



Renewable Resource Recovery Corp.

@Source-Energy System

A **Pumping Control Panel** installed in the System is manufactured by **A-1 Quality Heating and Air Conditioning**. The Panel controls flow in the System and contains circulation pumps, flow meters and temperature wells.

For specific information on the **@Source-Energy Wall** and the **@Source-Energy Pipe** please refer to the detailed brochures for each of the products.

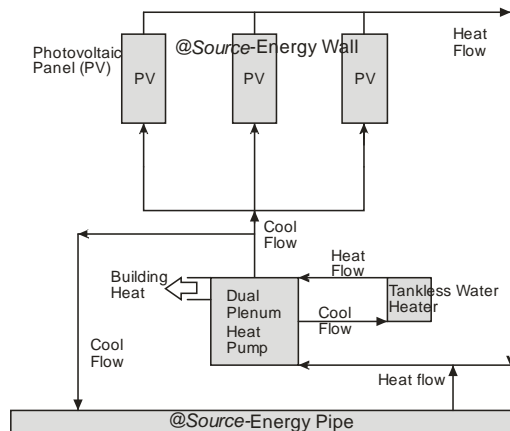
Contact R3C to obtain copies of the brochure or visit our web site at the address shown below.

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The **@Source-Energy System** is a dual sustainable energy system composed of **@Source-Energy Pipes** combined with an **@Source-Energy Wall**. The System is controlled through a heat pump with a dual plenum which upgrades low level heat extracted from the **@Source-Energy Pipe** and **@Source-Energy wall**, providing high level heating to the building and to the tankless water heater. The tankless water heater in the System functions as a mixer tank as well as providing domestic hot water and supplemental heating to the building. The tankless water heater is operated with natural gas or electricity. The heat flow schematic of the system is illustrated in the following schematic.



Xstrata Nickel Sustainable Energy Centre
With **@Source-Energy System**

@Source-Energy Wall

The **@Source-Energy Wall** is a precast, prestressed concrete wall panel with photovoltaic (PV) cells cast into the face of the wall and a thermal heat recovery system embedded in the concrete. The **@Source-Energy Wall** is fabricated as a structural wall or roof panel or as a cladding panel for residential, commercial, industrial and institutional buildings.

The **@Source-Energy Wall** generates electricity used in the building or sold to the electrical grid providing a revenue source to the building owners.

A fluid circulated through the **@Source-Energy Wall**'s thermal energy recovery system collects heat from the wall from behind the PV panels. The heat energy is used to heat domestic hot water and/or stored in a ground thermal energy storage system composed of **@Source-Energy Pipes**, which is transferred to a heat pump in the building.

@Source-Energy Pipe

The **@Source-Energy Pipe** functions as standard precast concrete sewer or storm water pipe while extracting energy from the effluent in the pipes and from the adjacent ground.

The **@Source-Energy Pipe** system recovers 6,800 - 17,000 BTU/h of heat energy from 1 m³ of waste water. Extraction performance is dependent on the water speed, downward gradient in the sewer pipe, quality of water and temperature of water.

For example the energy capacity of a 400 mm ID **@Source-Energy Pipe** flowing 1/4 full and 30m (100 ft) long (0.955 m³ of waste water) is 4,000 - 9,000 BTU/h.

Heat is also recovered from adjacent ground. Site tests indicate a recovery of up to 24,000 BTU/h/100 ft. for a 400 mm O.D. **@Source-Energy Pipe**