



Renewable Resource Recovery Corp.
2477 Maley Drive
Sudbury, ON P3A 4R7
Canada

Bulletin #1

Residential @Source-Energy System - Notice to Home Builders

The following information is for home builders and home owners connecting to the @Source-Energy System for heating and cooling of a residential building.

The @Source-Energy System is a ground source (geothermal) heating/cooling energy system that is built into the concrete sewer pipes, to which your home is connected. An enormous amount of thermal energy (heat) is normally lost when wastewater flows into the sanitary or storm sewer pipes. The @Source-Energy System functions as a standard geothermal system extracting heat from the sewer pipes and from the heat in the ground. The system is connected to and controlled by a heat pump (furnace) located in your home. Please refer to the attached Bulletin #2 for a discussion on how the System functions to provide efficient heating and cooling to your home.

Related Building Permit Requirements

You are responsible for the design of the heating and cooling energy system within your home. Renewable Resource Recovery will provide an engineering design of the @Source-Energy System to which your home is connected.

You are required to have the design of your building's heating and cooling system done by a qualified home heating system designer who will size the heat pump system and design the distribution system within your home. The designer will provide you with mechanical drawings and specifications for the system, completely outlining the energy system required for your home and the size of the heat pump.

You are to provide the Renewable Resource Recovery Corp. (R³C) with the heating system drawings and specifications for the heating system in your home. R³C's engineer will use your heat pump requirements to design the @Source-Energy System to meet your energy needs. Depending on your heating requirements, which are a function of your building size and design, a supplementary geothermal well may be required to provide additional energy to meet your building heating requirements. R³C's engineer will design the @Source-Energy System and provide you with engineering drawing of the System approved by a professional engineer.

R³C's engineering design is based on the building heating system requirements provided by your heating and cooling system designer. We do not accept responsibility for the design and function of the heating and cooling system within your building.

In order to receive your building permit you are required to provide the Building Department with your design drawings and specifications for the heating system within your home, and the R³C's engineering drawings and specifications for the @Source-Energy System.

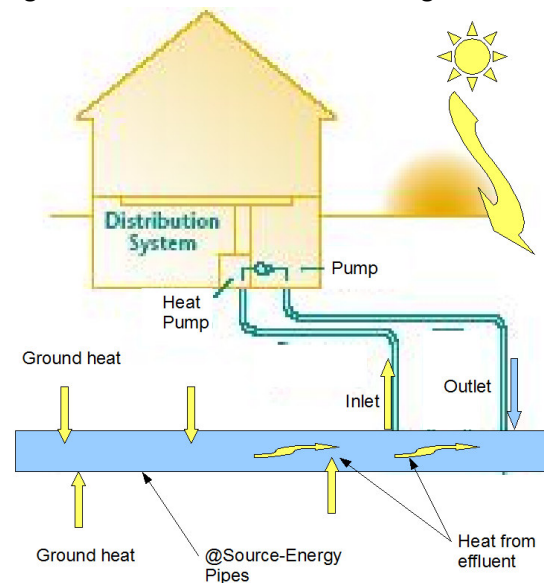


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Bulletin #2 Sewer Heat Recovery and Ground Source Heat Recovery

An enormous amount of thermal energy (heat) is normally lost when wastewater flows into the sanitary or storm sewer pipes. The @Source-Energy System functions as a standard ground source (geothermal) system extracting heat from the sewer pipes and from the heat in the ground. The system is connected to a heat pump located in your home. The following outlines how the system provides heating and cooling to your home:

- You set the desired temperature on a thermostat in your home and a heat pump (furnace) located in your home operates and controls the system, providing efficient heating and cooling to your home.
- @Source-Energy system inlet and outlet pipe connections are provided at your lot line to which your heat pump is connected.
- The heat pump pumps a liquid (30% ethanol and water) to the @Source-Energy System where it flows through a heat extractor in the @Source-Energy Pipes absorbing heat from the ground and the effluent in the pipe.
- It then flows back to the heat pump and through a heat exchanger within the heat pump where heat is extracted from the warmed fluid.
- The liquid is then pumped back to the @Source-Energy pipes to absorb more heat.
- In the building, the heat exchanger transfers the heat through a refrigeration process in a liquid refrigerant which boils, absorbing heat as it changes to a gaseous phase. The gas then flows to a compressor, which increases the pressure of the gas and reduces its volume forcing it back into a liquid phase and increasing its temperature. The hot liquid flows into a condenser coil from which heat is transferred to either a stream of air flowing over the coil or a hydronic heating fluid flowing through a hot water circulation system to provide building heat.
- The refrigerant then passes through an expansion valve where the temperature and pressure drop off and the refrigerant returns back to the heat exchanger where the cycle begins again.
- During the cooling season, the direction of the refrigerant flow is reversed by a valve. The heat pump refrigerant cools your home by picking up building heat and transferring it to the heat exchanger and back to the water/ethanol mixture and to the @Source-Energy pipes.



Solar heat in ground and heat from effluent is extracted by heat collector system in @Source-Energy pipes