

GAHP Line RTAR Series

Reversible Gas Fired Absorption Heat Pump Modular Configurations

Heating and Cooling

Cooling and heating with a unique gas fired high efficiency unit.

Robur GAHP-AR is the first air-source water-ammonia absorption heat pump. By using natural gas as the primary energy source it supplies hot water up to 140 °F or chilled water down to 37.4 °F. The same unit is suitable for heating or cooling by reversing the absorption cycle, using the outside air for heat rejection in cooling mode and as a heat source in heating

mode. The gas efficiency at rated conditions is 126% in heating mode. As a general efficiency feature, in moderate climate areas (about twice the heating load versus cooling load) the gas savings during the heating season can offset the gas consumption normally required during the cooling season. The RTAR series offers a wide variety of convenient applications, for instance: air conditioning systems for light

commercial, industrial and residential use; single unit for both heating and cooling with low electrical power

consumption; gas-based heating and cooling systems in order to achieve electrical peak shaving.



Use Heating and Cooling alternatively

Type Air to water

Heat transfer fluid Water

Heating capacity

From 240,800 to 602,000

Cooling capacity

From 115,400 to 288,500

Renewable energy percentage contributing to the total heat output 34

Heating efficiency 126%

Cooling efficiency 60%

Outlet water temperature

37.4 °F / 140 °F

Main applications High efficiency low temperature heating, air conditioning water system

Main advantage Savings up to 40% in operating costs in comparison with the best gas boilers, due to the energy recovered from a renewable source (air).

Additional advantages

- **Single Phase Power.**
- **Remote management** and staging by Direct Digital Controller (DDC - Optional). One DDC can manage up to 16 Heat Pump modules on a common water loop.
- **One Single System** supplies hot or chilled water.
- The prevailing use of gas **reduces the need of electric power by approx. 87%** in comparison with electric compression units (3.75 kW for 602,000 Btu/h heating and 288,500 Btu/h cooling).
- **No need to increase electric power demand.**
- For application requiring standby power, the **electric generator size and electric output will be lower.**

- **High Reliability** due to few moving parts inside the unit.
- **Easy Maintenance**, similar to gas fired boilers.
- **No Water Consumption.** No need for cooling tower (no problems associated with legionella).
- **No use of Harmful Refrigerants.**
- **Outdoor Installation.**

Features

- **Patented reversible absorption cycle.**
- **Air source/cooled heat exchanger** with single row aluminium fin coil.
- **Evaporator/Condenser-Absorber** tube and shell tower geometry made of stainless steel.
- **Axial fan** with thermally protected motor drive and

- safety protection grid.
- **Pre-mixed gas burner.** Stainless steel multiple gas type with ignitor and flame sensor device controlled by an electronic ignition box.
- **Microprocessor control.** Printed resin electronic circuit with LED display. Ensures optimum operation of the absorption cooling process while allowing easy access of unit data for preventative maintenance and diagnostics.
- **Optional Direct Digital Controller (DDC).** A single device to fully manage and control Robur units.
- **Built-in safety and control devices.**

PERFORMANCE RATINGS - HEATING ⁽¹⁾			RTAR	RTAR	RTAR	RTAR
			120-240	180-360	240-480	300-600
Heating capacity ⁽²⁾	BTU/h		240,800	361,200	481,600	602,000
Gas input	BTU/h		191,000	286,500	382,000	477,500
Ambient operating temperature	maximum	°F	95	95	95	95
	minimum	°F	-20	-20	-20	-20
Hot water temperature	maximum outlet (to hydronic system)	°F	140	140	140	140
	maximum inlet (to unit)	°F	122	122	122	122
Hot water flow	nominal	GPM	26.8	40.2	53.6	67.0
Internal pressure drop at nominal hot water flow		psig	4.2	4.2	4.2	4.2

PERFORMANCE RATINGS - COOLING ⁽¹⁾						
Cooling capacity ⁽³⁾	BTU/h		115,400	173,100	230,800	288,500
Gas input	BTU/h		191,000	286,500	382,000	477,500
Ambient operating temperature	maximum	°F	120	120	120	120
	minimum	°F	32	32	32	32
Chilled water temperature	minimum outlet (to hydronic system)	°F	37.4	37.4	37.4	37.4
	maximum inlet (to unit)	°F	113	113	113	113
Chilled water flow	nominal	GPM	25.6	38.4	51.2	64.0
Internal pressure drop at nominal chilled water flow		psig	4.5	4.5	4.5	4.5

ELECTRICAL RATINGS ⁽⁴⁾						
Required voltage, 60 Hz, single phase ⁽⁵⁾	V		208 - 230			
Operating consumption ⁽⁴⁾	kW		1.5	2.25	3	3.75

PHYSICAL DATA ⁽¹⁾						
Operating weight	pounds		2,086	3,144	4,027	5,242
Chilled water entering and leaving connections	FPT		1 1/2	1 1/2	2	2
Gas inlet connections	FPT		1	1	1	1
Dimensions	width	inches	49 1/2	49 1/2	49 1/2	49 1/2
	length	inches	100	153	204	255
	height	inches	53 1/4	53 1/4	53 1/4	53 1/4

⁽¹⁾ All illustrations and specifications contained herein are based on the latest information available at the time of publication.

⁽²⁾ Heating capacity at standard conditions of 44.6 °F ambient temperature. Hot water outlet temperature 122 °F, hot water inlet temperature 104 °F.

⁽³⁾ Cooling capacity at standard conditions of 95 °F ambient temperature. Chilled water outlet

temperature 44.6 °F, chilled water inlet temperature 53.6 °F.

⁽⁴⁾ May vary by ± 10% as function of both power supply and electrical motor input tolerance.

⁽⁵⁾ Modular links are factory-wired for 208-230 volts operation.

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

Optional DDC

- One Robur DDC can control up to 16 units working on a common hydronic loop or up to 48 units on a common loop when connected to two additional Robur DDCs.
- Programmable time scheduling.
- Monitoring of inlet and outlet water temperatures.
- Sequence step control of multiple units (Staging).
- Equalizes run time of individual modules.
- Visual and audible alarm for each module.
- Constant display of the system operating parameters.
- Logging and displaying of fault events.
- General fault and burner lockout signal for remote connection.

