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Drake Landing Solar Community

RAUGEO U-bends facilitate heating storage and distribution for solar-based Canadian community.

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RAUGEO helps sustainable Canadian community harness geothermal potential

Using the sun as its primary energy source, the Drake Landing Solar Community (DLSC) is a master planned neighborhood consisting of 52 single-family homes located in the scenic Alberta, Canada town of Okotoks. DLSC is the first community of its kind in North America, modeled after a proven European technology known as "solar seasonal storage." Each home is heated by a system designed to store an abundance of solar energy underground during the summer months and redistribute the energy throughout the winter. This innovative technology fulfills 90% of each home's space heating requirements, which results in less dependency on increasingly limited fossil fuels.

DLSC is the largest subdivision of single-family homes in Canada meeting the R-2000 standard. Each home is 30% more efficient than a conventional home, with roof-mounted solar collectors providing the majority of each home's domestic hot water requirements and a central panel system addressing space heating needs.

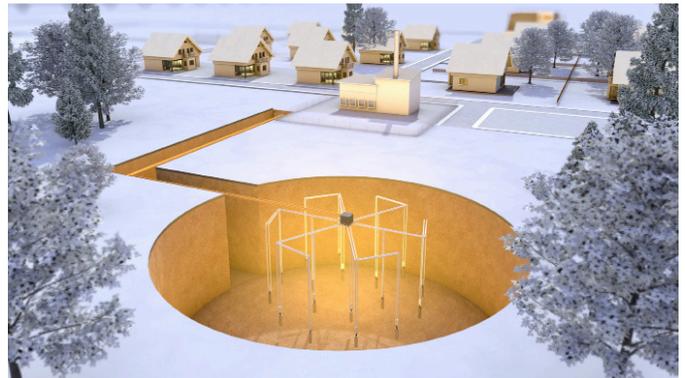
The solar energy system is composed of an array of 800 flat plate solar collectors and the RAUGEO ground loop heat exchange system, which includes crosslinked polyethylene (PEXa) pipes from REHAU. RAUGEO delivers an economical source of energy largely independent of the weather or season by harnessing the relatively constant 10 to 13°C (50° to 55°F) ground heat. It offers numerous benefits, including a substantial reduction of CO₂ emissions, energy savings of up to 75% and a maximum operating temperature of 93°C (200°F).

"Our RAUGEO PEXa pipes offer numerous advantages over the traditional PE pipe for geothermal systems, particularly the RAUGEO continuous U-bend design that eliminates leak concerns associated with the typical welded joint designs," explained Ali Sajjadi, REHAU heating and plumbing product manager for western Canada. "PEXa pipe also provides much better resistance to punctual loading and slow crack growth when compared with that of PE pipe."

According to Ric Bell of R. Bell Mechanical Services, the general contractor on the project, REHAU was chosen for the unique properties of its RAUGEO system, and technical support capabilities in helping to design the project's thermal energy storage field.

"REHAU's RAUGEO PEXa pipe proved itself an ideal choice for the DLSC project because of its ability to transfer heat through the BTES (Borehole Thermal Energy Storage) field effectively and without the need for connections – significantly simplifying the design and construction of this innovative housing community," said Bell.

The project's 35 m (115 ft) BTES field consists of a series of boreholes, which are similar to standard drilling wells. The single RAUGEO U-bends were inserted into the boreholes, each reaching a depth of 37 m (121 ft). When solar-heated water becomes available to store, it is then pumped into the energy center of the BTES field and through the single U-bend pipes. In total, 144 RAUGEO single U-bends were used in the project.



"REHAU has supplied the products to employ this innovative technology throughout Europe for the past 35 years," said Sajjadi. "We're excited to see that this concept, along with the products that bring it to life, is beginning to take hold in North America, and eagerly anticipate involvement with additional projects in the near future."

Project: Drake Landing Solar Community, Okotoks, Alberta
Construction type: Multi-family, opened in 2007
Project scope: 144 single PEXa geothermal U-bends
General contractor: R. Bell Mechanical Services
REHAU systems used: RAUGEO™ ground loop heat exchange

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