

GEOTHERMAL: THE SMARTER CHOICE



CONSUMER LITERATURE



TEMPSTAR[®]
Heating and Cooling Products
Quality you can feel.

WHY TEMPSTAR HEATING AND COOLING PRODUCTS?

Throughout the historic legacy of Tempstar Heating and Cooling Products, the company has provided millions of families with the finest comfort systems available. Offering a wide variety of state-of-the-art furnaces, air conditioners, heat pumps and now geothermal systems, Tempstar® dealers offer a complete line of products you can depend on.

WHY GEOTHERMAL?

Geothermal systems offer incredible energy efficiency and long-term cost savings, and they can create a more even, consistent level of comfort in your home. Within our geothermal options, Tempstar Heating and Cooling Products offers a wide variety of units, features and options, ensuring we have a geothermal system your family can depend on. For the homeowner who expects more from their heating and cooling system, geothermal offers just that.



GEOTHERMAL: HOW YOU'LL BENEFIT

UNMATCHED ENERGY EFFICIENCY

Tempstar® geothermal systems can save consumers up to 70% in annual heating and cooling costs.* By using the earth's natural thermal storage energy to heat and cool your home, geothermal systems deliver up to four units of energy for every one unit of energy purchased. Those are savings you can depend on, keeping more of your hard-earned money in your pocket every month.

SUPERIOR COMFORT

Geothermal systems provide even temperatures throughout the home all year long, with excellent dehumidification when cooling and optimal humidity when heating for the ultimate in home comfort. Banish hot and cold spots from your home forever with Tempstar geothermal. You'll also enjoy peace of mind knowing that geothermal units can last longer and operate for years virtually maintenance-free.

FITS YOUR NEEDS

A wide variety of units, features and options ensures we have a system to meet your family's needs. Our models allow for multiple configurations so we can tailor the system to your needs, and our best-in-class warranties ensure peace of mind.

30%

Qualified homeowners may be eligible for a tax credit of 30% of the installed system cost. This credit can be used to offset both alternative minimum tax and standard income taxes and may be carried over to future years.

*Savings calculated using Tempstar LoopLink software. Comparison based on simulation in Dallas, Texas. Tempstar 6-ton unit vs. standing pilot propane furnace, standard air conditioner and local fuel rates. Actual savings will vary based on configuration, weather and local energy costs.

EFFICIENT

Tempstar® geothermal products deliver up to four units of energy for every one unit of energy purchased, saving you up to 70% in annual heating and cooling costs.* In addition, units (HP, HS & HW) equipped with a two-stage compressor let the unit run at high capacity only when necessary, saving additional energy.

COMFORTABLE

Geothermal systems utilize moderate ground temperatures to ensure you and your family enjoy consistent, comfortable temperatures throughout your home with optimal humidity and zero hot or cold spots.

COST-EFFECTIVE

Because of the extremely low cost of operating a geothermal system compared to ordinary heating and cooling systems, existing homes could recover the added cost of the system within 5–7 years. New home builds could be saving money from day one. You can even use excess heat from system operation to supplement your water heater.

SAFE

By eliminating fossil fuels from the heating process, Tempstar geothermal systems also remove combustion, flame, fumes, and the chance of carbon monoxide poisoning from your home.

QUIET

Unlike ordinary heating and cooling systems, geothermal systems require no outdoor unit. Our products include heavy-duty sheet metal cabinets, high-density insulation, and a double-isolation mounted compressor for quiet operation.

DEPENDABLE

Geothermal units last up to 30% longer† than ordinary air conditioners and heat pumps. Made from high-quality materials, their placement inside the home and out of the weather means they can operate for years virtually maintenance-free.

GREEN

Geothermal systems reduce your carbon footprint today and for future generations. In fact, geothermal systems are better for the environment than ordinary heat pumps, cutting up to 50% of carbon emissions.‡



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†Geothermal unit with 20+ year life expectancy (http://www.energy.gov/sites/prod/files/guide_to_geothermal_heat_pumps.pdf) compared to average lifespan of residential split air conditioner or residential air-to-air heat pump (2015 ASHRAE Fundamentals Section 37.3)

‡Geothermal Exchange Organization, 2015; compares baseline building CO2 Emissions to Geothermal CO2 Emissions (17.7 mtons/yr baseline vs. 9.2 mtons/yr for geothermal).



HOW GEOTHERMAL MAKES THE MOST OF THE EARTH'S ENERGY

Geothermal offers an energy-efficient, cost-effective space conditioning system that taps into the earth to capture its renewable energy.

The sun heats the earth, which then stores about 47% of that energy in the ground. Just a few feet below the frost line, the temperature remains between 55 and 70 degrees all year round in many climates.

WINTER

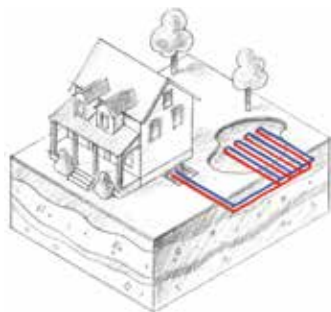
A geothermal system extracts the energy stored in the earth during the winter, concentrates that energy through compression, and then uses it to heat your home. So instead of heating using ice-cold air like an ordinary heat pump, our systems make the most of heat that already exists in the ground.

SUMMER

In the summer, the process is reversed. A geothermal system extracts the heat from your home and transfers that heat to the ground. Unlike ordinary cooling systems that are forced to dispose of excess heat into hot air, the cool ground just a few feet below the surface is ready to accept that heat.

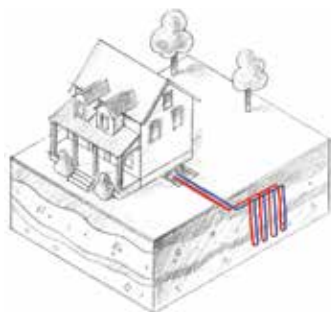
THE LOOP: AT THE CENTER OF IT ALL

A geothermal earth loop provides the transfer mechanism that moves heat from the earth to your home and vice versa. There are four types of underground loops. We can meet your needs even in as little as 15' x 15' of space in some homes.



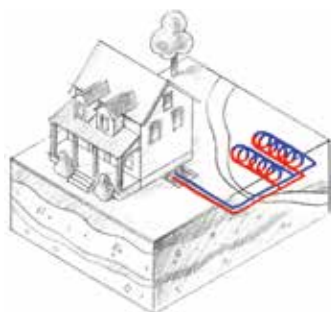
HORIZONTAL LOOP

Perfect for larger lots. Involves one or more horizontal trenches dug with a backhoe or trencher. Polyethylene pipes are laid in trenches that are then backfilled. Typical install requires a half-acre of available space.



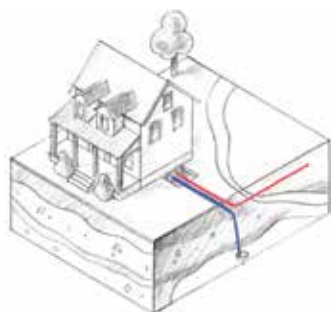
VERTICAL LOOP

Appropriate for limited land installs or when soil conditions prohibit horizontal loops. A drilling rig bores holes into the ground and pipes are inserted vertically.



POND LOOP

Ideal for homes located near an adequately sized body of water. Involves sinking a series of coiled, closed loops to the bottom of the body of water and then connecting those to the geothermal system.



OPEN LOOP

Best for homes with an abundant supply of quality well water. Water is drawn into the geothermal system, used by the system, and then discharged into an adjacent drainage ditch or pond.

PACKAGED UNITS

VERTICAL UPFLOW/VERTICAL DOWNFLOW/HORIZONTAL

Efficiency – Up to 4.6 COP and 30.0 EER
Copeland two-stage scroll compressors*

Variable-speed ECM blower motors*
Microprocessor control
** on selected models*



| | | |
|--|--|--|
| Applications | <p>HP Series Upscale Great choice for excellent performance and reliability</p> | <p>HB Series Performance Standard, solid performer at a base tier price</p> |
| Sizes | 2, 3, 4, 5, 6 | 1.5, 2, 2.5, 3, 3.5, 4, 5 |
| AHRI Ratings (13256-1) Closed Loop (GLHP) Ground Water (GWHP) | <p>3.5 – 4.0 COP, 15.5 – 24.5 EER 4.0 – 4.6 COP, 19.6 – 30.0 EER</p> | <p>3.7 – 4.3 COP, 18.5 – 21.7 EER 4.3 – 5.2 COP, 22.7 – 28.1 EER</p> |
| Compressor | Two-stage unloading scroll | Single-stage scroll (Rotary in 018) |
| Blower | Variable-speed ECM Constant CFM | Multi-speed ECM Constant torque |
| Cabinet Configurations | Vertical upflow Vertical downflow Horizontal | Vertical upflow Horizontal |
| Stages (* with Aux.) | 3 stages heating* 2 stages cooling | 2 stages heating* 1 stage cooling |
| Control | Microprocessor control | Microprocessor control |
| Air Coil | Tin-plated copper tubing | Tin-plated copper tubing Coated coil |
| Air Filter | MERV 8, 2" | MERV 8, 2" |
| Cabinet Insulation | Closed cell foam | Fiberglass |
| Compressor Blanket | Yes | No |
| Desuperheater | Optional Internal mount pump | Optional Internal mount pump |
| Auxiliary Heat | Optional Internal mount on vertical units | Optional Internal mount on vertical units |
| Smart Start | Optional (field installed) | Optional (field installed) |
| Zone Control | Optional | Optional |
| ENERGY STAR® rated | All sizes | All sizes |
| Dealer Notes | | |

SPLIT UNITS

Efficiency – Up to 5.2 COP and 29.1 EER
 Copeland two-stage scroll compressors
 Use with FVM fan coils or Tempstar® furnaces
 with variable-speed blowers
 Great for dual fuel applications



HS Series Versatility

Great performance, used with
 air handler or gas furnace

2, 3, 4, 5

3.3 – 4.6 COP, 14.8 – 28.8 EER
 3.8 – 5.2 COP, 19.2 – 29.1 EER

Two-stage unloading scroll

Used with ECM furnace or fan coil

Compact cube

3 stages heating*
 2 stages cooling

Microprocessor control

Depends on air handler selected

Depends on air handler selected

Closed cell foam

Yes

Optional
 Internal mount pump

Depends on air handler selected
 Dual fuel option

No

Optional

All sizes

WATER-TO-WATER UNITS

Efficiency – Up to 3.8 COP and 25.7 EER
 Copeland two-stage scroll compressors
 Rugged, durable and reliable for a variety
 of hydronic applications



HW Series Hydronic

Heating and cooling capable
 for various applications

2, 3, 4, 5, 6

(13256-2)
 3.0 – 3.2 COP, 14.6 – 22.1 EER
 3.4 – 3.8 COP, 18.8 – 25.7 EER

Two-stage unloading scroll

Not applicable

Compact cube

2 stages heating
 2 stages cooling

Microprocessor control

Not applicable

Not applicable

Fiberglass

Yes

Optional
 Internal mount pump

Not applicable

Optional (field installed)

Not applicable

All sizes



FEATURES & BENEFITS

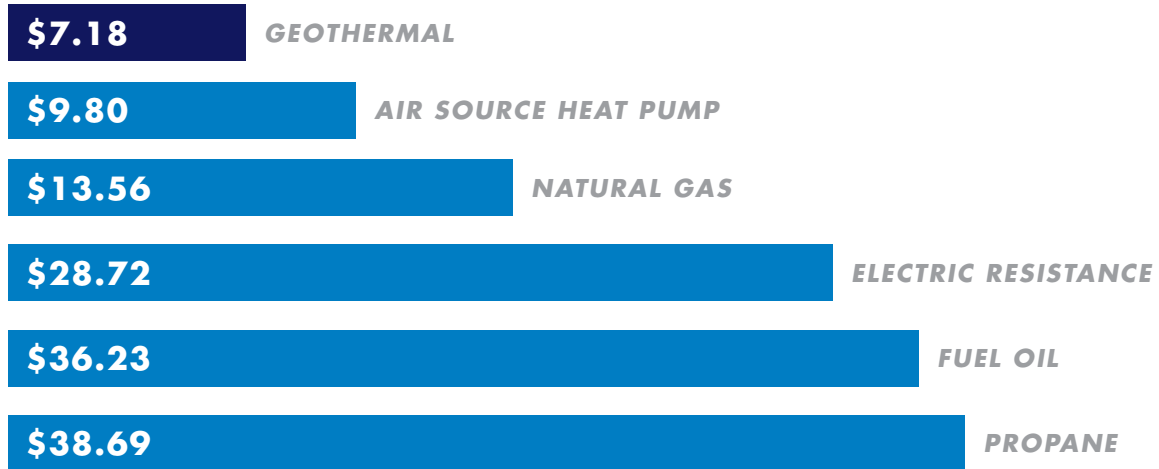
| MAIN PRODUCT FEATURES | BENEFITS |
|--|--|
| Copeland® Ultra-Tech™ two-stage unloading scroll compressor (single-stage scroll compressor on HB) | <i>Provides increased efficiency by allowing for low-stage use during lower demand times</i> |
| Variable speed ECM fan (HP) | <i>Can increase fan speed to deliver consistent required air flow</i> |
| Tin-plated copper tubing in air coil | <i>Additional durability, increased lifespan</i> |
| Heavy-duty sheet metal cabinet | <i>Additional durability, increased lifespan and quiet operation</i> |
| High-density insulation | <i>Increases efficiency and reduces noise</i> |
| Filter frame with two-inch MERV filter (HP, HB) | <i>Improves indoor air quality, keeps coil clean for energy efficiency and comfort</i> |
| Corrosion resistant drain pan | <i>Adds durability, increases lifespan</i> |
| Microprocessor control | <i>Precise sequencing for optimum performance, ease of service</i> |
| Dual-level compressor isolation | <i>Reduces sound during operation</i> |

YOUR QUESTIONS ANSWERED

ARE TEMPSTAR® GEOTHERMAL SYSTEMS REALLY THAT EFFICIENT?

In short, yes. Of course actual results may vary slightly, but the graph below offers a one-to-one comparison for heating and system efficiency.

COST COMPARISON FOR 1 MILLION BTUS (HEATING) COMPARE FUEL COSTS BASED ON FUEL RATES AND SYSTEM EFFICIENCY.



Source of Energy Rates: U.S. Energy Information Administration as of 4/30/14
Geothermal: 4.0 COP*, \$.098/kwh
Air Source Heat Pump: 10 HSPF[†], \$.098/kwh
Natural Gas: 90% AFUE[‡], \$1.22/ccf
Electric Resistance: 100%, \$.098/kwh

Fuel Oil: 80% AFUE, \$4.02/gallon
Propane: 90% AFUE, \$3.18/gallon
*COP stands for Coefficient of Performance.
[†]HSPF stands for Heating Seasonal Performance Factor.
[‡]AFUE stands for Annual Fuel Utilization Efficiency.

When cooling, a geothermal system offers an Energy Efficiency Ratio (EER) that's up to three times more efficient than a ordinary air conditioner.



HOW CAN GEOTHERMAL SYSTEMS DELIVER SUCH HIGH EFFICIENCY?

Tempstar® geothermal systems use the earth's natural thermal storage ability to heat and cool your home. Just a few feet below the surface, below the frost line, the earth's temperature remains a constant moderate temperature. Compare that to ordinary heat pumps and air conditioners that use outdoor air for heating and cooling. The temperature of the outside air often fluctuates widely, making geothermal systems operation much more efficient.

CAN I DEPEND ON MY TEMPSTAR GEOTHERMAL SYSTEM?

Absolutely. You'll also have the peace of mind that comes from owning a system with an average lifespan that's up to 30% longer* than ordinary air conditioners and heat pumps. Made from high-quality materials, their placement inside the home and out of the weather means they can operate for years virtually maintenance-free.

IS ONE KIND OF LOOP SYSTEM BETTER THAN ANOTHER?

Your Tempstar dealer will recommend the most appropriate loop system based on your lot size, soil type, well water availability, and other factors. All four systems have comparable operating costs.

DO I NEED A LARGE YARD TO INSTALL A LOOP SYSTEM?

In many homes, a Tempstar vertical loop system can be installed in a space as small as 15' x 15' with at least 10' of clearance from the home and adjacent property lines.

*Geothermal unit with 20+ year life expectancy (http://www.energy.gov/sites/prod/files/guide_to_geothermal_heat_pumps.pdf) compared to average lifespan of residential split air conditioner or residential air-to-air heat pump (2015 ASHRAE Fundamentals Section 37.3)



IS IT POSSIBLE FOR THE FLUID IN THE LOOPS TO FREEZE DURING COLD WINTERS?

No. We include antifreeze in the loop fluid to eliminate any chance of freezing.

HOW DOES AN OPEN LOOP OR WELL SYSTEM WORK?

Your Tempstar® dealer will check water quality and flow volume to ensure adequate supply. Geothermal units usually require between 4–9 gallons per minute during unit operation. Open loop systems also require a discharge location, such as a pond or drainage ditch.

WILL I HAVE TO TRADE COMFORT FOR EFFICIENCY?

Absolutely not. You'll actually find a Tempstar geothermal system makes your more comfortable. These systems use moderate ground temperatures to provide even temperatures throughout the home year round, with excellent dehumidification during cooling and optimal humidity during heating.

ARE GEOTHERMAL SYSTEMS NOISY?

Actually, they're quieter than ordinary systems. Tempstar geothermal units use heavy-duty, fully insulated cabinets for quiet, non-disruptive operation. Unlike ordinary air conditioners and heat pumps that require noisy outdoor units, a geothermal system is contained completely within the home.

WILL I NEED NEW DUCTWORK OR WIRING?

More often than not your Tempstar dealer can use the existing ductwork within your home without major changes. Our variable-speed ECM fans can even make up for sub-par duct systems. We recommend a 200 amp service for the home.

CAN GEOTHERMAL SYSTEMS WORK WITH IN-FLOOR HEATING?

Hydronic floor heating offers the ultimate in heating comfort by circulating heated water through tubes embedded below concrete and wood. Tempstar HW series units could be a perfect solution.

CAN I ADD A GEOTHERMAL UNIT TO MY EXISTING FURNACE?

You can. Our split units connect only the compressor section to your furnace and cooling coil. Under normal operation, the geothermal unit performs all the cooling and some of the heating. On colder days, the system switches over to furnace operation to maximize heating temperature and air capacity.

HOW QUICKLY WILL I SEE A RETURN ON MY INVESTMENT?

By including the cost of a geothermal system in the mortgage, new home builds may begin saving money on day one. Because Tempstar geothermal systems can save consumers up to 70% in annual heating and cooling costs,* an existing home could recover the added cost of the system within 5–7 years. Ask your Tempstar dealer to demonstrate the savings potential using LoopLink software.

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TAX CREDITS & INCENTIVES

Qualified homeowners may be eligible for a tax credit of 30% of the installed system cost. This credit can be used to offset both alternative minimum tax and standard income taxes and may be carried over to future years. Additional local/regional rebates or incentives may be available. (Learn more at dsireusa.org.)

BEST-IN CLASS WARRANTY

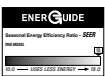
The only No Hassle Replacement™ limited warranty that you'll find in the industry backs every HP, HS, and HW product. It means comfort with no questions. We'll replace your unit if the compressor, coaxial heat exchanger, or air coil fails within the first 5 years. We give you extra coverage in addition to a 10-year parts and either a 5- or a 10-year labor limited warranty.*

**To the original owner, all HP, HS, and HW products are covered by a 10-year parts and labor limited warranty upon timely registration (the limited warranty period is 10-year parts and 5-year labor if not registered within 90 days of installation). To the original owner, all HB products are covered by a 10-year parts and 5-year labor limited warranty upon timely registration (the limited warranty period is 5-year parts and 5-year labor if not registered within 90 days of installation). Jurisdictions where warranty benefits cannot be conditioned on registration will automatically receive the "timely registration" coverage. See warranty certificate for complete details.*

All systems tested and listed by the appropriate agencies.



ISO 9001: 2000 Registered



As part of its commitment to quality, International Comfort Products reserves the right to change specifications on its products without notice. Illustrations and photographs in this brochure are only representative. Some product models may vary. Wi-Fi® is a registered trademark of the Wi-Fi Alliance Corporation.

HP/HB/HS/HW Series
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