

Pomaria's geexchange system heats and cools from the ground up

As far as downtown developments go, Pomaria is a clear example of the movement to green building technology. Located in Vancouver's Yaletown neighbourhood, Pomaria was designed to leave a smaller environmental footprint than similar developments of comparable size.

Amongst its many green features, this exceptional 30 storey development includes a geexchange loop field, owned and maintained by Terasen Energy Services (TES). The highly efficient geexchange system provides heating, cooling and domestic hot water for Pomaria residents, while achieving one of Pomaria's key sustainability goals: energy conservation.

How geexchange works

A geexchange system uses the solar heat stored in the earth from a ground or water source, to heat and/or cool a building. In colder months, the heat pump draws heat from the earth to warm the building, while in warmer months, the system uses the earth as a "heat sink" to cool the building. The size of the system required is determined by the amount of energy needed in the building, and a variety of options can be installed from radiant floor heating to fan coil air conditioning.

To collect earth energy at Pomaria, 56 vertical boreholes were drilled 350 feet into the ground to create a closed ground loop system. In a closed loop system, fluid circulates through polyethylene piping inserted in the boreholes, transferring heat from the earth to ground source heat pumps. As it's extracted,

the heat is upgraded by the heat pump and transferred to either a hydronic or forced air distribution system to provide a comfortable room temperature. To provide cooling in summer months, the heat pump system reverses the process, extracting heat from the air and transferring it to the ground via the loop.

Geexchange heat pumps have been available for many years and are used Canada-wide. Currently there are over 33,000 earth energy systems being used in Canada's residential, commercial and institutional sectors, and sales are increasing by about 13 per cent annually.

Saving energy

The chief benefit of geexchange is the high level of efficiency achieved, which is typically measured as a Coefficient of Performance (CoP). The CoP of a heat pump is the ratio of the output heat to energy input. The CoP of a geexchange system ranges from 3 to 4, meaning that for every kilowatt of electricity needed to operate the system, the heat pump provides 3 to 4 kilowatts of heat energy.

Using energy from the earth displaces the need for conventional fuels, which when burned, produce greenhouse gases and contribute to global warming. The geexchange system at Pomaria results in energy savings of 1,000 MWh of energy per year and greenhouse gas emission reductions of 190 tonnes. These energy savings also





reduce the need to import electricity from out of province, thereby increasing energy self-sufficiency.

In addition, TES provides a stable rate for the system's ownership and operation, which provides peace of mind that the system will be maintained to utility standards at a reasonable cost.

Helping developers go green

Not only are green buildings good for the environment, they meet the emerging demand by purchasers who are increasingly aware of their ability to reduce their environmental footprint. They also satisfy owners and operators seeking lower long term operating costs and improved productivity resulting from a more comfortable indoor environment.

TES helps developers go green in two key ways: we absorb the capital cost of the geoexchange system and we provide long term ownership and utility management. TES ownership alleviates a developer's energy system installation costs and provides occupants with greater peace of mind, knowing that their heating and cooling loads will be delivered as and when needed.

Learn more

TES ownership of alternative energy systems is growing. We can identify the right system for your development. Contact us for a free preliminary assessment to find out how your development can reduce its environmental footprint.

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