

Geothermal: A cleaner, more efficient way to live

BY RANDAL LEE

According to the US Department of Energy, heating, ventilating, and air-conditioning (HVAC) account for 48 percent of a typical home's energy use and its greatest operational costs. Consequently, property owners are increasingly turning toward innovative solutions that present significant long-term savings.

Fred Gant, an independent building consultant for Southern Oregon Green Rating Services, says, "Homeowners are becoming more educated about efficiency, driving market trends." Energy-conscious consumers are adopting new technologies and carefully selecting materials and appliances, reducing environmental impact and financial liability.

Geothermal technology is one such method embraced by homeowners. It is cleaner and more efficient than conventional HVAC and meets contemporary lifestyle demands. A 30 percent federal tax credit for ground source heat pumps and installation is also motivating homeowners to examine how they heat and cool their homes, but taxpayers must act quickly: the credit is set to expire next year.

Applegate Valley residents can save big on utilities by converting their propane or oil supplied systems to geothermal. Scott Rosendahl, co-owner of Advanced Air & Metal, Inc., and director of its Advanced Geothermal division, says, "It is not uncommon for people to save up to 70 percent on heating and cooling by switching to geothermal." He adds, "Geothermal is both an environmentally sensitive and financially responsible solution: customers replacing a conventional system often recoup their investment within three to five years."

The savings generated by converting to geothermal are twofold. Customers notice immediate savings on utilities and long-term savings on the serviceable life of the equipment. According to the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), geothermal equipment has double the life expectancy of conventional heat pumps.

To Rosendahl, the benefits of geothermal exceed monetary gain. "Look," he said, "I have lived in rural Jackson County for the last 20 years. Geothermal technology has provided a cleaner, more efficient way to live, translating into both savings and proactive environmental stewardship." According to WaterFurnace, a leading manufacturer of geothermal equipment, installing a geothermal heat pump is the environmental equivalent to planting 750 trees.

There are essentially two parts to a geothermal system: the indoor mechanical unit and an outdoor exchange loop. Like the outdoor condenser coil of a conventional air-to-air heat pump, a geothermal system incorporates an in-ground "coil" consisting of high-density polyethylene pipe and a solution of water and antifreeze that is pumped through the loop, acting as a heat exchanger. The fluid that circulates through the loop is much colder than the ground temperature in the winter and much warmer than the ground temperature in the summer. In the winter, the cold fluid passing through the loop is warmed by the ground temperature. That heat transfer initiates the process necessary to heat a home. In the summer, the fluid passing through the loop is cooled by the ground temperature; therefore, heat is extracted from the home, transferred to the



Advanced Air & Metal installed this geothermal system with a horizontal loop at a Rogue Valley vineyard.

solution traveling through the pipe, and ultimately dispersed to the earth.

With several loop configurations available, ground source heating and cooling is a viable option for any property owner. Loop fields are most commonly laid out horizontally, buried five feet below the earth's surface, or vertically inserted in wells and sealed with a thermally conductive grout. Pond loop or open-loop configurations are also available.

The length of the loop is determined by the size of the home being conditioned. Properly sizing the loop is the most critical part of geothermal design. Each property is different, and every system should be designed specifically to the home and soil conditions. Improperly sized loop fields will under-produce, failing to achieve the

desired exchange, output, and efficiency. It is, therefore, advisable to consult with a geothermal expert with a history of successful installation and satisfied customers.

Scott Steingraber, owner-wine maker of Kriselle Cellars, a Rogue Valley vineyard, says, "We endeavor to exercise environmental stewardship in all that we do; to that end, geothermal fits our business model and has been financially advantageous." He adds, "Advanced Air & Metal has done an exceptional job designing our custom system and maintaining it; we anticipate many years of pinpoint comfort in our tasting room."

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WANTED:

Outlaws, Misfits, Saints, and Martyrs

Ruch Library will be presenting a program, "Folk Heroes Who Shaped World History," featuring civilization's most immortal mortals, on Saturday, August 1.

This will be a "revue" featuring folk heroes, defined as anyone at the center of a much-told legend, and starring *you!* We need players—people willing to sing a ballad, present a short skit, sit and be a portrait while a narrator tells about your character, etc. This could be effortless (Mona Lisa) and fun (Bonnie and Clyde).

Costumes and props are encouraged, or come as you are (Johnny Appleseed). Please stop by Ruch Library at 7919 Highway 238, Ruch, or call 541-899-7438 or 541-899-8741 to sign up for a character or two.

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