

Gas Absorption Reversible Heat Pump System

Messaggerie del Garda

Castiglione delle Stiviere (Mantova) - Italy



caring for the environment



The former system supplied heating and cooling to the glass walled 3-floor building and to the keeper's house included using an oil boiler and a water cooled electric chiller with evaporative tower placed on the flat roof.

Using Robur Absorption Heat Pumps, it was developed an highly efficient system (heating efficiency up to 126% HHV) optimising energy consumption with low impact on the previous water system.

Taking into consideration economic and performance factors, the change from oil to natural gas-fuelled boiler was absolutely necessary.

After a year of complete operation (winter and summer included), energy advantages have been proved by a practical test: electricity and gas bills

Former chiller electricity consumption	\$ 36,000 per year
Former boiler oil consumption	\$ 15,000 per year
Former system total consumption	\$ 51,000 per year
Robur GAHP gas consumption	\$ 22,500 per year
Robur GAHP electricity consumption	\$ 13,500 per year
Robur GAHP total consumption	\$ 36,000 per year

TOTAL SAVINGS	\$ 15,000 per year
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Heating



Cooling



DHW



Evaluation of the capability of the heat exchange surface has been carried out, since heat pump operating temperatures are typically lower than those of traditional boilers and fan coils size turned out to be adequate for the system load. **Thus, no change to the whole indoor plant was required.**

N° 3 Robur Gas Absorption Heat Pumps, GAHP-AR type have been installed. These units are able to supply hot as well as cold water, using

natural gas or LPG as primary energy, with the following main advantages:

1. heating efficiency up to 126%;
2. hot water up to 140 °F with nominal heating capacity up to 361,200 BTU/h;
3. chilled water down to 37.4 °F with nominal cooling capacity of 173,100 BTU/h;
4. no additional boiler room required since the units are designed for outdoor installation;

5. reduction in energy consumption and fixed charges;
6. no water consumption since there is no more cooling

7. better energy management, thanks to the use of modular units.

Building type	Commercial
Surface	8,610 sq. ft. building + 645 sq. ft. keeper's house
Energy distribution system	N. 4 water circuits (3 floors building plus keeper's house). Fan coils provided with thermostat in each room.
Unit number and type	3 GAHP-AR Gas Absorption Reversible Air-water Heat Pumps
Heating capacity	361,200 BTU/h
Cooling capacity	173,100 BTU/h