

Introduction

Schools all over the country are being conditioned by the natural warmth of the earth with geothermal heat pump technology. Heating, central air conditioning and domestic hot water—three important benefits—can be generated from a single compact unit.

Geothermal heat pumps offer an amazing opportunity for schools to not only reduce their energy costs, but also provide cleaner air, a safer environment for students, and a live demonstration of energy efficiency that can inspire science class discussions.

A geothermal heat pump can provide years of worry-free energy to both heat your school in the winter and cool your building during the summer with clean, renewable energy—all while reducing operating expenses.



Environmental Impact

“By going geothermal, Sewells Point Elementary School has saved about \$18,000 in utility bills from September 2007 to October 2008 compared to their old traditional natural gas system.”

Ade Okusaga
Capital Project Engineer
Norfolk Public Schools,
Norfolk, VA

If all the schools in the U.S. replaced their conventional HVAC systems with geothermal technology, the impact would be similar to:

- Taking 37 million cars off the road
- Saving 2.6 billion gallons of gasoline
- Planting 8 million acres of trees
- Reducing U.S. reliance on imported fuels by 61 million barrels a year

Source: GeoExchange



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GEOTHERMAL TECHNOLOGY



For K – 12 Education Facilities And Universities

What would your school or university do with the money saved by a geothermal heat pump system?



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A Pleasant Learning Environment

Schools throughout the nation are now enjoying the comfort of natural, dependable warmth from geothermal heat pumps. Geothermal heat pumps remove many of the negative factors that are associated with traditional dirty energy sources. Not only will the general environment of the building be improved, but you will also be able to remove bulky and loud boiler room equipment and improve the aesthetics of your building.

- Natural and increased indoor air quality
- No rooftop or ground mounted equipment to be damaged by the weather, vandalism or roof leaks
- When installed properly, geothermal equipment is as quiet as a refrigerator
- With no boilers, smoke stacks or fuel tanks, they use about one-third of the space of a traditional boiler room, leaving more space for classrooms
- The operating unit is inside and the heat exchanger loop is underground, protecting children from dangerous outdoor equipment
- Unlimited architectural creativity for attractive exterior and roof designs
- Modernize historical buildings without negatively impacting their appearance

Cost Comparisons With Current Energy Prices*

* **Ground Source Heat Pumps: A Good Fit For Schools;** by John M. Vanderford, Vanderford and Associates – Jan 06
 ** Million Per BTUs

SYSTEM	EFFICIENCY	COST**
Natural Gas	77%	\$ 17.53
Propane Gas	77%	\$ 21.29
Fuel Oil	70%	\$ 16.67
Electricity Resistant Heat	100%	\$ 12.01
Ground Source Heat Pump	410%	\$ 2.93

Cost And Payback For Schools

Geothermal heat pumps not only provide dependable, natural heat—they also provide schools with more financial independence through the money the heat pumps can save. The savings produced by a geothermal heat pump can be reallocated for books, computers, teachers salaries and more. What would your school do with the money saved from a geothermal heat pump?

- Geothermal heat pumps have the lowest life cycle cost today – 25% to 50% less than a conventional system
- Savings depend on location and which GSHPS you use
- Will normally cost more than a roof top or split system, but will pay back that cost difference in approximately two years
- Considered the technology of choice by the Department of Energy and the Environmental Protection Agency



Installation Examples

In addition to reducing your school’s environmental impact and heating costs, geothermal heat pumps also reduce the ongoing maintenance that is associated with traditional dirty energy sources. Today’s common boilers and chillers require far more routine check-ups, cleaning and maintenance than geothermal heat pumps. See how geothermal heat pumps are helping a school just like yours.

Space Conditioning Equipment And Carbon Dioxide Emissions - By Region

In thousands of Kilograms per year, see how geothermal heat pumps are helping a school just like yours.

Conventional Schools’ Energy Costs Are 45% Higher Than Geothermal Schools.

Jordan School District, Salt Lake City, UT: Average Energy Cost (\$/ft²)

Getting Started

Getting started exploring the potential of geothermal heat pumps is easy—and with incentives in place from federal and state governments, now is the time to take advantage of the immense cost savings and environmental benefits of renewable energy. Contact your FHP-Bosch Group representative today to