

Keeping Your Cool

Gas-driven heat pumps are an increasingly efficient, affordable way to control your home's temperature.

By Pam Baker

For decades, having a comfortable home has been just a thermostat setting away and rarely did it require much thought beyond determining an ideal temperature. But like most technologies, cooling units have changed rapidly in recent years, and there's much to be gained from installing the latest models. Understanding what's new in air conditioners will help you lower energy costs and provide greater temperature control in individual rooms.

Heat pumps retain the lead position in home cooling options but the units of today are radically different than those of years past. For one thing, some of today's heat pumps are powered by environmentally friendly natural gas rather than by electricity. Also, when in the heating mode, most natural gas models don't contain expensive-to-replace moving parts such as compressors, nor do most natural gas models require an expensive backup heating system to handle really cold days. So your family is not only saving money on utility bills, but also on maintenance and part-replacement costs.

Gas-fired absorption heat pumps, also known as gas heat pumps (GHP), offer solid savings and a wide range of comfort features. This technology has been tried and tested for decades in Japan. Most people are pleasantly surprised to learn that this technology, which has only recently come into widespread use in the United States, is not new.

"Gas-driven heat pumps are not new to people in other parts of the world," explains Tim Cone, chief operating officer of marketing at IntelliChoice Energy, which distributes NextAire gas heat pumps. "These types of cooling units have been successfully used for the past 20 years worldwide. They are most heavily in use in technology-savvy Japan."

This is not to say the technology is totally foreign to North America. "Gas absorption cooling, which has no compressor, is a proven technology that's been in commercial use since the 1920s," says Rick



Halbig, national sales manager at Robur. "Ask your grandparents if they remember Servel gas refrigerators; I'm sure they do. The technology was later adopted for air conditioning purposes in the mid 1960s. Research to reverse the cycle and develop a heat pump model had been ongoing for several years."

Robur and NextAire are two brands that were among the first to move into the American home market, both of them offering units for a wide range of home sizes. When it comes to the large, luxurious homes, one or the other of the two brands are usually found in use — and for good reasons.

Gas air conditioners are perfect for homes in hot, humid climates. But make no mistake, an 1,800-square-foot home benefits from using a gas air conditioner as does a 10,000-square-foot luxury home in any climate.

Gas absorption units are kinder to the environment and your wallet than electric units. These extremely high-efficiency gas-fired absorption heat pumps reduce annual operating costs by up to 40 percent.

"When compared to the other types of electric heat pumps, the primary difference is that Robur uses a chemical process with our absorption generator (also known as a thermal compressor with no moving parts), whereas an electric heat pump uses a mechanical process with a mechanical compressor," explains Halbig. "There is no mechanical compressor in the Robur unit so there is no expensive part to wear out that needs repair or replacement."

"When our heat pump unit is being used for heating we are utilizing the heat from the absorption process with heat extracted from the outside air. The combining of these two energy sources results in the high heating efficiency of the unit."

Robur's GAHP-AR (Gas Absorption Heat Pump – Air Source Reversible) unit has nominal capacity ratings of 4.8 Tons (57,700 Btu/hr) cooling and 120,000 Btu/hr heating. The unit's heating efficiency at rated conditions is an outstanding 126 percent. The Robur unit's



back-up heating equipment that is usually very costly to operate,” Halbig says.

NextAire’s eight-ton multi-zone GHP (gas heat pump) unit can replace multiple, noisy conventional units typically used in larger homes. It is also much quieter, operating at less than 57 decibels. “There is more design flexibility too since the system can be conveniently located up to 400 feet from the building, well out of view,” Cone says.

Gas chillers are another great option. These work with chilled water and they present a number of design options that heavy ductwork systems do not. They, too, have all the energy savings and green benefits as other gas-driven air conditioning units.

Another distinct advantage is the qualification for LEED points necessary for green-building certification. “We’re trying to get things off the power grid to reduce the pull on the grid and the carbon footprint of the user,” Cone says. “Your electric bill will be significantly reduced, too.”

Halbig adds that while there are many reasons gas-driven absorption heat pumps are so popular these days, chief among them are the “lower greenhouse gas emissions, the absence of ozone-depleting chemicals in the refrigerant, the reuse of waste heat, and the extremely high efficiencies.”

The NextAire 8-ton multi-zone GHP allows you to maintain individualized temperature settings in up to 17 different spaces. You can easily and efficiently customize comfort levels based on usage and personal preference. “For example, you can keep a wine cooler room at perfect temps while keeping a mother-in-law suite a bit toastier. Whatever the personal preferences, zoning allows you to keep everyone happy and comfortable,” Cone says. ■

Sources: NextAire: www.icegHP.com, Robur: www.Robur.com

cooling-to-heating capacity ratio better matches the requirements for most homes in the northern half of the United States.

Its heating capacity in colder weather (temperatures below 32°F) is considerably greater than most electric heat pumps. Even at 5°F, its heating capacity is approximately 90,000 BTUs with an efficiency around 94 percent.

On heating applications where lower hot water temperatures are required, such as radiant floor heating, the efficiency of the Robur heat pump will be around 100 percent. Depending on the actual heating load of the space and how the Robur unit is sized, back-up heat is usually not required until outdoor temperatures start dropping below -10°F or -15°F.

“In many areas of the country where winter temperatures never drop below -20°F, this feature can avoid extra cost associated with back-up heating requirements and/or minimize the need to operate



BEAT THE HEAT – AND THE HUMIDITY

As most of us know, it’s not just summer heat that can wear us down – it’s also the humidity. That’s true both inside and outside of the home.

Maintaining the proper humidity is vital to having a healthy home. When humidity levels are too high (more than 50 percent RH, or relative humidity), your home can become a breeding ground for mold, mildew and fungus. When the RH is too low – less than 40 percent – it can lead to such ailments as sore throats, sinus pain and an increased growth of viruses.

“Maintaining a relative humidity between 40

and 50 percent offers tremendous benefits to homeowners,” says Scott Janke, executive vice president for NovelAire Technologies. “It prevents mold, reduces allergens, protects furnishings and saves energy.”

NovelAire’s Dessicant unit is one way to fight summer humidity – while at the same time protecting family members who suffer from respiratory ailments. The unit has a separate humidistat, which allows you to control the humidity of your home independent of the central HVAC system.

Source: NovelAire, www.novelaire.com