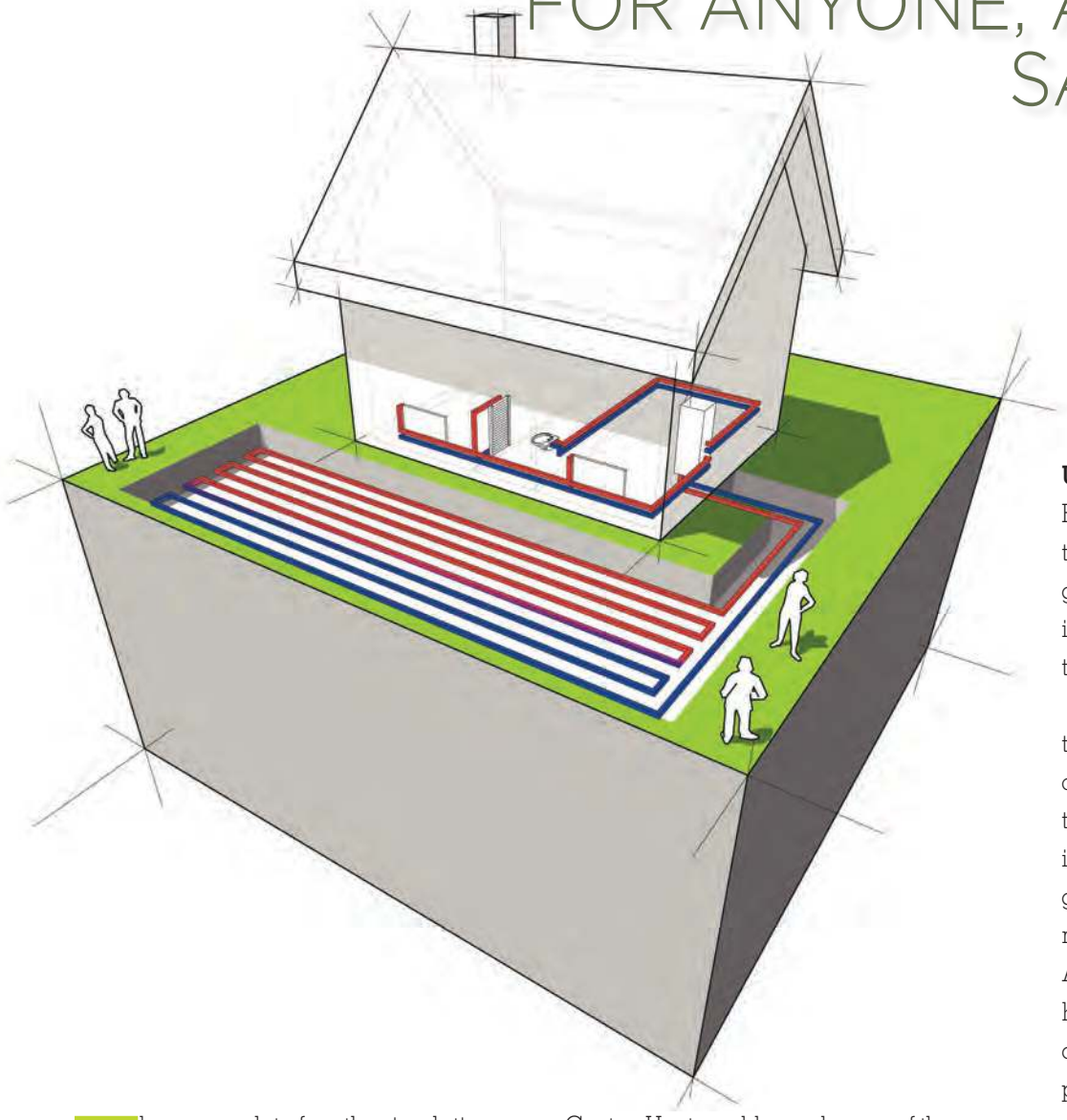
GEOTHERMAL IS A VIABLE OPTION FOR ANYONE, ANYWHERE, SAYS EXPERT

By Brynna Leslie



There are a lot of myths circulating these days about the practicality of geothermal heating and cooling systems for homes and businesses. At the 2013 Homebuilder and Renovator's Expo in December, **Chad Hayter**, owner of solar and geothermal plumbing and heating company, **The Hayter Group**, set out to dispel those myths.

In a 79-page presentation to an audience at the Metro Toronto Convention Centre, Hayter addressed many of the financial, technical and maintenance concerns often mistakenly associated with geothermal systems. The Hayter Group located in Alvinston, Ont., west of London, has specialized in geothermal heating and cooling since 1982. Hayter's philosophy is that geothermal can be a practical, environmental and cost-saving reality for anyone, anywhere in any type of building.

UNDERSTANDING GEOTHERMAL

Homeowners often don't take the time to consider geothermal because of a general lack of understanding of what it actually is, but it's simpler than you think, says Hayter.

Geothermal is a combination of two words. Geo means "of the earth" and thermal pertains to "heat or temperature." The earth is a natural insulator. As little as four feet under the ground, the temperature of the earth remains relatively constant year-round. As the sun heats the earth or water, heat can be transferred to the building directly through a series of complex pipes called loops.

The underground or underwater loops essentially remove the heat from the earth and pump it into the building. For cooling, the transmission system is reversed, extracting excess heat from the building and moving it through the earth loop to cool it.

INSTALLATION – EASIER THAN YOU THINK

People are often put off installing

MYTH
Geothermal is just too expensive

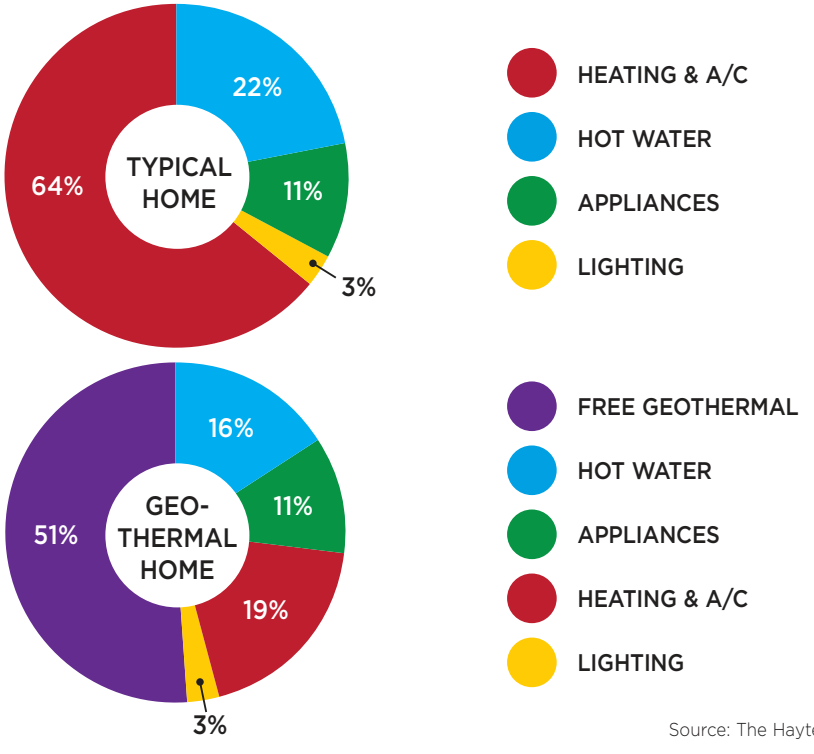
FACT
A typical Return on Investment (ROI) for geothermal installations is 12 to 21 per cent

geothermal systems, says Hayter, because they mistakenly believe the system is difficult to install, or that it's not possible to install geothermal in houses that don't have a large property. Both are untrue, he says. Even the smallest infill properties can benefit from geothermal.

Depending on space available, the installation of geothermal loops can be done in a number of different ways. A vertical loop requires a deeper excavation than a horizontal loop, but is space-saving, while the latter requires more surface square-footage. In other cases, the loops run into a nearby body of water, like a pond or a well. In Toronto, for example, there are 130 buildings conditioned by Lake Ontario.

Typically, vertical installations are conducted with powerful machines that can drill down into the earth to find the "warm spot," often100-to-200 feet deep. Horizontal installations require the excavation of long trenches. Water loops have their own intricacies, but all are effective.

COST BREAKDOWNS BY PERCENTAGE – TYPICAL HOME vs. GEOTHERMAL



Source: The Hayter Group

IS GEOTHERMAL COST EFFECTIVE?

One of the biggest reasons homeowners opt out of installing geothermal home energy systems, however, is the capital required on start-up. GeoExchange systems cost about $23,000 on average to install, compared to $9,000 for an electric furnace and air conditioning system and $11,000 for a high efficiency heating/cooling system. To homeowners looking to renovate or build, however, the up to $14,000 premium paid up front is well worth it in the long run, says Hayter.

When comparing costs of geothermal to conventional heating/cooling systems, it's worth looking to the future, says Hayter, because the operational cost savings and the return on investment associated with geothermal heating, cooling, radiant floor and hot water options are significant.

Homeowners who install geothermal products typically see a 12-21 per cent return on investment, he says, making geothermal a viable option for clients who are building or renovating their homes or businesses.

Many people assume geothermal installation is only "worth it" if they're building new. Not so, says Hayter. In fact, the older the home, the greater the return on investment. Older homes typically are more sieve-like and have aging furnace and hot water systems to go with them. Installing geothermal can literally cut annual utility bills in half. And while the costs of oil, hydro, propane and natural gas have fluctuated in recent years, geothermal

MYTH

In homes built with Insulated Concrete Forms (ICF) geothermal is unnecessary because the homes are so efficient

FACT

The walls in ICF homes are not an issue, but the windows are.

costs have remained stable since 2006 and are still lower than $875 per year on average.

With geothermal, you also get more bang for your buck. Hayter demonstrated how homeowners get more heat per kilowatt of electricity used to run a geothermal system than they would with a traditional heating unit. In may cases, the energy can be used to heat pools, radiant floors, hot water tanks and entire buildings through the ductwork may require upgrading.

But it's not just the significantly lower operating costs of geothermal that homeowners need consider, says Hayter. Resale value on homes with geothermal systems installed can be significantly higher. He offers the example of two homes that are equal, but for their utility system. The one with a traditional gas furnace and hot water tank has a resale value of $300,000 in the current market. The one with geothermal should be worth 18 per cent more, with a resale value of $350,000.

The reason for the significant difference in value is twofold, says Hayter. First, geothermal systems are more energy-efficient, requiring less energy to operate. Second, replacement value is a factor with geothermal systems typically outlasting conventional heating systems, he says.

A RENEWABLE ENERGY SOURCE WITH A LONG TRACK RECORD

The science behind the systems are so simple that the Romans used a primitive version more than a thousand years ago. Today's transmission systems are so effective and time-tested that once the initial installation is done, the maintenance on the system is relatively minimal.

Even in Canada, geothermal has a long track record. It was first used to heat homes in the 1940s and since rapid improvements in technology in the 1980s, it has been more widely used in homes, commercial and retail buildings.

A number of well-known large structures such as Rideau Hall in Ottawa, the Pan-Am Aquatic structure in Toronto and The Forks Market in Winnipeg use geothermal, says Hayter. Even Buckingham Palace uses a geothermal heating system.

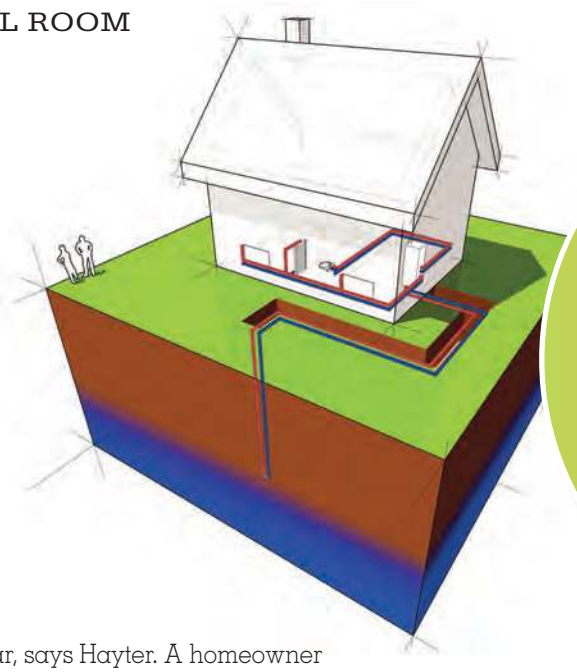
Even though it's good enough for the queen, geothermal doesn't have to be cost prohibitive.

Operational cost savings can be up to

Estimated annual fuel costs for various heating and cooling systems*

	Heating	Cooling	Hot Water	Total
Electric furnace	$1,980.00	$195.00	$452.00	$2,627.00
High-efficiency propane furnace	$2,660.00	$195.00	$607.00	$3,462.00
High-efficiency gas furnace	$1,213.00	$195.00	$276.00	$1,684.00
GeoExchange System	$619.00	$94.00	$283.00	$996.00

*Based on average pricing for fuels noted. Actual costs will vary with market conditions.



MYTH
There is not enough room for the ground loops in city lots

FACT
Vertical geothermal installations allow for efficient installation even on narrow city lots.

$2,500 per year, says Hayter. A homeowner that replaces a high-efficiency oil or gas furnace with a geothermal system can expect to recover the difference in installation costs within four to ten years, with minimal maintenance fees. CC

For further information on the costs and benefits of geothermal heating, please contact Chad Hayter, The Hayter Group, chad@hayters.net

WHAT YOUR CUSTOMER IS PAYING FOR HEAT

ENERGY SOURCE	HEATING EQUIPMENT	AMOUNT OF HEAT PER $1.00 SPENT
Geothermal Electricity (per Kilowatt Hour)	Hi Efficiency Geothermal System	113,766 BTU
	Standard Geothermal System	75,086 BTU
Electricity (per Kilowatt Hour)	Zuba Central	62,571 BTU
	Electric Furnace	22,753 BTU
Oil (per litre)	Oil Furnace	36,668 BTU
Propane (per litre)	Hi Efficiency Propane Furnace	33,142 BTU
Natural Gas (per cubic meter)	Natural Gas Furnace	65,981 BTU
	Hi Efficiency Gas Furnace	88,285 BTU
Wood*	Wood Furnace/Boiler	69,511 BTU

*Includes labour of 15 minutes per day.