



• WHAT IS A GAS HEAT PUMP (GHP)?

GHPs move heat from an external heat source to a heat sink (indoors) using natural gas as the primary energy source to drive the thermodynamic cycle. Heat pumps extract heat from air, water or the ground, and then move (pump) this heat to the inside space. Heat pumps are incredibly efficient, exceeding the 100% efficiency barrier, something conventional HVAC equipment cannot achieve.

• HOW DO GHPs WORK?

Heat pumps in heating mode are effectively air conditioners running in reverse, extracting heat from outdoors and efficiently moving it indoors. Engine-driven GHPs work very similar to electric heat pumps, with the electric motor replaced by a natural gas engine. Absorption GHPs replace the motor and compressor with a generator and absorber running on natural gas.

• WHAT ARE THE BENEFITS OF A GHP?

GHPs lower heating and cooling costs, reduce Greenhouse Gas Emissions (GHG) and provide a reliable system that does not require a back-up heating source.

• ARE GHPs ENERGY EFFICIENT?

Yes. For heating, GHPs offer Coefficient of Performance (COP) ratings between 1.2 to 1.4 or greater. For cooling, COP is typically 1.3 for an engine-driven GHP or 0.6 for absorption. Even at 0.6, absorption GHPs still tend to save money over conventional cooling systems. When simultaneously cooling and heating, COPs can reach as high as 3.0.

• HOW WILL A GHP IMPACT MY GAS BILL?

GHPs reach 140% heating efficiency compared to 80% for a typical gas furnace or boiler, which leads to savings of 30-50%. When using a GHP for cooling, gas bills increase during cooling season, but are offset by significantly reduced electric bills.

• DO GHPs STILL USE ELECTRICITY?

Yes. Like a gas furnace, GHPs use electricity for controls, fans, pumps, etc. Electric usage is negligible and does not require costly electric upgrades.

• CAN I REPLACE MY EXISTING ELECTRIC HEAT PUMP WITH A GHP?

Absolutely. When natural gas is available a GHP saves money, provides warm comfortable heat and does not require a backup/emergency heat system like electric heat pumps do.

• DO GHPs OPERATE BELOW 35°F (1.7°C)?

Yes. Heat recovered from the combustion process allows GHPs to operate below 0°F (-17.8°C) without the need for back-up heating. In comparison, standard electric heat pumps typically switch over to electric resistance or emergency heat mode when the outside temperature drops below 35°F (1.7°C).

• WHAT IS THE AVERAGE LIFESPAN OF A GHP?

GHPs typically have a lifespan of 20 years.

• WHAT MARKETS & APPLICATIONS ARE BEST FOR GHPs?

GHPs work well in commercial and residential space and ventilation heating, DHW heating and space cooling. GHPs are already available for commercial markets.

• WHO MAKES GHPs?

Search manufacturers at <https://gasairconditioning.com/technologies/heat-pumps/resources/>

• WHEN WILL RESIDENTIAL GHPs BE AVAILABLE FOR PURCHASE?

GHPs are already available for larger homes, with smaller units under development and commercialization.

• CAN GHPs OPERATE ON RENEWABLE GAS?

Yes. GHPs can run on renewable gas (RNG) and blends of hydrogen for significant greenhouse gas reductions.