gas-fired convectors

A long-standing range created to integrate the heating of environments, even with occasional use, without waiting times and even in the absence of a power supply.



Evaporative Coolers

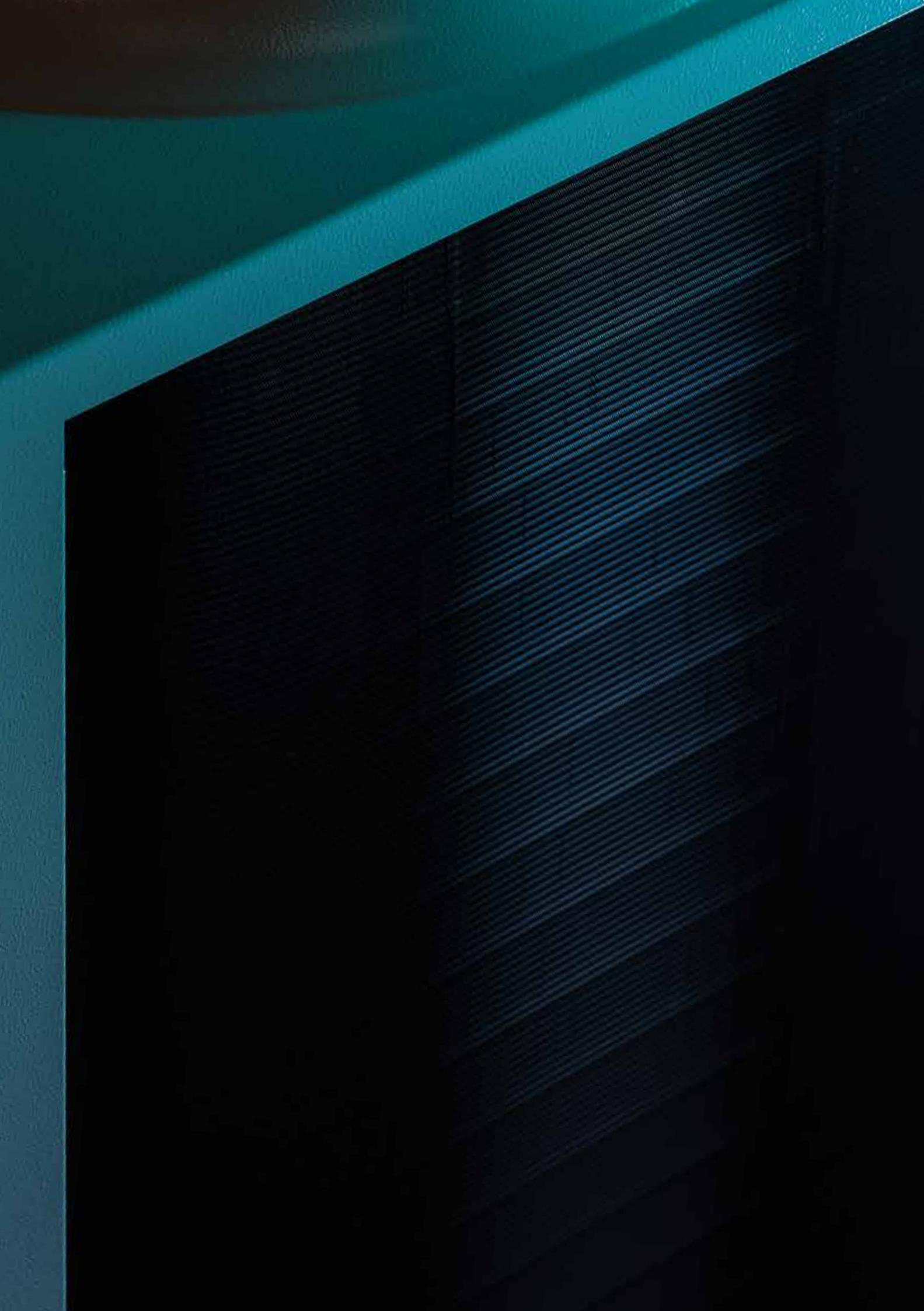
Created to improve the summer comfort of working environments, cooling medium to large buildings, and guaranteeing low running costs.

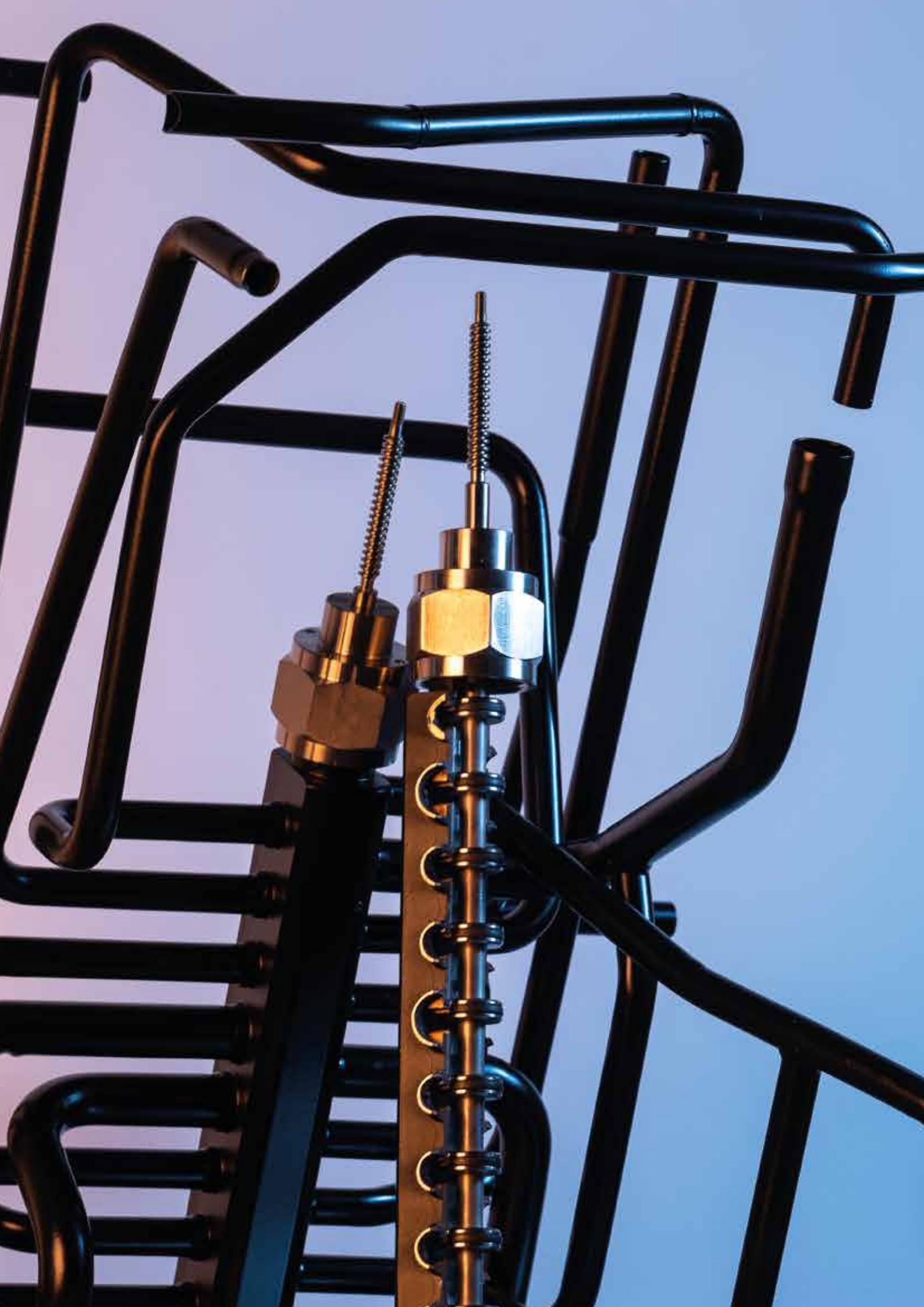


Air curtains

They have the task of preventing or limiting the entry of cold air into doors and large openings of warehouses, industrial and commercial buildings.









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