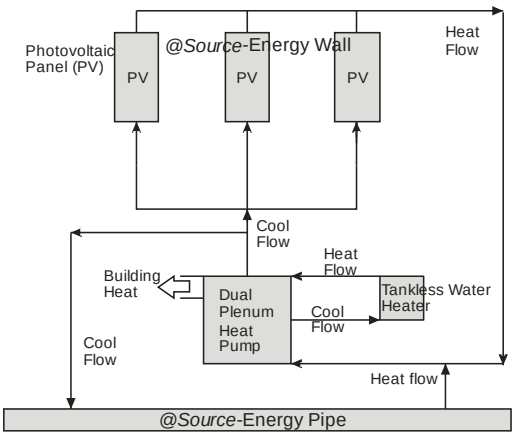
Renewable Resource Recovery Corp.

@Source-Energy System

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/or to the water heater. The water heater in the System functions as a mixer tank as well as providing domestic hot water and/or supplemental heating to the building. . The heat flow schematic of the system is illustrated in the following schematic. The System performance is outlined on the back side of this sheet.



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 or other geothermal systems. A heat pump is used to extract heat from the *@Source*-Energy Pipe to heat the building. Reversing the heat pump cools the building.

@Source-Energy Pipe

***@Source-Energy* Pipes** function as standard precast concrete sewer pipes while extracting energy from the effluent in the pipes and from the adjacent ground.

Conductivity tests by an independent geothermal testing consultant* determined a conductivity for *@Source*- Energy Pipe of 1.72 BTU/(hr-ft-F$_o$). Based on a ΔT of 20$_o$F and an 8 inch (200 mm) diameter *@Source*-Energy Pipe 100 ft long has the capacity to remove up to 37,000 BTU/hr/100 ft. from the effluent in the *@Source*-Energy Pipe.

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

During warm periods *@Source*-Energy Pipes store heat recovered from the building, which is recovered in cool periods

* Conductivity tests by Ewbank and Associates

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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Renewable Resource Recovery Corp.

@Source-Energy System Test Data

The following data was determined from a full year test of the ***@Source*-Energy System** installed at the Xstrata Sustainable Energy Center located at Cambrian College in Sudbury, Ontario Canada. The system is composed of an ***@Source*-Energy Wall** with 18 PV panel, connected to 120 feet of ***@Source*-Energy Pipe** functioning as a ground thermal energy storage (GTES) system. On January 20, 2013 a 1 Ton HP was turned on at full load for continuous operation 24 hours per day,

The heat energy recovered from the PV panels is shown in Fig. 1 averaged for a single PV panel. The total heat energy recovered from the *@Source*-Energy Wall and stored in the ***@Source*-Energy Pipe** GTES system is illustrated in Fig. 2.

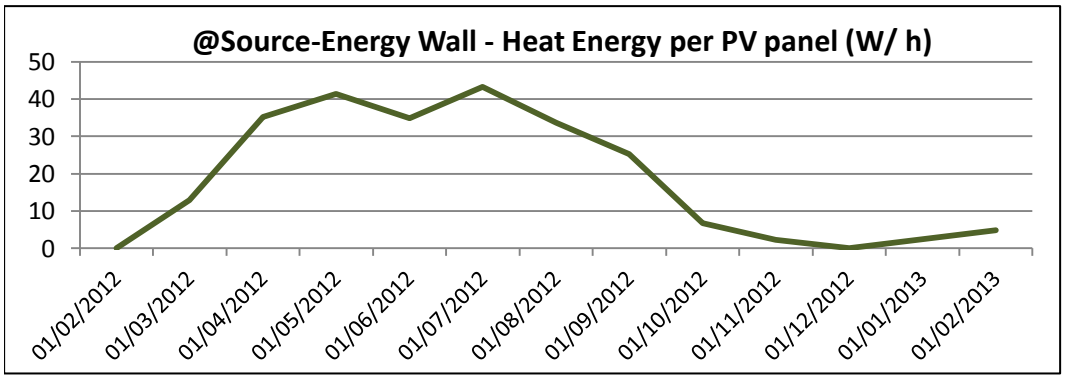

Fig. 1 – Average Heat Energy Recovered per PV Panel over a 24 Hour Period

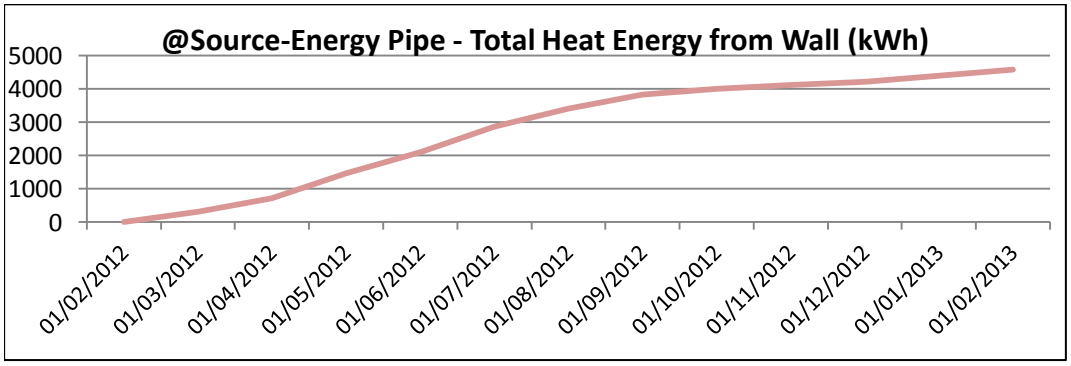

Fig. 2 – Total heat Energy Recovered from @Source-Energy Wall stored in GTES

***@Source*-Energy Wall Performance**

The average electricity generated for 235W PV panels in the test location is 29W/h/PVpanel.

In this test the average heat generated is 28W/h/PVpanel.

Data for this test project was collected and analysed by Sustainable Building and Energy Consultants Inc., Sudbury, Ontario, Canada

SBEC

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