POWER-PIPE®

WASTE WATER HEAT RECOVERY SYSTEMS

Unilever

Unilever Industrial Case Study

An innovative Waste Water Heat Recovery system is being utilized at one of Unilever's food processing plants in Peterborough, Ontario, Canada.

The consumer goods giant has installed Power-Pipes at its Ragu factory, which has allowed it to recover valuable heat energy left over in the hot water used to clean its product containers.

Instead of being wasted, this is now being recovered and sent to pre-heat the steam feed-water for cooking processes.

A key advantage of using a Power-Pipe in this application is that it is completely safe (and approved) for heating potable water. The pre-heated water can even be used in the food product.

Before installing these systems, this energy would have been disposed of because of concerns relating to cross-contamination, clogging and fouling all associated with traditional heat exchangers.

A Power-Pipe used in industrial application requires little or no maintenance, which keeps operating costs to a minimum. Because it has no moving parts, it has a minimum service life of 50 years. If necessary, inspection and cleaning can be performed while the units are in operation.

Cost Analysis

As well as helping to make substantial daily energy savings, by installing Power-Pipes at the factory, Unilever made back a return on its investment in just over a year. See calculation breakdown below.

Cost to install: CAD $27,528 (roughly £15,000). The system included a heat meter to accurately quantify energy savings and operational performance and runs at average efficiency of 70 percent.

Savings: The system saved CAD $26,136 (roughly £14,500) in its first year of operation resulting in a payback of under 1.1 years.

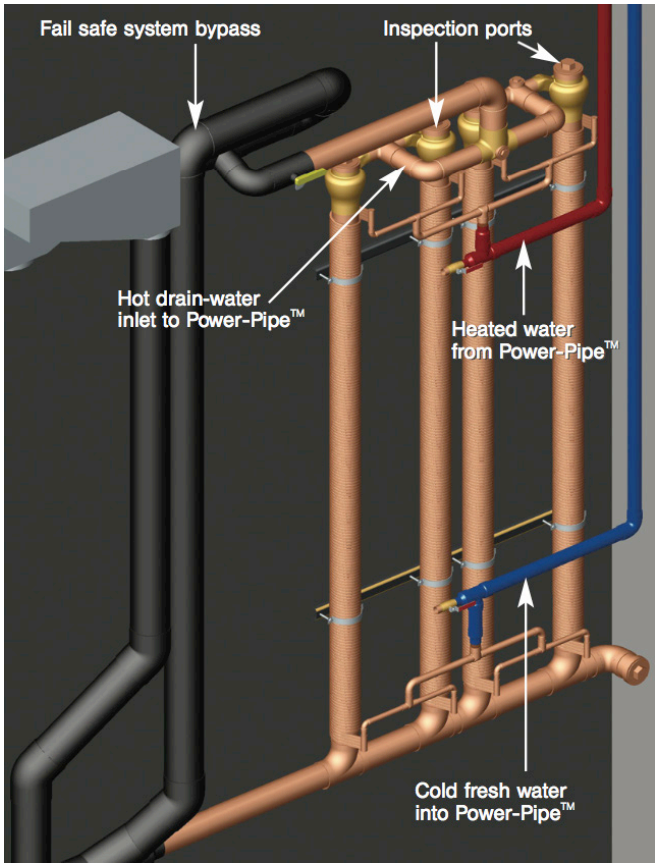
Installing Power-Pipe has also reduced Greenhouse Gas emissions at the Ragu factory by over 130 tonnes/ per year.

Contact Power-Pipe UK

Tel: 0207 227 2270 | **Email**: sales@powerpipehr.co.uk | **Twitter**: @powerpipeuk

Highlights

- Uses energy in drain water to preheat potable water
- 1.1-year payback
- 70% of heat recovered from drain water
- Very low maintenance



Implementation

The existing drainwater line already had a vertical fall of about 10 feet. In order to accommodate the high drainwater flow rate, a Power-Pipe unit incorporating four heat exchangers, each 8 feet long, was installed.

The drainwater flow is split using a patent-pending manifold, which minimizes vertical height required while maintaining the drainwater velocity to improve the falling film effect inside the heat exchangers. The warm drainwater is piped from a weir to the inlet of this manifold, while the fresh water flows through the coils of the heat exchangers.

The Power-Pipe units can recover most of the heat from the warm drainwater without slowing or affecting the flow. The result is an average heat recovery effectiveness of 70%, which will yield a reduction of approximately 43,000 m3/year in natural gas demand.

About Unilever

Unilever is one of the world's largest consumer goods companies with over 400 brands to its name including food, beverages, cleaning agents and personal care products.

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