



Western Heights Middle School
Oklahoma City, OK



Commercial Case Study

Energy Savings Reach New Heights

School districts across the United States are increasingly turning to geothermal heating-and-cooling systems due to overall energy and cost savings. Western Heights Middle School realized the benefit and installed a ClimateMaster geothermal system.

Located within a mile of the ClimateMaster world headquarters, what makes this system even more interesting is the fact that the middle school also happens to be located in close proximity to Western Heights High School; equipped with conventional heating-and-cooling equipment that has been installed at various stages of its 40-plus-year history.

"The middle school is about 144,000 square feet," said Western Heights Public Schools project manager Jim Matthews, who is responsible for maintaining the heating-and-cooling systems at all of the schools in the district. "And the high school is much larger – but at the high school, there are

some sizable spaces that aren't air-conditioned. The volume of 'conditioned' spaces within the two schools is roughly the same."

Classroom Comparison

For a sixth-grade class project on alternate fuels and energy sources, some of the middle-school students asked Matthews to help them better understand the heating-and-cooling system at their own school building. This simple request opened a





broad window of opportunity for Matthews to teach the sixth-grade kids about the operational and energy-saving advantages of geothermal systems.

Western Heights Middle School – which welcomed its first students in academic year 2004-05 – was built with a geothermal ClimateMaster heat-pump system that encompasses 88 heat pumps ranging from 3-and-a-half- to 5-ton heating-and-cooling capacity.

Meanwhile, Western Heights High School dates back to the 1960s – and its conventional heating-and-cooling system consists of a polyglot arrangement of equipment that has been installed as the high school expanded several over the years.

“For this presentation to the sixth-grade kids, I compared just one particular month’s electric bills for the two schools,” said Matthews. “And I wouldn’t want to base anything approaching what we might call a ‘scientific’ judgment on just one month’s results, but anybody can see that the difference for that one month was pretty dramatic.

“Again, the ‘conditioned’ space of each of the two schools is almost exactly equal – but the high school’s total energy bill for that one month was

approximately \$3,500 higher than the total month’s energy bill for the middle school.”

A random check of other months – comparing the high school with its conventional heating-and-cooling system to the middle school with geothermal – reveals that the middle school’s monthly energy cost consistently comes in between



The pump room at Western Heights Middle School



ClimateMaster heat pumps at work in Western Heights Middle School

about one-third and one-half of the high school's monthly energy cost.

Matthews, who came to Western Heights Public Schools after a multi-decade climate-control career spent largely in the printing business, recalls some of the details of the installation of the geothermal system as the middle school was being built.

"This middle-school geothermal system has a 'vertical' ground loop that's made up of 200 wells – each drilled 350 feet deep," said Matthews. "The drilling contractor was able to drill four wells a day, so it took a good 50 working days to get 200 of them in.

Although the ClimateMaster factory is physically within sight, it is several steps removed from the end-user through the usual marketing/distribution channels. Matthews credits subcontractor Hunter Mechanical & Controls with the decision to go with ClimateMaster equipment when the middle school was being built.

More Bang for your Buck

Flexibility and expandability may just be icing on the cake for Matthews when he waxes philosophic about the ClimateMaster geothermal heating-and-

cooling system at Western Heights Middle School.

"I've talked to several people who have put geothermal systems in or are thinking about putting geothermal systems in," said Matthews. "And they wonder if they can really get the bang for their buck with a geothermal system.

"But at our middle school, we have several different things that speak to the fact that the system is working for us, starting with the observation that it's just so much more efficient – with the cost savings.

"And we've also found that – for us, anyway – it has cost a whole lot less to maintain it. Heck, my HVAC guy seldom ever even has to go over there – that fact alone speaks volumes."



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Square Footage:
144,000

Type of System:
Geothermal Ground-Loop System

Number of Units:
88 Heat Pumps, Ranging from 3½ to 5 Tons

Project Manager:
Jim Matthews

Subcontractor:
Hunter Mechanical & Controls

Controls Contractor:
Global Logic Corp.

Architect:
Boynton, Williams & Associates

Manufacturer:
ClimateMaster, Inc.
climatemaster.com



ClimateMaster is the world's largest and most progressive manufacturer of geothermal heat pumps. The company is committed to innovation and dedicated to environmentally clean, economically sound and superbly comfortable home and business environments.

ClimateMaster has been designing and building equipment that enhances the environments we live and work in every day for more than 50 years. In addition to geothermal heat pumps, ClimateMaster offers the most extensive product line of water-source heat pumps for use in a wide variety of applications. ClimateMaster products are proudly built in the U.S.A.



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