

Geothermal Heating and Cooling- One Stop Resource

<http://www.geo-heating.com/>

Earth-friendly construction on the rise

Written by Administrator, Thursday, 27 April 2006

Green symbolizes many things -- stacks of crisp Benjamins in a bank vault, a seasick sailor clinging desperately to the memory of land, the cutting gaze of a jaded rival's jealous eyes, or even a business's approach to energy efficiency and environmental awareness.

Locally, Aztech Technologies, Inc. of Ballston Spa has taken this last green theme to the extreme with a new, 24,000-square foot facility. The environmental engineering and geoscience firm moved into its new digs on McCrea Hill Road on Jan. 3, after moving out of its former home at the intersection of routes 50 and 9 in Saratoga Springs.

"It's got about every energy management feature you could imagine," said Fil Fina, a part-time independent engineering consultant who works with Aztech.

From the roof to the floor, the building sports features that reduce energy consumption and energy needs.

The roof and windows, for instance, are both "low emissivity amenities." In the case of the windows, that means "radiant heat doesn't go through the glass," Fina explained. "Heat is reflected during the summertime and kept in during the wintertime."

The roof, made of four inches of polyfoam with a white PVC membrane, operates on the same seasonal principal of retaining heat during the colder months and reflecting it during warmer months. Aztech's biggest energy-saver, however, is its geothermal heating and cooling system. Other area businesses and institutions, like Adirondack Community College, also use geothermal heating.

The system, composed of a series of wells and pumps, uses the earth's own warmth to make work spaces cozy. Heat is extracted from the ground when water from seven wells is pumped into a network of lines that run throughout the facility, Fina said. Each well was sunk 500 feet into the ground below Aztech Technologies.

"The water comes out at about 50 degrees, and we put it back in (the earth) at about 45," he said.

The water, which is not treated with anything before being returned to the earth, can also be used to gain the opposite effect.

"During winter, we take heat out of the ground," Fina said. "In summer, we put it in."

Last year, Adirondack Community College finished installing a similar geothermal system under Eisenhart Hall with the help of JMZ Architects and Planners of Glens Falls.

The system, JMZ President Robert Joy said, was the second energy conversion the building has made in its lifetime, starting with electricity, shifting to natural gas 10 years ago, and finally ending with geothermal last year.

Geothermal was a desirable option both for its cost-effectiveness in the future, and for the comfort it now provides the hall's occupants.

"People were passing out in the building; it was so hot with no ventilation," Joy explained.

The geothermal system changed all that, while completely restructuring the way Eisenhart Hall uses energy.

"Basically, the source of heating and cooling is free," Joy said of the water pulled from the ground via ACC's 24 wells. "All you're paying for is the electricity to pump the fluids around."

That ability to spend less money while improving operations is what's making the very costly initial investment for green features like geothermal systems more and more popular.

The Benefits of Being Green

Eisenhart Hall's new method of heating and cooling cost \$170,000, Joy said, which is \$78,000 more than a basic, conventional system.

In just over seven years, however, ACC officials estimate the system will have saved enough money in energy bills to cover the additional cost.

"The expected annual savings are \$11,000," Joy said.

Aztech Technologies had similar financial incentives that will make its \$2 million campus worth every penny.

"We expect a 35 percent energy savings annually," said Matt Darcangelo, Aztech manager of business development and administration.

Savings on energy bills aside, the company also got some financial breaks when constructing the facility and will get more while paying for it. The breaks are a result of the energy efficient features Aztech included.

The company, for instance, got a direct rebate of \$22,000 for some of the lighting and heating amenities, Darcangelo said. This rebate was the result of participation in the New York State Energy Research and Development Authority's New Construction Rebate Program.

Along the same lines, any building that goes above and beyond the energy code can have its interest rate cut by 4 percent by NYSERDA.

Over 10 years, this reduction in loan rates, Darcangelo said, will approach \$200,000 in savings.

By investing in green technology, ACC and Aztech are also ensuring the future marketability of their buildings, should the companies ever want to sell.

"It makes abundant good sense to invest in quality buildings that lose less energy," said Jean Stark, JMZ senior associate and a Leadership in Energy and Environmental Design accredited professional. "Energy efficiency is a very significant marketing tool."

In the residential sector, Larry Rowe has also seen a rise in the number of private individuals wising up to this fact.

"It's homeowners in particular who are researching their homes and looking for value -- who are really pushing this (trend)," said Rowe, the director of product sales for The McKernon Group, a design, building and construction company with offices in Glens Falls and Brandon, Vt.

McKernon's green team, of which Rowe is a part, offers residential and light commercial customers many energy-saving alternatives to standard building materials.

One of its most prominent is ECO-Block, a product made from panels of polystyrene (the same stuff coffee cups are made from) that are connected to form blocks, Rowe said. The blocks are then stacked to construct the wall of a house. Once in place, the polystyrene wall is filled with concrete.

"It creates a super-insulated envelope for the house," Rowe said. "Our thrust with the whole green movement is the building envelope -- that's where the bang for your buck is in energy savings."

Homeowners and business owners alike are taking that seriously, at least in part, because of the potential answer to one question.

"You might be able to build homes more cheaply with two-by-fours, but can you continue to afford to heat them?" Rowe asked, alluding to recent increases in the cost of energy. "The handwriting is on the wall here, and people are starting to realize it."