

Utilities find opportunities in geothermal heat pump technology

As Western's customers face increased competition, they need to find innovative ways to meet customer needs. In turn, this leads utilities to use new technologies and offer new services.

Among the technologies that offer opportunities, geothermal heat pumps stand out. Heat pumps allow utility customers to use heat from the earth, thereby reducing energy bills.

Customers benefit from

the reduced cost and the technology uses a renewable resource, making geothermal heat pumps an environmentally friendly choice.

The utility benefits, too. Geothermal heat pumps offer marketing opportunities. Heat pumps use electricity for operation. And, some utilities market heat pump technologies themselves, creating the opportunity to move into a new type of business. For example, Delta-Montrose Electric Association in Colorado has formed a subsidiary to market geothermal heat pump technology.

Kansas Electric Power Cooperative in Topeka and Northwest Rural Public Power District in Hay Springs, Neb., are showcasing the technology in their own facilities. This move demonstrates their faith in the technology, provides a working demonstration, and offers opportunities to educate customers.

Benefits from GSHP system

The Kansas Electric Power Cooperative has long encouraged its customers to use ground-source heat pumps for heating and cooling. When the co-op began construction on a new headquarters,

it only made sense to include a GSHP in the design. Besides digging the technology, the utility was digging its own system.

A well-drilling rig bored 64 separate 170-foot-deep holes at the site of the new building in Topeka's

Corporate Meadows Office Park. These holes will carry the loops that will capture the earth's heat to warm the building—the backbone of the GSHP system.

Besides benefiting from the system's efficiency, KEPCo will also demonstrate that its commitment to the advanced technology is real.

For 10 years, KEPCo and its member rural electric cooperatives have promoted GSHP technology, its low maintenance



KEPCo profile:

Customer type: Generation and transmission cooperative

Region: Rocky Mountain

Western sales from: Loveland Area Projects

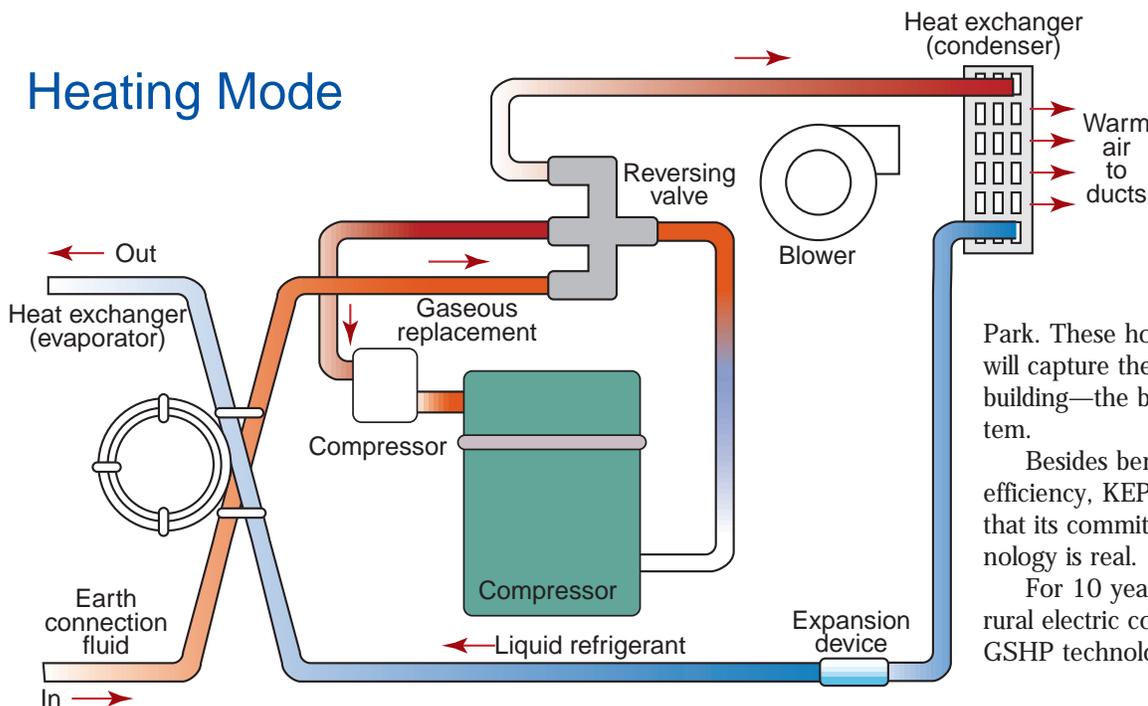
Service territory: Rural areas across the state, especially in central and eastern Kansas

Founded in: 1975

Number of Customers: 21 electric cooperatives that serve 95,000 meters and 300,000 rural Kansans

Headquarters: Topeka, Kan.

Heating Mode



(See next page)

costs and high dependability. They also offer rebates to Rural Electric Cooperative members and consumers who install the systems. Systems save customers money and help KEPCo reduce costs by avoiding high-cost energy purchases during peak periods.

"We have issued approximately 1,000 ground-source rebates for systems installed by cooperative customers," said Bruce Graham, KEPCo's vice president of member services and external affairs. "In addition, seven of our member electric cooperative offices have installed ground-source heat pumps, along with numerous small businesses across the state."

Nebraska utility also uses GSHP

When the time came to replace the Northwest Rural Public Power District's office heating and cooling system, the utility had one choice.

"We decided we should put our money where our mouth is," said John Barlean of Northwest. "We promote geothermal heat pumps to our clients, so this was an opportunity to show how well they work."

The office's system of air-source

heat pumps was failing, making a change necessary in the 15,360-square-foot building. A geothermal heat pump seemed to be the ideal solution, since it would cut energy bills and showcase the technology for skeptical customers.

Northwest used three local drillers to bore 33 holes, 200 feet deep, that the 33-ton system required. This process gave each driller an opportunity to become familiar with ground source heat pump installation and technology.

Northwest enhanced this opportunity by hosting a three-day training session culminating in certification by the International Ground Source Heat Pump Association.

"We wanted to show contractors and drillers that geothermal heat pumps are a good money-maker for them, as well as putting money back in the customer's pocket."

The system cost \$120,000, and Northwest received a \$50,000 grant from the U.S. Department of Energy. That reduced costs to \$70,000. Barlean said the expected payback period is five years, given the cost difference of going back in with a new air-to-air system vs. the geothermal system.

Barlean hopes that the utility's demonstration of the technology will spark more interest among Northwest's residential customers. In fact, he says it already has.

"We ran an article on the system in the magazine we send to customers," he said. "Since then, we've had more inquiries about the systems."

To help Northwest customer service representatives discuss the technology with customers, three employees have completed IGSHPA certification.

"That way, we can go out on site and ensure that a system is being installed correctly," Barlean explained. "It gives customers a higher degree of confidence."



Northwest Rural profile:

Customer Type: Public power district, member of Tri-State Generation and Transmission Association, Inc.

Region: Rocky Mountain

Western sales from: Loveland Area Projects

Service territory: 3,500 square miles in three counties of northwestern Nebraska

Founded in: 1945

Number of customers: 1,530 residential customers and 494 irrigation wells

Headquarters: Hay Springs, Neb.



A drilling rig bores holes to contain the ground-source heat pump's loops. The loops collect the Earth's warmth for use in heating KEPCo's new headquarters.