



# EARTH ENERGY SERIES 190

## A Wood-burning Furnace Leading the Industry in High Heat Output and Low Emissions!

- Downdraft/Updraft Gasification
- Long Burn Times
- Large Loading Door
- High Capacity Water Chamber
- EPA Hangtag Phase 2 Qualified For Year-Round Use
- Double Door Design
- Firebrick Lined
- Large Firebox



**PHASE 2 QUALIFIED**  
 U.S. Environmental Protection Agency  
 Hydronic Heater Program

Phase 2 Qualified models are cleaner and produce less than other models that have not met the emission limit. Exposure to smoke has been associated with respiratory disease and other health problems. Models that have lower smoke emissions may reduce your risk.

For more information go to [www.epa.gov/woodheaters](http://www.epa.gov/woodheaters).

**HYDRONIC HEATERS  
 SMOKE EMISSIONS RANGE**

Lower Emissions Higher Emissions

▲ EPA Phase 2 (2010) (LH)

Models with lower emissions produce less smoke when installed and operated properly.

HEATSOURCE1  
 2201 RIDGEVIEW DRIVE  
 BEATRICE, NE 68310  
 1-888-628-3533  
 WWW.HEATSOURCE1.COM

**Exceeds 2010 Clean Air Regulation Emission Standards**

*Patent pending*

2201 Ridgeview Drive • Beatrice, NE 68310 • 1-888-628-3533 • [www.heatsource1.com](http://www.heatsource1.com)

# Welcome to HeatSource 1

## Introducing Earth Energy Series 190 Outdoor Wood-burning Furnace

HEATSOURCE 1 in Beatrice, Nebraska, is proud to introduce the New Earth Energy Series 190 Environmental Protection Agency qualified outdoor wood-burning furnace.

After building outdoor wood furnaces for over 37 years, the owner of HEATSOURCE 1 has produced the cleanest burning, highest BTU producing, outdoor hydronic wood-burning furnace tested to date. This unit has not only met EPA's Phase 2 Hydronic Heater Program 2010 Clean Air Regulation Emission standards but has exceeded those requirements by 44%. In addition, Underwriters Laboratory has certified the Earth Energy Series 190 for use in United States and Canada.

## Why The Name Earth Energy?

The name Earth Energy was chosen to reflect HEATSOURCE 1's goal – to create a furnace with the lowest emissions and highest heat output with the least amount of negative environmental impact. To achieve this goal, HEATSOURCE 1 spent almost two years testing and re-testing the furnace. When possible, HEATSOURCE 1 incorporated technically advanced and environmentally-friendly components into the design of the furnace, such as low-chemical, "earth friendly" insulation and firebrick mined and processed here in the Midwest. In addition, powder coat technology is used on our furnace's surface treatment, greatly minimizing the negative impact on the air that we breath. Consideration was given to every detail of the furnace, from the water chamber which is constructed of domestically produced stainless steel, to the smallest of details such as the nuts and bolts.

## Quality and Convenience

HEATSOURCE 1 values their customers, so when the designing process began on the Earth Energy Series 190, customers were asked to provide their input as to what features of their furnace are important to them. Height of the loading door, large capacity water chamber and very simple controls were just some of the features noted. HEATSOURCE 1 utilized their 37 years of furnace production experience, in conjunction with customer input, to create a furnace that is not only environmentally friendly, but is convenient to use and built to last. The furnace comes with a limited lifetime warranty.

And the best thing about Earth Energy Series 190 is that it is proudly made with Midwest American labor. HEATSOURCE 1 is a very strong believer in "Buying American".



# Earth Energy Series 190

## How Does It Work?

Your new Earth Energy Series 190 furnace uses a process called gasification to generate clean and highly efficient heat. In simple terms, gasification strips and burns combustible gases off the wood before the actual wood burns. This method results in approximately 30 percent less wood usage than conventional wood furnaces.

## The Next Step

After the gasification takes place, the extreme heat generated from the process is transferred to the furnace's 321-gallon water chamber. When the water reaches 180 degrees Fahrenheit, the water is pumped through underground pipes to the building, house or pool to be heated. The heat generated by the water is then utilized by your existing furnace system to deliver the heat. Earth Energy Series 190 can be used with forced air furnaces, boiler and in-floor radiant heaters. It also can be used to heat domestic hot water for in-home use and can be used for multiple purposes and for multiple buildings.

By keeping the fire outside and transferring only heated water to a building you eliminate the dangers associated with indoor wood-burning furnaces. In addition, the wood for the fire remains outside the home, resulting in less mess inside.

## EPA Phase 2 Qualified

HEATSOURCE 1's new Earth Energy Series 190 was tested to the new EPA Phase 2 Test Method 28 and to date is listed as the cleanest burning, highest BTU producing outdoor hydronic wood-burning furnace on the market. EPA Hydronic Heater Program test methods are comprehensive and rigorous. Not all manufacturers of outdoor hydronic furnaces have been able meet the requirements to become EPA Phase 2 qualified for year-round burning.

## Testing Methods

EPA's testing methods consists of two major criteria - heating season only burning and year-round burning – with the year-round burning criteria being the most challenging to pass.

HEATSOURCE 1 is proud to say that Earth Energy Series 190 excelled at the year-round burn tests. The furnace not only passed the testing standards but exceeded them by 44 percent. This makes the Earth Energy Series 190 the true leader in the industry.

## Honesty and Integrity

The owner and designer of Earth Energy Series 190 and all other HEATSOURCE 1 outdoor wood furnaces has been in business for 37 years. In today's economy, a company that can make this claim is a company that truly stands the test of time. HEATSOURCE 1 contributes the company's success and longevity to the owner's commitment to serving customers with honesty and integrity. HEATSOURCE 1 and their employees manufacture the highest-quality furnaces possible and take great pride in their work. They are also proud of the fact that their products are made in the USA with the honest and hard-working ethics of the American work force.



Earth Energy Series 190 can be used to heat your home, pool, greenhouse or farm.



Heat Your Home



Heat Your Pool



Heat Your Greenhouse



Heat Your Farm



# Earth Energy Series 190 Exclusive Features

## Double Door Design



### Electronic Control Water Level Indicator

In addition to quality construction, Earth Energy Series 190 designers recognized the importance of creating a furnace that is easy to use and operate – beginning with the Electronic Control and Water Level Indicator. This control provides a readout of water temperature, control settings and relay status. It displays on-board diagnostics for easy troubleshooting and a water level light alerts you if you need to add water.



### Double Doors

One of the most notable features of all HEATSOURCE 1 outdoor wood furnaces is the double door design. Both the loading door and the clean-out door are this design. This feature sets us apart from other brands. Without double door construction, extra wood is required to overcome the huge heat loss that occurs when loading doors are exposed to outside elements. HEATSOURCE 1 furnaces have an inner loading door and an outer heavy gauge door for weather protection.

The Earth Energy Series 190 furnace has a 21x17 inch loading door. This door has our cam latch design and is insulated with approximately 4.5 inches of high temperature insulation.



## Large Rear Exterior Door



### Thermostatically Controlled Blower/Draft Gate

The Earth Energy Series of wood furnaces uses a simple blower system that forces air into the burn chamber. When the water temperature is below the set point, the controller activates the blower, forcing a large volume of air into the fire chamber. When the water reaches the high set point, the blower shuts off.

The draft motor activates the draft door to open and close as needed for the burn cycle.

When your furnace needs to burn, the door opens and lets in a large amount of air for combustion until the water temperature hits the high set point. The door then automatically closes.

## Convenient Features

**EARTH ENERGY SERIES 190** has a long list of features that make operating your furnace convenient. These features include fork lift slots in the heavy framework of the furnace, a top lifting eye, large doors, low wood-loading height and easy plumbing and clean out access doors. This furnace was designed with the customer in mind. We polled many of our customers to understand what features are most important to them and included them into the Earth Energy Series 190 design.

### Stainless Steel Water Chamber

As with all HEATSOURCE 1 furnaces, the Earth Energy Series 190 is manufactured with 10-gauge 409 stainless steel, minimizing the possibility of corrosion on furnace parts that come in contact with water or exhaust. The use of this high-quality material assures home and property owners the investment they make in their Earth Energy Series 190 heating system will be a lasting one.

### Heavy Roof Design

The roof design allows water to easily flow off of the roof. As with all HEATSOURCE 1 products, the roof is made with high-quality, heavy-gauge powder coated steel.

### Powder Coat Finish

HEATSOURCE 1 is one of very few manufacturers in the outdoor wood-burning furnace industry that uses powder coating. Powder coating technology is more environmentally friendly as it releases virtually no volatile fumes into the air we breath. The coating is applied to the furnace components in a dry form and is electrically charged to cling to the surfaces. Coated parts are then heated to 400 degrees in a very large oven. The end product is a very hard, weather-resistant finish.

### Large Removable Door

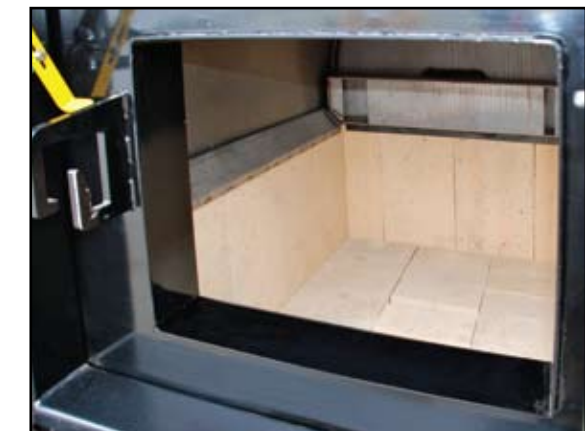
To make hookup as easy as possible HEATSOURCE 1 furnaces are equipped with a very large exterior rear door that is easily removed for full access to components located in back of furnace.

### Easy Clean-out

All clean-out doors are color coded for easy identification. Clean-out is not often required, but can easily be done during furnace operation. Clean-out tools comes standard with all furnaces.

### High Temperature Firebrick

Approximately 1,500 pounds of high temperature firebrick is used in this



design. At very high temperatures, the brick assists in gasification burning and reflects a tremendous amount of heat back into the fire. This increases efficiency and helps create a very clean burn. Earth Energy Series 190 is the cleanest burning and most environmentally friendly furnace on the market to date.

# WOOD GASIFICATION

## What Is It and Why Do You Want It?

### Wood Gasification

Wood gasification is not a new concept. This technique has been widely used for many years, and was a popular burning method during World War II.

Although the process of gasification is rather complicated, the result is a fire that delivers high heat output and low emissions.

### The Process

During a typical burn in a gasification wood furnace, wood is heated to a very high temperature and the following combustible gases (listed in box) are released.

**51% nitrogen**  
**27% carbon monoxide**  
**14% hydrogen**  
**4.5% carbon dioxide**  
**3% methane**  
**.5% oxygen**  
**Trace elements**

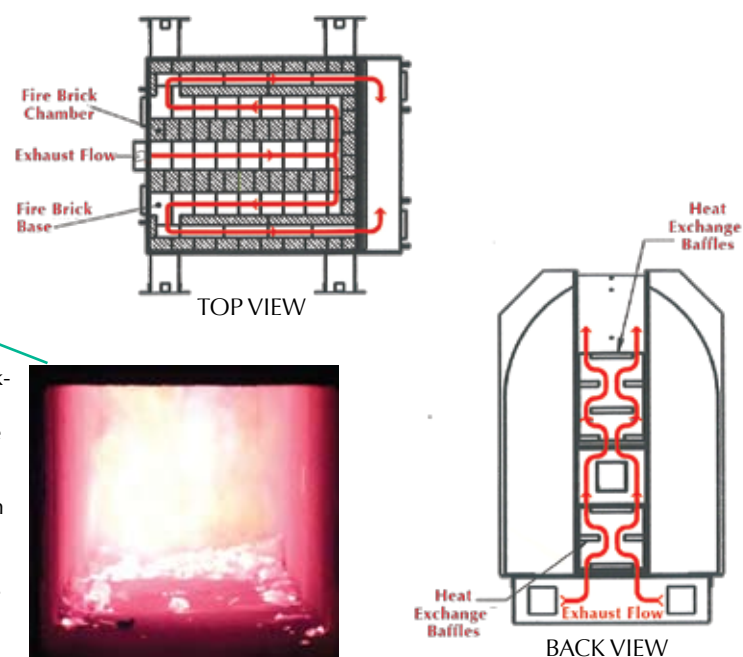
These gases contain up to 60 percent of the potential heat in the wood. Although not all of the gases are combustible, there is large amount of hydrogen and methane gases which can be utilized to produce additional heat.

During a normal burn in a conventional wood furnace, these gases are present in the smoke, but are not burned efficiently. Flames burn upward and exit the furnace. In your new HEATSOURCE 1 Earth Energy Series 190 furnace, we use a process called downdraft gasification. During this gasification process, flames actually burn upside down, burning through the wood and down through the charcoal bed. The burn continues through a large amount of high temperature refractory brick. This process strips the gases off the wood and burns them in excess of 2,000 degrees Fahrenheit. This creates a very low exhaust temperature and a very clean burn.



### Updraft/Downdraft Design

A feature that is unique to the Earth Energy Series 190 is that it can also be utilized as an updraft furnace with a simple pull of a handle. This gives you the best of both designs, however, for maximum efficiency and lowest emission, it was tested as a downdraft gasifier.



**Left:** Wood burns in the firebrick-lined firebox. Note the wood is only burning on the bottom due to downdraft design.

**Right:** Fire burns down through the charcoal bed, through the firebrick and into the combustion tunnel where the wood gas is burned at an extremely high temperature.



## HEATSOURCE 1 Stainless Steel Outdoor Wood Furnace Earth Energy Series 190 Specifications and Accessories

### Specifications

All specifications subject to change without notice.

**ELECTRICAL SUPPLY – 115 volts, 60 Hz, 1 Phase**

**TYPE OF FUEL – WOOD or approved fuels ONLY!**

HEATSOURCE 1 is available in a variety of colors and is designed to look like an attractive utility building. Our standard colors are listed below (see back page for photos):



We will provide custom colors upon request. The HEATSOURCE 1 outdoor wood furnace is installed outside, away from the home or building being heated.

The information in this brochure is valid at the time of publication.

Warranty	Limited Lifetime
Weight	3258 lbs.
Height	94"
Width	66"
Length	88"
Forced Draft	Yes
Chimney Size	6"
Firebox Length	38"
Firebox Width	31"
Firebox Height	37"
Water capacity	321 U.S. Gal.
Firebox Door Opening	21" x 17"
Insulation (sides)	10" R-30
Insulation (top)	10" R-30
Heating Area	Up to 6,500 sq. ft.*

\* Furnace was tested at 190,000 BTU output, however, BTU output will vary depending on wood type, quantity and moisture content.

### Accessories

- Unit Heater** - A unit heater is a self-contained forced air hot water heater.
- Draft Disruptor** - This was designed to eliminate any draft caused by high winds.
- Stack Extension** - This adds three feet to the stack for exhausting over buildings.
- Low-E Insulation** - Installs easily and creates a superior thermal performance.
- Water Lines** - Many brands of water lines are available; many of which have thirty year warranties.
- Insulated Pipe** - Insulated PVC is used in ground to run your water lines through.
- Chemical** - Outdoor wood furnace anti-corrosion chemical (included with purchase of furnace).
- Air Handler** - An air handler is a self-contained forced air hot water furnace.
- Circulating Pump** - The circulating pump is used to circulate water from the outdoor wood furnace to the house and back to the furnace.
- Heat Exchanger** - A water to air heat exchanger may be installed into an existing electric or gas furnace duct work.
- Domestic Hot Water Assembly** - This assembly is connected to your existing hot water heater which can provide most of your in home hot water needs.
- Brazed Plate Heat Exchanger** - These water to water heat exchangers make them ideal for domestic water heating, radiant floor, and hot tubs.

- Insulated Pipe** - This insulated pipe is ideal for outdoor wood furnaces. There is very little heat loss in the ground. This type of insulated pipe also has the water lines fabricated into it.
- Brass Fittings** - These fittings are required for a basic installation.
- Rain Cap** - Keeps rain out when furnace is not in use.





# Why Earth Energy Series 190?

- EPA Phase 2 qualified
- Cleanest burning outdoor hydronic wood-burning furnace on the market to date
- Highest heat output
- Downdraft/updraft gasification
- Double-door design
- Stainless-steel construction
- Powder coat finish



Green/Black



Stone/Black



Charcoal/Black



Bronze/Black



Start saving now with your new Earth Energy Series 190.  
By virtually eliminating your heating costs your Earth Energy furnace may pay for itself in the first couple years of operation.

Ask your dealer about recommended burn practices.  
The information in this brochure is valid at the time of publication.

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