

# PE POWDER HEATER CASE STUDY

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## Introduction (Problem)

A polyethylene powder customer in the USA makes PEX (cross linked polyethylene) tubing for residential and commercial use.

The plant receives its polyethylene powder in rail cars, which are parked outdoors. Inside the plant, the extrusion process receives the polyethylene powder at production rates to match the demand from several extruder lines. The extruders will perform more efficiently and produce more consistent product when the raw materials entering them are consistent. The cold powder would also have a tendency to pick up moisture, which also adversely affects the extrusion process.

During the winter months, the powder can get as cold as -7°C and correlated to a much higher percentage of rejected and discarded tubing.

The cold powder creates process problems to the point where production had to be halted numerous times.

In order to avoid these process problems, they required the powder to be heated to room temperature or 21°C.

## Description of Equipment (Solution)

In 2012, the customer engaged with Solex Thermal Science to provide a solution to their cold powder issue.

Solex proposed a heater that used 50 USGPM of 60°C water to indirectly heat 2000 kg/hr of polyethylene powder from -7°C to 21°C. A test with Solex's pilot equipment at the customer's site was conducted and with its success, a Solex heater was subsequently purchased.

## Solex Heat Exchanger Advantages (Benefit)

Since the Solex heating unit would only be used during the winter months, the cost and space had to make sense in order for an order to ensue; and it did.

The small footprint of the Solex heating unit of approximately 1.5 x 2.5 feet allowed the customer to accommodate the unit in a small corner of their plant.

Solex's global-reaching Technical Services team was available at start-up of the equipment to address any issues that arose.

## Return on Investment

Instead of having to shut down production on cold winter days, the heater allows the customer to continue producing plastic tubing product at their desired capacity while achieving a high production quality. This provides a more predictable production capacity year-round and a more consistent revenue stream.

The Solex heating unit was such a success that when the customer decided to increase their capacity, they came to Solex to buy another unit.

The second unit was purchased in 2014 and is capable of 4000 kg/hr.

## Solex Background

Solex Thermal Science Inc. is a global developer and provider of high efficiency, indirect heat exchangers for bulk solids heating, cooling and drying. Solex has over 500 projects installed in more than 50 countries on a variety of applications including fertilizer, oilseeds, plastics, chemicals, industrial minerals, biosolids and food products. Solex's technologies are subject to patents and patent applications in various jurisdictions around the world. Solex is based in Calgary, Alberta, Canada and has offices in North America, South America, Europe, Russia and China.

Solex products provide lower power consumption, little to no emissions and zero product degradation. Unlike more traditional methods, air is not used as the heat transfer medium resulting in a more energy efficient process.