

Urban Canada Embraces Geothermal Through Sonic

With the global push to find and use more sustainable sources of energy, it should come as no surprise that geothermal is leading the race. In Canada, a number of provinces have embraced geothermal as an affordable and environmentally-friendly energy option for both commercial and residential projects. In the eastern province of Ontario, GeoEnergy Solutions Inc, of Bolton, has been able to position itself as a leader in the expanding sector of geothermal drilling by using a sonic drill rig.

“The sonic drill is extremely efficient,” says Jeremy Beatty, president of GeoEnergy Solutions. “We completed approximately 20 major drilling projects during the last year. Many were two week-long projects, mostly in the commercial sector, with about 10% of our work done for residential clients.”



“We are able to complete that many projects as a result of the unique capabilities of the sonic drill, which allows for rapid, simultaneous drilling and casing of the borehole,” he says.

GeoEnergy Solutions uses a Sonic Drill Corporation rig with its patented sonic-drill head. The sonic head works by sending high-frequency, resonant vibrations down the drill string to the bit, while the operator controls the frequencies to suit the specific conditions of the soil/rock geology.

Resonance magnifies the amplitude of the drill bit, which fluidizes the soil particles at the bit face, allowing for penetration through most geological formations, while an internal air-spring isolates these vibrational forces from the rest of the drill rig. The rig can bore, case, loop and grout in one operation.

Mr. Beatty describes the firm’s biggest project of the summer of 2008, for Idomo Furniture in North York, as having been particularly challenging given its scope, as well as the on-site ground conditions.

“We had to drill through 200ft of overburden and case the material as we progressed downwards, then switch to a different technique as we reached the bedrock,” he says. “The versatility of the drill allowed us to do this quickly and we were thus able to bore 66 holes to a depth of 550ft in 2 1/2 months.”

The challenging working environment involved having to bore some of the holes at a distance of only 10ft away from the building, which meant that the company had to drill at night for three weeks to avoid disrupting Idomo’s business.

Another noteworthy project for the company was one that involved drilling a geothermal installation before the actual building was built by Toronto Community Housing. GeoEnergy took on the task of drilling 50 boreholes to a depth of 430ft, taking into consideration an extra 30ft of drilling for the two-level underground parking facility.

“The unusual part of this operation was that we had to cut away the pipe casing 30ft below ground level to allow for the subsequent construction of the underground parking,” says Mr. Beatty. “We then had to remain on site while they were doing the excavating to make sure they did not damage our pipe installation.”

Features

GeoEnergy Solutions is a family-owned and operated company that was created two years ago as a new geothermal-installation enterprise to complement the activities of the environmental consulting firm Beatty & Associates Ltd. The company's services also include:

- Geological mapping and groundwater assessments
- Feasibility studies
- Earth energy and groundwater modeling
- Design of borehole fields, as well as water-supply and injection wells.

GeoEnergy Solutions is on the verge of acquiring a second sonic drill. Mr. Beatty adds: "We purchased our Sonic SDC 550 from the outset since we had heard many positive things about the outstanding performance provided by these rigs. In the two years-plus that we have been using this equipment we have been more than happy with the results in our various drilling projects."