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EPA Tests Verify 400% Efficiency in Commercial Water Heating



To achieve 400% commercial water heating, EarthLinked equipment sends heated water into a standard water heater where it is held until needed for use. (Graphic: Business Wire)



Geothermal energy is transferred into a building where EarthLinked and water heater equipment produce large volumes of hot water for a variety of uses. (Graphic: Business Wire)

LAKELAND, Fla.--(BUSINESS WIRE)--The U.S. Environmental Protection Agency (EPA) has released an Environmental Technology Verification (ETV) report confirming 400% efficiency of the EarthLinked® Heat Pump Water Heating System. The hybrid system combines a high efficiency ground-source heat pump with a standard commercial water heater tank.

The EPA's Greenhouse Gas Technology Center verified that renewable energy from the earth reduced electricity consumption for water heating by 75% at a Florida nursing home. The report also confirmed that the EarthLinked system can avoid the emission of up to 7,000 pounds of carbon and 50 pounds of nitrous oxide per year for each ton (12,000 BTUs) of compressor capacity.

The EarthLinked system developed by Lakeland, FL-based ECR Technologies, offers the highest efficiency of any powered water heating system. The systems have been heating water since 1983, as an optional feature of EarthLinked residential space heating and cooling systems.

They are appropriate for apartment or condo buildings, motels, universities, restaurants, health care facilities, food processing operations and a variety of other commercial users.

"The technology has proven itself over twenty-three years of reliable operation," said Hal Roberts, ECR's CEO. "What's new is the way the geothermal heat pump system is coupled to traditional water heaters to work in tandem to increase efficiency, capacity and reliability to meet high-volume water heating needs."

The most economic application for these systems is to heat or preheat domestic water for large users. The ground-source system heats water up to 110-120°F, which can then be "topped off" by traditional gas or electric water heaters to any desired higher temperature.

"The systems do not consume energy to create heat," added Roberts. "They extract renewable energy from the earth and deliver up to four units of heat for each unit of electricity used to operate the heat pump. That's 400% efficiency, while the most efficient traditional water heaters do not achieve 100% efficiency."

The cost of installing the ground loop is a large part of the system's total cost. That cost varies with the installation method, which can use small bore drilling, directional drilling, trenching or excavation to install the refrigerant lines vertically, diagonally or horizontally, even under a parking lot. The cost is typically recovered within 24 to 36 months, depending upon usage and energy costs.

According to Roberts, ECR produces 4-ton (48,000 BTU) and 6-ton units. A 6-ton unit can eliminate up to 42,000 pounds of CO₂ and 300 pounds of NO_x emissions each year, while delivering 2,000 gallons of hot water per day.

The Greenhouse Gas Technology Center is operated by EPA and the Southern Research Institute. It conducts independent performance verification testing of energy efficiency and greenhouse gas emission reducing technologies. The full report may be found at <http://www.epa.gov/etv/verifications/vcenter3-18.html> and at www.earthlinked.com. For further information, call Joe Parsons, of ECR at 863-701-0096.

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