

Gas Absorption Reversible Heat Pump System

Kelly Residence

Glastonbury, CT - USA



A new 9,000-sq-ft Colonial-style house is now being heated and cooled by two natural gas-fired absorption heat pumps Robur GAHP-AR. This is one of the first residential installations of these unique heat pumps, which have a rated efficiency of 126%.

Mark Falade, president, Marx Diversified Interests, Hebron, Conn., designed the heating and cooling systems had previously worked with Robur equipments, and he knew the

company offered a high-efficiency combination boiler-chiller system that could potentially work in this application. "I went to look for the original product, and there was the new heat pump. The numbers were amazing as far as I was concerned. I couldn't believe that anything out there would do something like this. It's the first product that takes an ammonia absorption chiller and reverses that process and uses it to produce heat."



Heating



Cooling

For every dollar the homeowners spend to operate these heat pumps in heating mode, they will receive an average of \$1.26 in energy returned.

The HVAC system includes the absorption heat pumps, which serve a radiant heating and hydro-air heating and cooling system, as well as high-efficiency air cleaners, humidification, programmable thermostats, and zoning.

The radiant system is connected to the heat pumps, which provide a continuous supply of 110 °F water.

Only the floors in the traffic areas are warmed, including the bathrooms, kitchen and foyers, as well as the basement and three car garage.

The radiant system is limited by thermostats but will run continuously at lower outdoor temperatures. It effectively heats the living areas of the home until the outdoor temperature reaches about 20 °F.

Once the air temperature in any given zone drops

below 70 °F, the thermostat in that zone will turn on its respective air handler, which in turn will call for warm water from the heat pumps.

All air handlers are set to low fan speed, which serves to minimize noise from the distribution system.

“Having the radiant heating system operate off the heat pumps dramatically increases their efficiency”, noted Falade.

“The radiant is really where you save your money, especially if the house is well insulated like this house is. You can turn the water temperature way down and still get a nice consistent temperature in the house. That’s really the secret: the lower you can go with the supply water temperature and keep your customer comfortable, the less money they’re going to spend on fuel”.



Building type	Residential
Surface	9,000 sq. ft.
Energy distribution system	Radiant heating and hydro-air heating and cooling system, as well as high-efficiency air cleaners, humidification, programmable thermostats, and zoning
Unit number and type	2 GAHP-AR Gas Absorption Reversible Heat Pumps
Heating capacity	240,800 BTU/h
Cooling capacity	115,400 BTU/h