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Eric Lange: transforming an energy glutton with geothermal energy



(Oct 30, 2007) What happens when an businessman decides to turn his building into a haven for sustainable energy?

When Eric Lange, owner of [Transportation and Storage Ltd](#), discovered his new premises was an energy glutton he took an unconventional route to solve this problem and became the first business in Canada to be completely retrofitted with geothermal heating. Green Living spoke with Eric about the conversion.

Green Living: Is your business a heavy energy user?

Eric Lange: Our main division is moving trade shows and special events. We have smaller division moving medical equipment that must be kept between 55 and 85 degrees Fahrenheit. We do about 325 shows across Canada so we have a lot of deliveries. Our warehouses have been expensive to heat and keep air conditioned.

GL: What inspired you to start the retrofitting?

Lange: I got my first electricity bill in July. It was for \$3500, and we hadn't moved in - and that

was just for the lights used by the contractors who were painting and cleaning up the 70,000 sq ft covered in oil and grease. I'm looking at the bill and thinking 'What have I done?'

I sat down with my general manager and said, "We have a problem. We haven't turned on the air conditioning yet, we haven't plugged in the computers. None of that stuff... Wait until we get to wintertime and the natural gas...we have a BIG problem." You're not successful by being stupid.

GL: What was your first line of attack?

Lange: We sat down and came up with five items for certain areas of the warehouse and the office. We changed the old steel doors so the guys didn't have to open the doors until they see the truck backing in. We put up foam around the doors so when the trucks back in, there is an actual seal to prevent heat loss. The lighting system was the old fluorescent tube style -- we switched to the T8 system which is a very skinny bulb it actually saves 35 percent of the energy use.

GL: You had a huge task ahead of you. How did you stay focused?

Lange: We knew we couldn't do everything at once. There's a lot you can do with a brand new building but our building was over 30 years old so we had to plan accordingly. We did the windows, the seal had gone on them, and so we changed them to a double pane. On the ground floor windows, we put a safety device into them so that if somebody tries to break it, it won't shatter. We put motion detectors that shut off after 15 minutes of no motion in a number of areas - washrooms, photocopy rooms, kitchen area, and kitchenette. We didn't want to just do the standard easy things we wanted something really sustainable.

GL: How did you come to geo-thermal?

Lange: The geo-thermal was an exhausting search. There's not a lot of information out there. We had looked at everything possible: wind, solar, new natural gas apparatuses were out there that would reduce our reliance on natural gas. Then I saw a trade journal article quoting an old friend who put in geo-thermal at his winery in Grimsby. So I called him up and asked "PR aside, between us boys, does this work for you?" He had nothing but praise for it - it was a system once you put in you don't have to think about it. If you came to our office - there isn't much to see.

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GL: What kind of problems did you run into?

Lange: Well the cost of drilling the holes was enormous and but fortunately I have been in business for over 21 years and my bank manager understood they were financing my business and not the pipes. Two months into the project, Select Power, the company that had our contract closed down. They did call me up to tell me they would finish my project. We got the pipes in - there were 28 of them and they went down 111 metres (365 feet).

Once the system was in we had a pipe that didn't work the way we wanted it to. The system was fine in December and January, but then we had the coldest February in 30 years and the warehouse got down to -41 degrees Fahrenheit -- way below our -55 target. We had to bring in some salamander heaters. What I understand now is that water-ethanol mixture running through those pipes needs to be touching earth in order to absorb the heat.

Apparently what happens is the first year they're only about 80 percent efficient because the ground has not captured enough energy. I also hadn't put roof fans because I was looking at replacing the roof. The engineers told us we had to get those fans up, run them on a DC power, which takes only about 30 percent of the electrical use as opposed to an AC fan. We put the fans in.

GL: When did you feel satisfied that you had done the right thing?

Lange: The highlight of the whole program was when I got a natural gas bill for \$5600 bill after the geothermal had been installed. I called up the company and to ask what was going on. It turned out to be an estimate. I gave them a meter reading and they thought I had made a mistake because the meter hadn't moved. I got my credit after speaking with several supervisors but went through the same thing the next month with an estimate for \$6500. Eventually they sent out a supervisor because they were convinced someone had tampered with something. I eventually asked them to remove the meter but they had to create a new form since they never remove meters.

GL: When you expect to get a return on your investment?

Lange: The geo-thermal will take eight years six months based on August 06 prices for me to get my payback. Now that I've shown there are energy savings I've added those savings onto the property value.

GL: So what's next for your building?

Lange: We're installing seven more solar tubes to use natural light from outside and replace florescent tubes in the office areas. We're tackling the roof with a new energy efficient urethane/silicone roof. Basically we will have a new roof "sprayed over" the existing roof to take advantage of the approx. R10 value that is there already and adding an additional R10 with the urethane spray. This means we will have an even more efficient rating for our existing geothermal heating and air-conditioned system. The cost of this system is very much in line of traditional roofs, but we are not throwing the "old roof" into the landfill.

GL: We'll look forward to hearing more from you about your latest renovations.