WATERLESS® GEOTHERMAL

SIMPLE. EFFICIENT. EFFECTIVE.

WHAT MAKES WATERLESS® GEOTHERMAL SO DIFFERENT?

A Waterless® direct exchange geothermal, also known as a DX geothermal, is a type of geothermal heating and cooling system. Unlike traditional geothermal systems that use a water-filled loop buried in the ground, DX geothermal circulates environmentally friendly refrigerant directly through the ground loop, transferring heat to and from the earth. In summary: the main difference lies in less heat exchanges resulting in a more efficient ground loop; while a water source geothermal uses both water and refrigerant, Waterless® uses only refrigerant, eliminating the need for an extra heat exchanger. This results in higher energy efficiency and lower operating costs. Thousands of geothermal systems have been installed around the world.

THIS IS NOTHING NEW

Direct exchange geothermal technology is nothing new. It is a proven and reliable technology that has been around from the beginning of geothermal. In 1945 Robert C. Webber installed the first ever closed loop geothermal design. He buried copper tubes in the earth to heat & cool his house in Indianapolis, IN. He patented his system and it was even featured by "Ripley's Believe It Or Not."

COPPER GROUND LOOP

At the heart of a Waterless® geothermal system is a copper ground loop, the most conductive geothermal loop design in the industry. Copper tubing provides superior heat absorption from the ground, and allows the system to transfer more heat while using much less electricity than other heat pump designs.

LESS SPACE

Waterless® DX geothermal systems require less space for installation, especially when using vertical boreholes, making them ideal for properties with limited space or difficult terrain.

SAVE THOUSANDS EVERY YEAR

Waterless® geothermal systems can provide both heating and air-conditioning with savings of up to 70% over a conventional heating and cooling system (see figure 1). Stop paying for high priced heating fuels and start to enjoy the lowest utility bill you've ever had. Since the system is so efficient, you will be able to keep your home at a warm temperature during the winter months, and, a cool comfortable temperature in the summer, while still saving you thousands of dollars every year!

MANY EARTH LOOP DESIGNS

The Earth loop options for a Waterless® system can be seen in figure 2 on the next page. A smaller borehole requires less space needed to install. The diagonal loop configuration can be installed in an area as little as a 3-foot diameter space in the yard. A Waterless® geothermal system can be installed virtually anywhere. It's ideal in areas with little space, like a small lot in town or a lot in the middle of a woods

HEAT AND COOL A 2,100 SQ. FT. HOME FOR AS LITTLE AS $29 A MONTH!

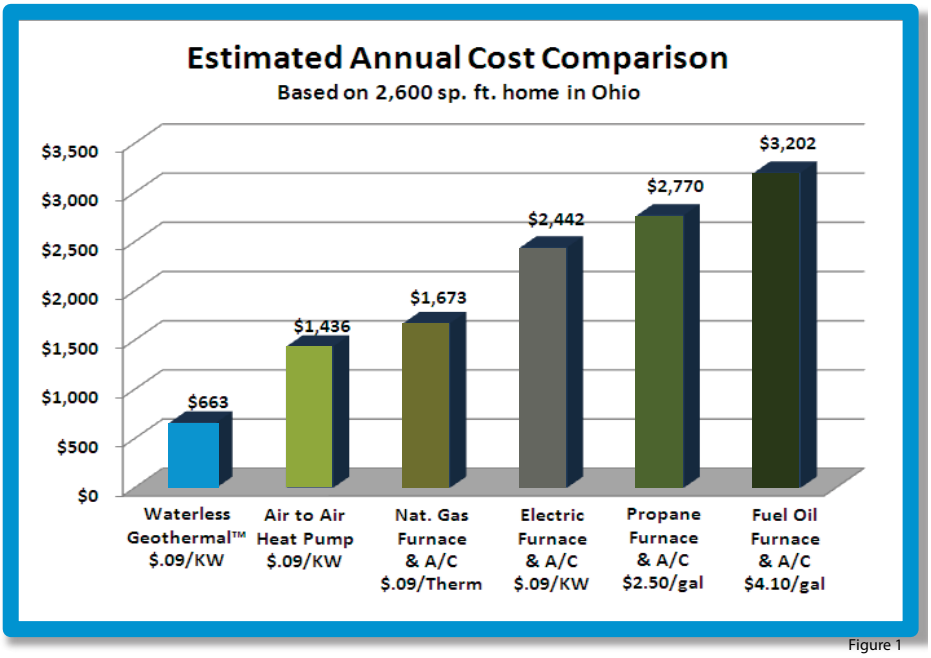


Figure 1

LOOP OPTIONS

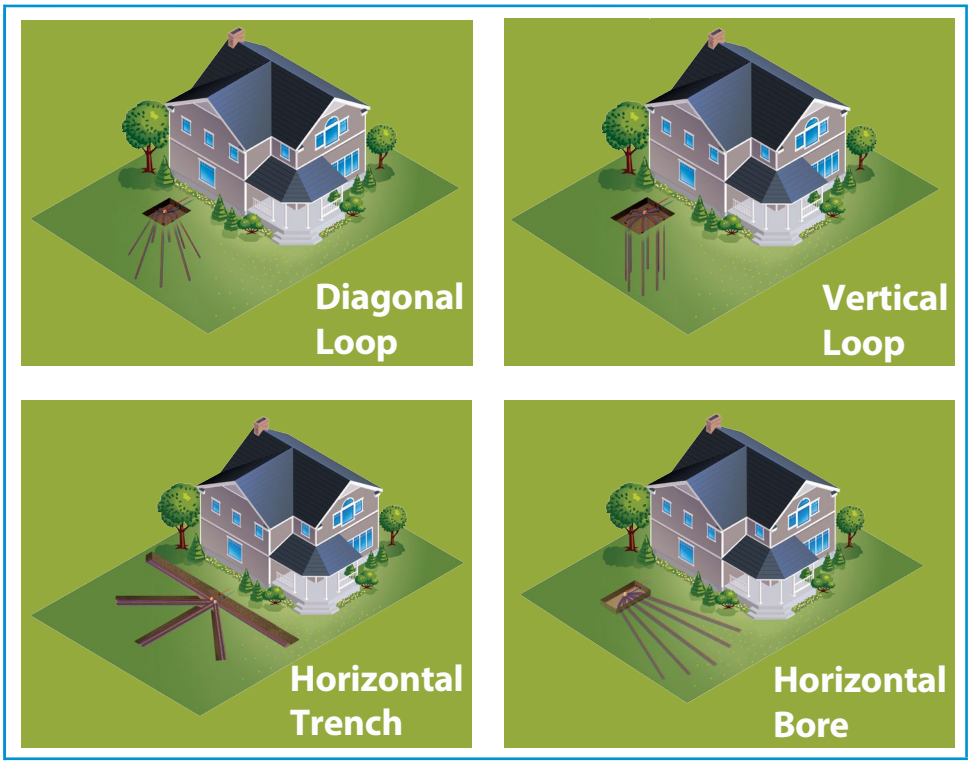


Figure 2

Advantages of a Waterless® Geothermal

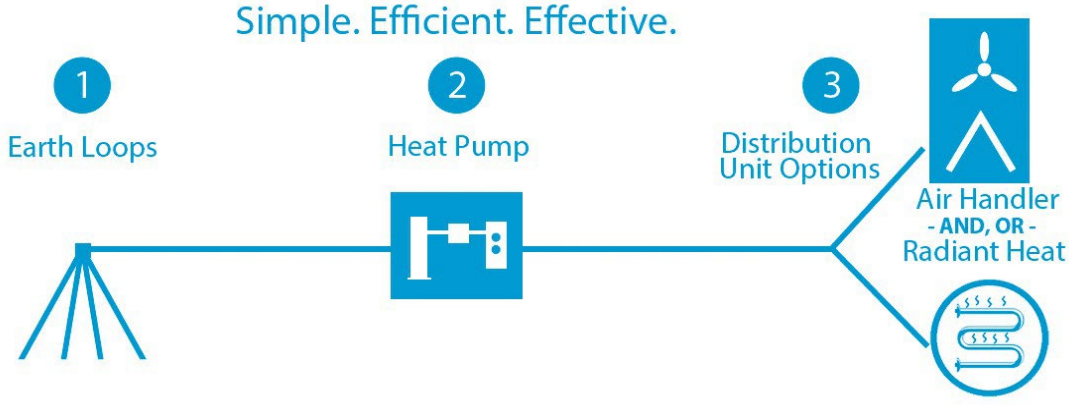
1. Bigger Savings
2. Longer Life Expectancy
3. Higher Efficiencies
4. No Water Or Antifreeze
5. Less Parts
   - No Water
   - No Water Pumps
   - No Plastic Pipes
   - No Water Heat Exchanger
6. Conductive Copper Earth Loop
7. Higher Performance In Extreme Weather
8. Less Backup Heat
9. Higher Heating

SIMPLE DESIGN

HOW IT WORKS

Pre-engineered for maximum performance, a Waterless® Geothermal Renewable Energy System works seamlessly with the stored energy in the earth. By using small, highly conductive copper (1) earth loops and environmentally friendly refrigerant, only a small yard space is needed to capture enough energy from the 55° earth to heat and cool your entire home. In the winter, the geothermal (2) heat pump transfers the sun's warm thermal energy stored in the earth into your home.

While maintaining a comfortable indoor environment, in the summer months, the process is reversed and the unwanted heat from your home is sent back into the earth. Our unique technology, controls this process to deliver heat safely and efficiently to your home. The (3) Distribution system conditions the individual rooms in your home via an air duct system or a radiant tube system.



ULTIMATE COMFORT

WARMER AIR TEMPERATURES

The Waterless® Geothermal System is designed to provide maximum comfort by delivering warmer air temperatures in the winter, and cooler air temperatures in the summer. By exchanging more heat energy with the earth in both the summer and winter. The system can comfortably heat and cool your home by using considerably less energy than other systems on the market.

IT'S QUIET

A Waterless® design also includes a sound package to reduce noise, making the system so quiet you may not even know it's running.

LOW MAINTENANCE & LONGER SYSTEM LIFE

LESS PARTS

The simple design of a Waterless® geothermal also eliminates a lot of extra parts that are typically used in geothermal. No water, no antifreeze, no water pumps, no plastic pipes, and no heat exchangers are needed with the simple, yet efficient design of a Waterless® geothermal.
Since the copper ground loop is buried underground, and the Waterless® geothermal system compressor unit is usually set inside the building, this eliminates the need for unsightly outdoor equipment. The Waterless® geothermal design also eliminates a lot of extra components within the system creating greater reliability, and less potential for future system breakdowns. This simplicity allows for more efficient heat transfers, higher efficiencies, more savings, and lower operating cost.

- *Greater Simplicity…*
- *Less Parts…*
- *Better Reliability…*
- *More Efficient Heat Transfers…*
- *Savings you can count on!*

Estimated Savings *(see Figure 4 for details)*	
5 yrs Savings	= $10,535
10 yrs Savings	= $21,070
15 yrs Savings	= $31,605
20 yrs Savings	= $42,140

Figure 3

COMMITMENT TO THE ENVIRONMENT

REFRIGERANT IS SAFE & EFFICIENT

Environmentally friendly refrigerant is such an efficient heat transfer substance that it is used in nearly every cooling system, air conditioner, refrigerator, heat pump, and geothermal system manufactured today. The refrigerant circulating through the copper ground loops offers a major efficiency advantage. Since refrigerant has the ability to transfer large amounts of heat from one area to another very efficiently, a DX geothermal can exchange more heat energy directly with the earth, heating and cooling more efficiently than other loop designs. The Environmental Protection Agency (EPA) even makes a statement that refers to the efficiency advantages of using refrigerant in the ground loop. They say, ***"Refrigerant is a non-toxic, inert gas, posing no direct health threat to humans – nor to the groundwater – and it can be used with confidence in underground heat exchangers... and it has an inherent efficiency advantage over a conventional water source geothermal."*** You can rest assured a DX geothermal is not only efficient, but also environmentally safe as well.

Natural gas, propane gas and fuel oil furnaces emit greenhouse gas (CO_2), which can cause global warming. The operation of one fossil fuel furnace is equivalent to cutting down 384 trees! With a geothermal system, greenhouse gases are non-existent, saving our environment and the 384 trees.

EASY INSTALLATION

GEOTHERMAL MADE SIMPLE

The installation of a Waterless® Geothermal System is efficient, typically taking only 5-7 days. The process begins with a thorough evaluation of your home to determine the optimal system configuration. Next is the installation of the copper ground loops, which are determined by the chosen loop design. After the earth loops are installed, the loop is pressure tested, the area is back-filled, seamlessly blending back with your yard once the grass regrows. Inside the home, the air handler and compressor unit are installed and connected to existing air ducts. The ground loop is then connected to the geothermal unit. Finally, the system is charged with refrigerant and started up, ready to provide efficient, sustainable, and cost-effective heating and cooling.

INVESTMENT ADVANTAGE

LOWER DRILLING COST

A copper ground loop requires less loop & less digging or drilling than a conventional geothermal, lowering the drilling cost. The value-conscious homeowner can easily see the Waterless® Geothermal System ultimately costs less in the long run (Figure 4.) **offering a quick return on your investment. You can achieve a shorter payback period after applying the state tax credits and factory rebates. There is even a possibility of receiving local incentives from the utility company, reducing the overall system cost even more.** After a proper installation is completed you can dramatically reduce your monthly operating cost for utilities, resulting in annual savings as high as 70% year after year. As future fuel prices continue to rise, your savings just keeps getting bigger!

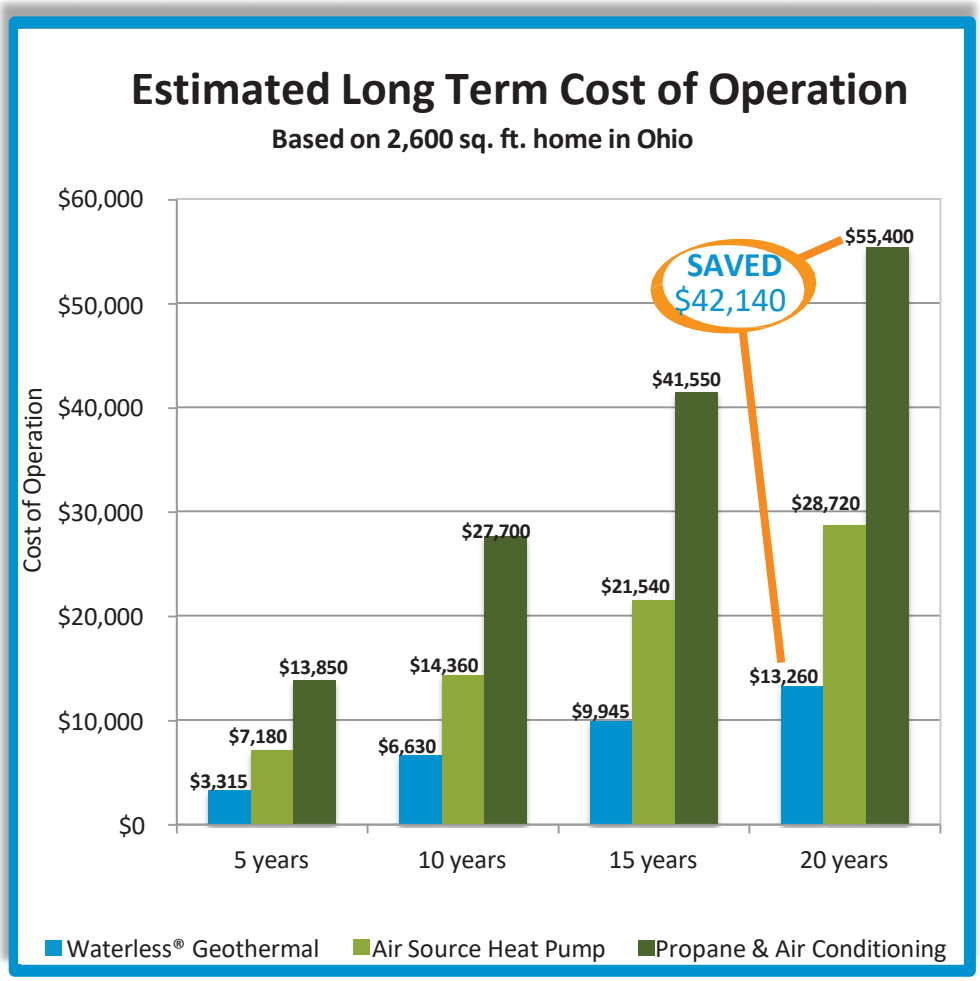


Figure 4

Free Hot Water!

By utilizing the optional domestic hot water module, called a desuperheater, the system can produce free hot water for you! Capturing excess heat in the refrigerant, this module can typically provide as much as 50% of the total hot water needs of many homes or businesses. The geothermal system can heat or cool at the same time the system heats your water. A standard water heater averages a cost of approximately $400-$600 per year to heat your water, and with the optional desuperheater you can save up to $300 a year. These savings, combined with the heating and cooling savings, result in a short system payback period and real cash savings for you.

THE POWER & LONGEVITY OF COPPER

EARTH LOOP PROTECTION

Ancient Egyptians understood the longevity of copper. Even today some 5,000 year-old copper pipes that were used to convey water in Egypt are still in existence! Copper is a naturally occurring element in the earth and in most cases is resistant to corrosion. As an added safety feature, a Waterless® geothermal is equipped with an Earth Loop Protection system in case the copper is exposed to harsh or corrosive soil conditions. The protection system automatically adjusts to the ground conditions surrounding the copper loop. This ensures the conductive copper loop will last a lifetime and allows the copper earth loop to still maintain its strength and longevity.

The principles of the Earth Loop Protection System have been used for over 100 years to protect buried metal pipes, and steel tanks from corrosion in many industries like the oil, gas, plumbing and marine industries. The rugged durability along with the super conductive properties of copper, provide outstanding longevity and is the obvious reason why copper is the material of choice when it comes to utilizing the earth's energy.

SELECT DEALER NETWORK

TALK TO A COMFORT ADVISOR

Ask your Waterless® Geothermal dealer to perform a detailed energy analysis of your home to determine the heating and cooling requirements. They can recommend the system that will deliver the maximum level of comfort and savings to you. You can rest assured that your system will be installed by an industry professional who stands ready to serve you.

MORE AFFORDABLE
with a Rebate

ASK YOUR SALES REP ABOUT FACTORY REBATES

Waterless Geothermal offers a factory rebate on qualifying geothermal installations. This rebate is applied after installation, helping reduce the overall cost of your system. **What this means for you:**

- Receive a factory rebate on the cost of your geothermal system
- Lower your upfront cost
- Get a faster return on your investment
- Simple, straightforward, and hassle-free

Our goal is to make switching to geothermal as easy and affordable as possible — while delivering long-term comfort, efficiency, and peace of mind.

There can be many more local rebates and incentives available depending on your region, consult with your sales rep for more information.

GEOEXCHANGE® AHRI we make life better™ ENERGY STAR ASHRAE™

IGSHPA International Ground Source Heat Pump Association · Copper Development Association · MADE IN THE USA · ETL LISTED Intertek · national ground water association®

www.WaterlessGeothermal.com