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Heating system with gas absorption heat pump +
renewable energies p. 17



Gas unit heaters, also in condensing version available,
gas condensing boilers, evaporative coolers
and gas convectors p. 19

The reasons for choosing Robur heating and cooling systems fired by gas + renewable energies



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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

7 pillars

Sharing values
Training
Quality
Innovation
Service
Social Responsibility
Testimony

The right choice can make the difference

A responsible purchase behaviour may have a great influence on our way of life.

Consider that a product consumes tons of oil during its whole life cycle, generating pollution that the forest cannot rebalance.

That's why, when choosing a good, we take a great responsibility.

Even the choice for the heating system may have a big impact.

To all who choose responsibly, Robur offers high efficiency heating systems with low environmental impact, and moreover concepts, data and facts to spread the culture of energy efficiency and environmental protection.

Benito Guerra - Robur S.p.A. Chairman



ROBUR[®]
since 1956

Robur awards and certifications

- 1995** - ISO 9001 Certification
- 2000** - First Prize Italian Quality Award
- 2001** - Robur is the first ISO 9001:2000 (Vision 2000) certified company in Europe in HVAC sector
- 2003** - Special Prize Winner of "European Quality Award"
 - Robur GAHPs were included in the recommended designs group of the Environment Friendly Innovation Award
 - Robur, with its reversible Gas Absorption Heat Pumps, claimed the Technological Innovation Award
- 2004** - Benito Guerra, chairman of Robur, received a nomination as finalist in the "Quality of life" category of the National Businessman of the Year Award, promoted by Ernst & Young
- 2005** - ISO 14001: 2004 Certification
 - CSA Certification (USA)
- 2006** - Honourable mention at AHR Expo Innovation Award sponsored by ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers - USA)
- 2007** - Mentioned as best product category for gas-fired heat pumps as part of the "Impresa Ambiente" Prize
 - Special mention in Enterprise Prize for Innovation promoted by Confindustria
- 2008** - Gas heat pumps E³ won the honourable mention of the HVAC&R Innovation Prize sponsored by Costruire Impianti
 - ROBUR Test Laboratories accredited by California Energy Commission (CEC)
 - Gas Absorption Heat Pumps performances are tested by VDE and DVGW-Forschungsstelle
- 2009** - Special mention in the category Energy Efficiency
 - Development Prize 2009 by the Foundation Sustainable Development and Ecomondo

GAHP

GAHP Gas absorption heat pumps

The Robur gas absorption heat pump + renewable energy sources is **The perfect blend of the two most common heating technologies**, namely the condensing boiler and the electric heat pump.



ADVANTAGES

Condensing boiler

- Natural gas fired
- DHW supply
- Only 1/10 of electricity consumption in comparison to electrical heat pumps



ADVANTAGES

Electric heat pump

- Use of renewable source energy with efficiency over 100% (Gross calorific value)
- Cooling mode also available

MINUS

Condensing boiler

- No use of renewable energy
- Efficiency lower than 100% (Gross calorific value)

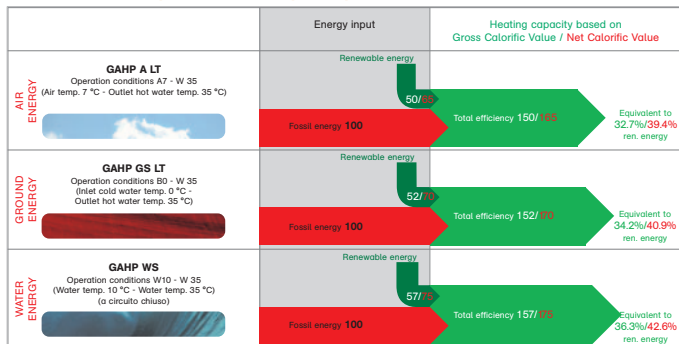


MINUS

Electric heat pump

- High electrical demand
- Use of HFC fluids
- Limited operational field

Efficiency and renewable energy utilisation in gas absorption heat pumps



GAHP (Gas Absorption Heat Pump): A (Air Source), GS (Ground Source), WS (Water Source)
LT (Low Temperature)



Robur GAHPs are **ENVIRONMENTALLY FRIENDLY** using natural gas + renewable energy sources ⁽¹⁾

With a GAHP, **every year 4.2 Tons of CO2 emissions are saved**, which are equivalent to those absorbed by 599 trees or those produced by 2 green cars; every year **1.6 TOE are saved.**

4.768 ⁽²⁾ Gas Absorption Heat Pumps with Self-Sustainable Renewable Energy save **7,629 TEP every year** and the emissions of 20,026 Tons of CO2, which is equivalent to the emissions of 9,536 green cars or those absorbed by **2,856,032 trees** covering a surface of **39,991,970 sqm**

The GAHP technology is the best option to meet the objective of reducing energy consumption as required by the Kyoto Protocol. With impact on global warming close to zero (GWP - Global Warming Potential - of less than 1), the GAHP technology is the best solution to the problem of global warming due to greenhouse gases.

Note: All data are tested by certificates and approvals from ENEA for Italy, DVGW-Forschungsstelle and VDE for Germany, California Energy Commission for USA.

⁽¹⁾ GAHPs, using up to 40% renewable energy (air, water, ground), are recognized by RES Directive - Renewable Energy Source.

⁽²⁾ Updated on 31st Aug. 2010.

Let the sun shine 24hours a day, 365days a year!
Make it possible with **Robur** heating systems

Self-sustainable
Renewable
Energy



Every unit using **1 kW of natural gas** adds **0.5 kW** of renewable energy, 24-hours-a-day available.



GAHP:
Gas absorption heat pump
using up to 40%
of renewable energy sources
Geothermal, water
and air type available

This can be used only when you need it, thus avoiding unnecessary integration systems and/or unnecessary heat disposal (in summer).

Note: to produce 0.5 kW of energy the installation of approx. 1m² solar thermal collectors is necessary.

Robur GAHPs for **COST AND ENERGY**

SAVINGS

GAHP technology can provide significant savings 40% on heating costs.

High efficiency makes GAHP a smart and beneficial investment with a pay-back time of 2 to 4 years.

Robur GAHPs **INCREASE PROPERTY**

VALUE

GAHPs are the most profitable investment to increase the value of the building. Updating the heating system only, with a small investment per square meter, will increase the building performance rating.



MFH 2 MW Project - Netherlands



Domaine La Coquillade Hotel - France



Engineering Department,
Municipality of Milan - Italy



Edeka Riedel, Bad Wiessee - Germany



Southern Connecticut Gas Utility - USA

Have a look at our latest customer references
<http://www.robur.com/references/>

Due to continuous product innovation and development, Robur reserves the right to change the product specifications without prior notice.

ROBUR GAHP are the **IDEAL**

INTEGRATION of new installations or existing systems, such as solar systems, condensing boilers and electric heat pumps.

Open up A **NEW WAY** for solar thermal energy...
increase the rate
of **Self-sustainable Renewable Energy**
thanks to the integration with
Robur Gas Absorption Heat Pumps (GAHP)

Solar thermal energy provides
20% of renewable energy of annual heating demand



80% can be integrated with:



Condensing boiler:
no use of renewable energy



Renewable energy rate 20%



Gas Absorption Heat Pump
provides up to **29% of renewable energy** (36.3% on 80% integration = 29%)



Renewable energy rate 49%
20% from solar thermal energy
29% from Gas Absorption Heat Pump



GAHP Line WS- RTWS Series

Condensing gas absorption heat pump + **water source** renewable energy for heating and cooling

Advantages

- Up to 36.3% utilisation of water source renewable energy.
- Exceeds peak efficiencies of 175%, guaranteeing up to 36.3% reductions in annual heating costs.
- It permits a considerable promotion of the building's energy classification with the consequent increase in the value of the building.

Applications

- Heating and air conditioning systems with an energy source available for recovery (preheating of DHW).
- On request GAHP-WS units can be pre-assembled as links with the same units (RTWS Series).

Working point W10/W35	G.U.E.	%	175
	heating capacity	kW	43.9
	capacity from ren.	kW	17.6
Outlet water temperature for heating	max	°C	65
Inlet water temperature for heating	max	°C	55

Simultaneous use: efficiency levels of 244%.

Advantages

- Simultaneous production of hot water up to 65 °C and cold water down to 3 °C.
- Overall efficiencies of more than 244% in case of simultaneous use.
- External sources are not required, thus reducing installation and operational costs.

Applications

- Systems that simultaneously require heating and cooling (hospitals, manufacturing process or liquid-ring-based air conditioning systems).

Working point W10/W35	overall efficiency	%	244
	heating capacity	kW	43.9

ROBUR
wants to be a place of work:
Driven by the Progress
Moved by the Passion
Trusted by the Humanity
Led by the Justice
Guaranteed by the Quality
Inspired by the Beauty

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

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