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Geothermal project takes shape at the high school

Posted on 06 April 2011.

By Selwyn Harris

Progress on Pahrump Valley High School's campus expansion has district officials excited by the dynamic type of technology being used in the project.

The installation of Geothermal Heat Pump Systems, or GHP, is well underway not far from the athletic fields. According to the U.S Department of Energy, Geothermal energy comes from the natural heat of the earth. Earth's temperature varies widely, and geothermal energy is usable for a wide range of temperatures from room temperature to well over 300 F.

The GHP system utilizes the temperature to cool and provide heat to structures without using boilers and chillers.

EnLink Geoenergy Services was awarded the contract to build the system for the Nye County School District in January. Project Manager Stuart Lyle said once complete, the district can take advantage of efficiencies of up to 600 percent and reduce energy consumption by a large margin.

"This particular system here is actually designed to pretty much hedge your heating and cooling costs. Your typical HVAC system that will go into a school, which is what this project is, essentially it will reduce your cost by about 70 percent. So it's definitely more eco-friendly," he said.

The Pahrump project will include 300 geothermal wells drilled to a depth of 395 feet each. The system will contain two underground vaults which will serve as central connection points for smaller lines coming from the geothermal borefield before feeding into the school.

Further expansion on the campus was also considered.

As the district plans for the future, Lyle said the system has been sized so it can service two additional buildings, when and if the school expands at a later date.

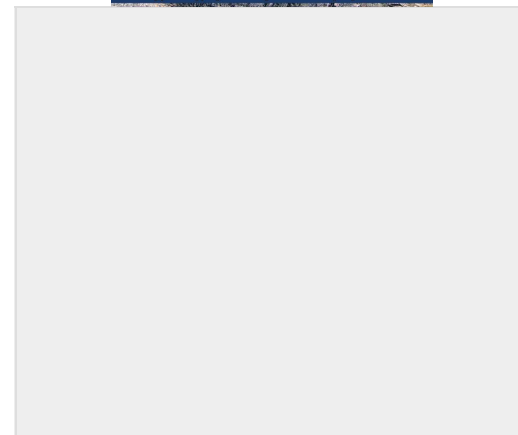
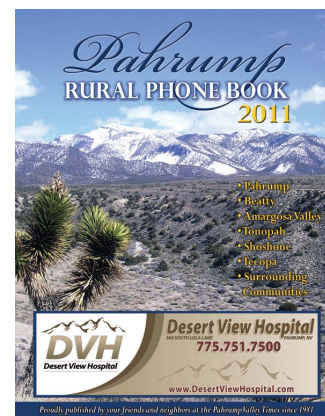
"This system is actually for new construction and we can retrofit as well. We're actually running future use lines, that way they can put it into new construction or they can figure it into the old school here," he said.

The school district decided on a design called the vertical, closed, ground loop system where holes about four to six inches in diameter are drilled 20 feet apart and 100 to 400 feet deep.

The vertical loops are then connected with horizontal pipe placed in trenches and then connected to the heat pump in the building.

Nye County School District Project Manager Dave Wonderly gives EnLink and the technology the company is using high marks.

"Geothermal heat pump technology has been a great success out here in the desert, so it only makes sense that we would include it in this project as well," he said. "The bottom line is, GHP saves us money because it is the most efficient way to heat and cool our buildings, and it also helps us protect the environment at the same time, which is more important than ever."



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Water conservation is a very important issue in the desert, too.

According to the Southern Nevada Water Authority, during the summer, large amounts of water are used for cooling, which sends costs skyrocketing for building owners and creates shortages and watering restrictions for residents.

Lyle said the GHP system only requires a one-time filling of the precious resource. "Basically you're going to circulate clean filtered water in, and that's what's going to heat and cool your system so you'll never have to add or subtract any water from this," he said.

An added bonus of the GHP system is free hot water through the use of rejected heat in the system, thus eliminating the need for using other forms of energy to heat water.

Tiffany East, director of public relations for the Glenn Group said another benefit to the system is that it works rain or shine.

"The great part about geothermal energy is its consistent energy. Its not like the wind has to be blowing all the time, or solar, where you might have a lower percentage of your energy being produced when it's overcast. Geothermal is very consistent; it's 100 percent," East said.

GHP technology has been around for the better part of 60 years and the science behind it has grown leaps and bounds.

The current project at the high school is not the first time district officials considered embracing GHP.

During the construction of Floyd Elementary School in 2007, it was discussed. District officials did not have enough facts about the technology at the time and decided against it.

The new Manse Elementary School, however, will use the GHP system when it opens in the fall.

Over the hill in Las Vegas, the Clark County School District is using the system for its heating and cooling needs at several of its new trade school campuses. Even the Regional Transportation Center and the Las Vegas Public Broadcasting Station facility use geothermal heat pumps.

PVHS Principal Max Buffi said he's looking forward to the money saving aspect of the project, and he's pleased with how progress is going at the site.

"They have all of the main pads poured, they're forming up the walls and putting in the windows and door frames. I feel by spring break we'll have most of the building up," he said.

Based in Rancho Dominguez, Ca. EnLink Geoenergy has been around for 15 years.



Don McDermott / Pahrump Valley Times – Enlink Geothermal Services developed the earth heat exchange system at PVHS, which is part of a campus expansion project underway.

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