The Buzz

E-Newsletter

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University Geothermal Building Finished

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Geoexchange Systems Used Worldwide

Questions and Answers

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Story Update

When the University of British Columbia (Vancouver, BC, Canada) decided to build a new faculty of law building, it wanted to ensure that the new structure would be environmentally-friendly and geothermally-heated and cooled. Despite encountering some very tough soil conditions on a preliminary test hole, the university remained committed to the plan of going geothermal.

In the project's initial first steps, the university conducted a feasibility study to see if it was practical to install a geothermal field. Located on the campus near the high sand bluffs overlooking Burrard Inlet, the plan was to drill a single 350-foot hole. The initial hole was drilled using a conventional mud rotary rig but, when the drill rig got past the 320- foot mark, it was stopped in its tracks. That's when the sonic drill was brought in as a "rescue rig." In typical fashion, the sonic rig buzzed quickly and easily through the same challenging conditions that jammed the conventional rig while completing that hole in under three hours.

That performance led to the final contract to drill and install the geo-loops for the project, which now had the green light to move ahead. Today, the new building is finished and using geothermal energy thanks to the 161 holes drilled by the award-winning, patented sonic drill rig.

Geoexchange Systems Used Worldwide

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Recent estimates indicate the presence of more than two million Ground Source Heat Pump (GSHP) systems worldwide, providing more than 15 GW of thermal capacity.

The majority of installations are in North America and Europe, although there has been rapid uptake of the technology in countries such as China and Korea, with systems also present throughout other parts of Asia, Australia, the Middle East, Africa and South America. Of these, perhaps the most famous buildings are the Birds Nest (Olympic) Stadium in Beijing, China and Buckingham Palace in the UK.

Geoexchange or GSHP systems are an efficient, low-emission way of providing heating, cooling and hot water to buildings and industrial applications. Although they utilize the ground or a water body for their operation, they are not a true geothermal technology.

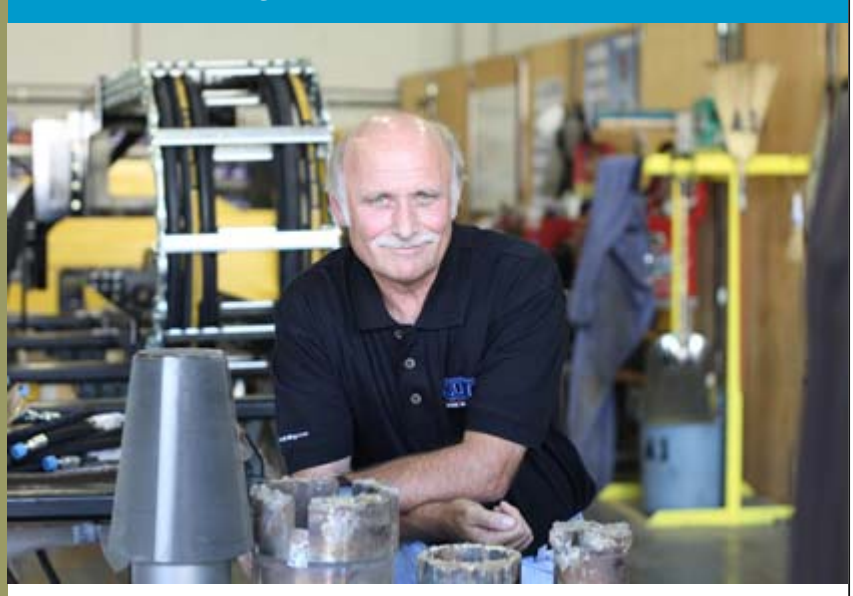
Instead, geoexchange systems operate via a heat exchange process using solar radiation (47 per cent of the sun's energy that reaches the Earth) stored in the ground and in water bodies.

This solar radiation provides stable temperatures that are the approximate equivalent of average annual air temperature for that location. For example, the average ground temperature in the top 100m of the mountainous regions of the Himalayas will be less than 10C, whereas in the equatorial regions it will be approximately 30-35C.

The simplest method of directly experiencing this temperature stability first hand is to enter an underground cave, basement or wine cellar. Thus, geoexchange systems can be located almost anywhere across the globe and are not reliant on unique geological features.

Courtesy of GeoExchange Australia

Questions and Answers



Ray Roussy, Sonic Drilling Technology Developer and Patent-Holder

Q: *What are the benefits of using sonic over other methods of drilling?*

A: The sonic drill is a very unique device that has the potential, with continued research and development, to replace most other drill types.

Already, it is significantly faster, produces less waste, provides high-quality undisturbed core samples and it is able to drill in tough formations that are impractical to drill using other methods.

Because of the unusual way that it drills, it is also used in many environmentally-sensitive projects such as dam remediation and nuclear site investigations.

Q: *What are the opportunities for this technology overseas?*

A: Sonic drilling is currently in use in six continents on projects that cover a wide scope. Its primary applications include mineral exploration, environmental investigations and geothermal installations but, often, we find our clients using the drill in applications or ways we never dreamed of. Right now, sonic drills are working in Britain, Holland, Belgium, France, Russia, Japan, Peru, Chile, Africa, Guyana, New Zealand and throughout the USA and Canada.

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