

# Geothermal Energy Systems

## HOW GEOTHERMAL HEAT PUMPS WORK

Utilizing electrical energy, geothermal systems are extremely efficient. Geothermal systems use far less energy than air-to-air heat pumps. They typically deliver about three to four times more energy than they consume. During the summer, the unit extracts heat from your home and transfers it back to the circulating liquid in the underground loop system, where it is transferred into the cooler earth. During the winter, liquid circulating through the underground loop system absorbs heat from the earth and carries it to the geothermal unit which extracts the heat and then enhances the heat to a higher temperature and distributes it throughout the home. Another energy source is ground water. At a depth of 30 feet, ground water remains at a constant temperature (within a single degree throughout the year), and may be utilized in lieu of the underground loop system.

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## Geothermal Benefits

### SAVINGS

Geothermal heat pumps can cut your heating and cooling costs by 30% to 60% and provide hot water.

### COMFORT

Constant, even temperature and humidity control.

### SAFE & CLEAN

No pilot lights to worry about, no flue vent, no odors, and no toxic fumes.

### ENVIRONMENTALLY FRIENDLY

Helps reduce both outdoor noise and air pollution.

### DURABLE

Geothermal heat pumps last longer because they are housed indoors and protected from harsh weather conditions. No defrost cycles are needed like air-to-air heat pumps, which means less stress on critical components and no loss of operating efficiency.

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## Here Is How Fhp's Heat Recovery System Works:

FHP's Heat Recovery System employs a circulating pump that moves water from your hot water tank through a double wall vented heat exchanger and then returns the heated water to the tank. As the water passes through the heat exchanger, it is heated by the superheated discharge refrigerant gas as it flows through the other side of the heat exchanger. This heat transferred during the cooling mode increases the capacity and the efficiency of the heat pump. However, during the heating mode, this heat being transferred to the water would normally be used for space heating. During the heating mode the heat recovery system may be deactivated simply by the flip of a switch.

### FEATURES

Each Heat Recovery system is matched to the heat pump for optimum performance

Factory installed and UL approved

Hot Water Temperature limit safety switch

Low refrigerant gas temperature limit switch

The installation does not require an additional water storage tank - It utilizes your existing hot water tank

On/Off switch with an operational indicator light  
Copper double wall vented heat exchanger  
Hot water circulating pump  
Optional concentric fitting for connection to your hot water tank