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Commercial HVAC Gas Heat Pump

Considerations for Installation

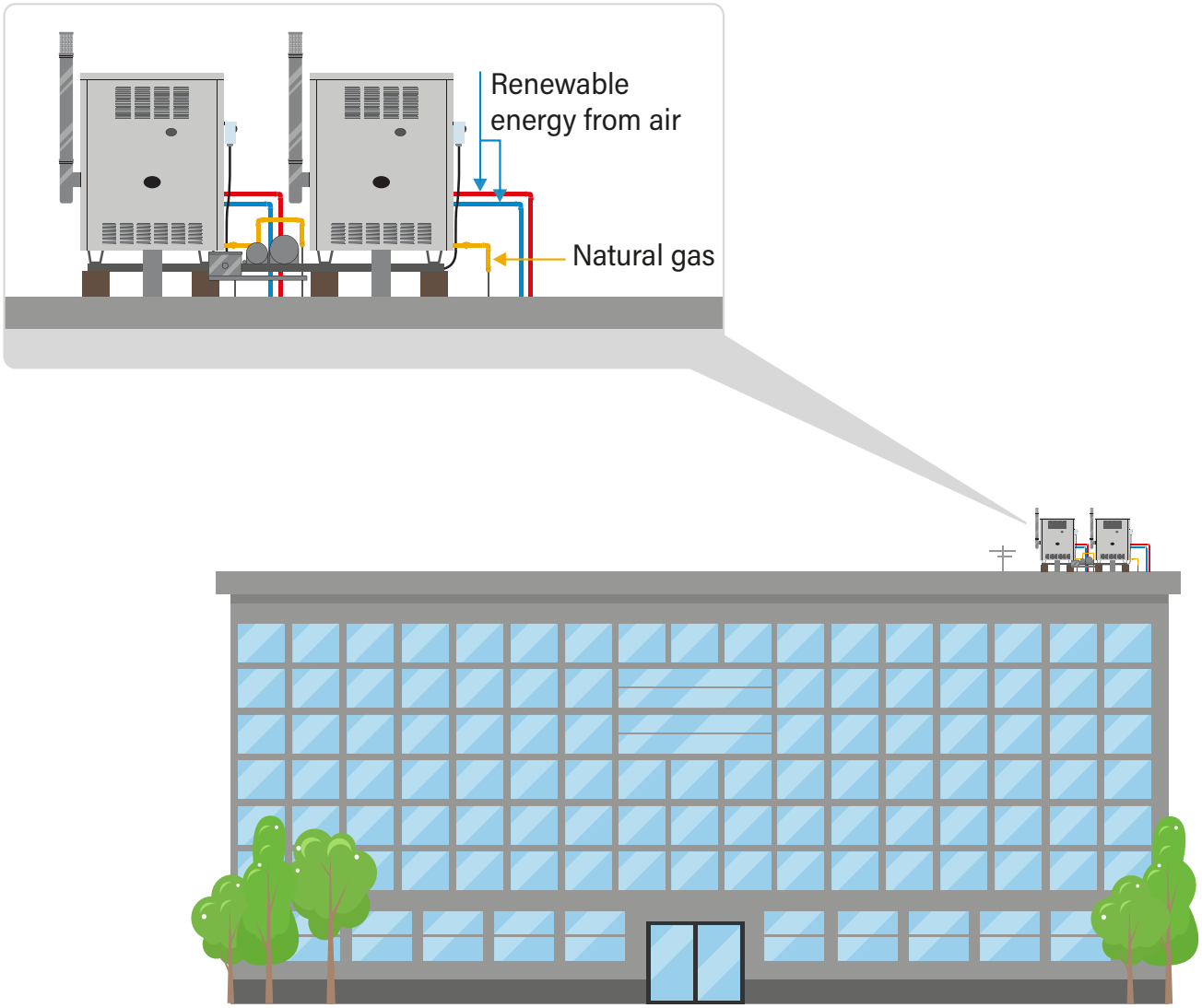
Introduction

Commercial gas heat pumps (GHPs) are a highly energy-efficient technology used for space heating, cooling and/or water heating. These products operate similarly to electric heat pump technologies where heat is moved from one place, such as air, water, or the ground, and is transferred indoors.

There are two major types of commercial gas heat pumps: gas-engine driven heat pumps (GEHP) and gas-absorption heat pumps (GAHP). GEHPs supply year-round heating and cooling. They use a natural gas engine to power a compressor, which drives the refrigeration cycle. GAHPs supply heating, cooling and domestic hot water. Compared to electric heat pumps, GAHPs use ammonia as a refrigerant instead of hydrofluorocarbons, resulting in zero global warming potential. **Figure 1** demonstrates how GHPs typically work.

Commercial GHPs are highly efficient and versatile – proving capable of reducing energy consumption in a variety of applications. GHPs efficiently utilize the heat coming from the combustion of natural gas, and they do not require a backup heating source like electric heat pumps. Commercial GHPs offer modularity and a wide range of sizes/systems and have minimal annual maintenance. Additionally, they can perform in a wide temperature range, particularly colder climates.

Figure 1. Commercial gas heat pump



Product benefits and features

Commercial GHP technology offers commercial and industrial organizations numerous benefits including energy and cost savings, utilization in cold climates and greenhouse gas reductions.

- **Energy and Cost Savings.** Commercial HVAC GHPs are over 120% efficient[1] (AFUE). This high performance continues in freezing temperatures, significantly reducing the amount of gas needed for heating. The energy saving can be up to 40%[2] in operational costs compared to condensing boilers.
- **Cold Climates.** Because cold ambient temperatures only minimally impact the performance of gas heat pumps, a commercial GHP is a highly efficient solution in cold climates. These units are capable of efficiently heating down to -40F (-40C) without a backup heating source.

Commercial HVAC GHP customer benefits

Natural gas is the most predominant and economical form of heating in North America. GHPs have the potential to significantly reduce energy use and greenhouse gas emissions. Customer electricity can cost up to three times more than the cost of natural gas and customers can save up to 40% in operational costs when compared to condensing boilers.[3,4] Commercial GHPs reduce peak demand on the electric grid, resulting in energy savings. For example, GHPs reduces electrical power for air conditioning by about 90% by using gas to drive the heat pump compressors.[5] Additional customer cost savings occur because natural gas is typically cheaper than electricity.

GHPs can be utilized in a variety of applications. They can be combined with boilers, variable refrigerant flow (VRF) and domestic hot water (DHW) heaters for improved efficiency of existing systems and redundancy. In addition, GHPs can provide domestic hot water heating up to 149°F. New product as of Q2 2025

1 Robur product line
2 Robur, https://www.robur.com/en-us/products/gahp-a
3 ESC, Efficient & Affordable Natural Gas Heat Pumps The Guide to Efficient & Affordable Natural Gas Heat Pumps
4 Robur, https://www.robur.com/en-us/products/gahp-ar
5 Yanmar, https://www.yanmar.com/global/energy/ghp/vrf/merits.html
6 Anesi, https://stonemountaintechnologies.com/resources/technical-library/#technical-bulletins

Considerations for installation

Installation best practices

Quality service and installation can generate word-of-mouth referrals, increase sales and improve customer satisfaction. To ensure customers get the most from their commercial HVAC GHP system, this guide includes considerations for contractor installation.[6] However, since GHPs can be used effectively in a variety of scenarios, the installer must assess and apply these suggested best practices according to the specifics of each situation. This document does not replace manufacturer specifications or installation guidelines.

Location considerations

Commercial GHPs are typically installed outdoors. In addition, there are a variety of other factors to consider when selecting the appropriate location.

- Ensure ample space for the GHP and all required clearances per the manufacturer's instructions. Adequate space will allow easy access to all controls, filters and drains.
- The building must have a dedicated outdoor space either on the ground level or roof for the GHP unit.
- Ensure the GHP site is reasonably level and able to withstand its weight.
- Pre-emptively assess the appliance's sound effect in connection to the site, considering that building corners, enclosed courtyards, and restricted spaces may amplify the acoustic impact.
- Keep the appliance away from combustible or flammable materials or components.
- Ensure a minimum clearance of 4 feet horizontally from electric meters, gas meters, regulators and relief equipment.
- Position the appliance away from the roof edge drip line.
- The GHP should not be placed within 6 feet of any external air intakes of the building. For installations on balconies or roofs, the appliance should not be located within 8 feet of chimney flues, outlets and other such vents.
- Use a collection basin or containment rim and a discharge system for the defrosting water to avoid overflowing, freezing or damage.
- If the GHP is installed directly on the roof surface, conduct a proper roof structural analysis before installing. Use base supports for installation.
- Avoid installation directly above sleeping quarters. If not possible, use vibration isolators and vibration-dampening pipe fittings between the unit and the piping system.
- Ground-level installations should use vibration-damping base supports or a 4 inch concrete slab.
- Anti-vibration joints should be installed between the appliance and water or gas pipes.

Other considerations

- Excess noise may occur if the water lines are sized without regard to the appropriate velocity of the water/mono ethylene glycol solution. Consult manufacturer for appropriate pipe size.
- Active antifreeze self-protection is only effective if the power and gas supplies are assured. Antifreeze is required in cold climates.
- Free chlorine or water hardness may damage the GHP. Adhere to the chemical-physical parameters and water treatment regulations for residential and industrial heating systems.
- The electric system should be wired appropriately for phase type, voltage and hertz specifications.
- Perform preliminary checks of the equipment before the first use according to manufacturer and warranty specifications. This may include checking the water, electrical and gas systems for their required capacities, safety and control devices; checking for leaks in the water and gas systems; checking the type of gas being supplied and associated gas pressure; and checking for any issues with the flue exhaust duct and power supply.
- Have a qualified service technician or engineer perform work on sealed circuits.
- Regularly service the GHP after installation to maintain the system's performance and keep running costs low. Follow the manufacturer's recommended service requirements.

Contact us at **Innovative-Solutions@PeoplesGasDelivery.com** or **InnovativeWaysToSave.com** to get started.

6 Installation considerations is provided, in part, from Robur, Corp. for contractors installing GHPs and air handling units (AHU) for absorption GHP types.

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