From the Saucepan to a Continuous Process

Procordia Food

Case Story

Alfa Laval Contherm® Scraped-Surface Heat Exchangers for Cooling Rice Pudding

Risifrutti is a rice pudding that can be eaten directly from the cup either as a dessert or as a snack. While it is simple and convenient for the customer to eat, it is not an easy product to make. Anyone who has tried making rice pudding and ended up with a burned saucepan bottom knows that. Procordia Food in Orebro, Sweden, found the solution to making a delicious rice pudding that didn't burn and stick was three Alfa Laval Contherm® scraped-surface heat exchangers.

Risifrutti, rice pudding in a six-ounce cup, was introduced to the Swedish market in the beginning of the 1990s and was an immediate success. It was such a success that it created its own niche market. Today, together with another cereal pudding called Manifrutti, the company's product range has captured approximately 25 percent of the market for products sold in cups under nine ounces, including all types of yogurt products.

The Highest Hygienic Requirements

These new consumer-friendly and tasty products were so popular that by the beginning of 1999 Procordia had to expand their plant in Orebro for the manufacture of Risifrutti and Smaskens, another new product of fruit and vanilla sauce in a two-part cup.

"The demand for these products was so great that the capacity in our existing plant was insufficient. Therefore we decided to relocate manufacturing and build a new line in Orebro," says Christer Norefors who is responsible for fruit and berry products at Procordia Food in Orebro, a city in central Sweden.

"The plant has been adapted to the highest requirements for hygiene and gentle treatment of the products," continues Christer. "Moreover, we have managed a significant increase in production. The combination of Tetra Pak's (the supplier of the line) process knowledge and Alfa Laval's unique Contherm scraped-surface heat exchanger makes it possible to operate five shifts continuously and still be able to increase production when needed."

In the process, the rice pudding is heated in an additional three Contherm scraped-surface heat exchangers before it is cooled and packaged in cups. The reason Procordia chose Alfa Laval's scraped-surface heat exchangers for this process is their unique ability to treat products with particles, high viscosity and a tendency to create a film when heated. Anyone who has ever cooked hot cereal knows how easily it burns and sticks to the bottom of the saucepan. The Contherm's blades continuously scrape the internal surfaces to keep them clean and free from burn-on. They also agitate the product in order to ensure high heat exchange. This has made it possible to switch from batch operation to continuous operation.

Little Need for Service

The Contherm heat exchangers are easy to operate and require very little monitoring. "Maintenance of the Contherms is minimal. We inspect the heat exchangers once a week and sharpen the knives when needed," says Thomas Wretlund who works with process and maintenance at the Orebro plant. "This is a great advantage when running a continuous operation since we only have time for a couple of hours of planned shutdown per week."

Procordia Food – One of Sweden's Leading Foodstuff Companies

Procordia Food is one of Sweden's leading foodstuff companies with four well-known brand names. Their product range includes convenience foods, canned vegetables, fruit and berry products, pizza, sauces and processed potatoes. The company is part of the Norwegian company Orkla Foods, A.S., one of the largest foodstuff companies in the Nordic countries.

At Procordia Food, Thomas Wretlund, process and maintenance, and Christer Norefors, responsible for berry products, in front of the six Contherm scraped-surface heat exchangers.

The Contherm Scraped-Surface Heat Exchanger

The Contherm scraped-surface heat exchanger is vertically mounted and designed for the heating and cooling of particulate, sticky, viscous and crystallizing/phase-change processes. It is available in three sizes and can serve in a wide range of process stages including heating, cooling, slush-freezing, pasteurization, sterilization and crystallization. The Contherm can operate with any of the following media: steam, water, brine, ammonia, glycol, freon, thermal oil or liquid gases.

During operation the product is pumped into the lower end of the heat exchanger cylinder and is removed from the cylinder walls by scraping blades as it flows through the cylinder. This scraping action results in product heating or cooling with a high heat transfer rate without fouling. The scraping action continuously removes the product from the cylinder wall, thereby allowing the fresh product to be exposed to the heat transfer surface and providing high heat transfer. The heating or cooling media flows in the annular space between the cylinder and the insulated jacket. When liquid media or steam is used, a spiral coil is installed in the annulus to provide high heat transfer efficiency.

The Contherm Offers the Following Advantages:

- Does not affect the taste, color or texture of the product
- Saves floor space
- Maximizes product recovery
- Optimizes cleaning-in-place and reduces the risk of contamination
- Offers easy maintenance and inspection
- Provides effective air purging

Alfa Laval's Unique Customer Testing Center

The Contherm Product Center for Alfa Laval Inc in the USA is located in Newburyport, Massachusetts. The Contherm Product Center staff provides design, application and service expertise for heat exchangers for the food industries including the Contherm and Convap heat exchangers as well as sanitary plate heat exchangers.

Alfa Laval's new Customer Testing Center offers customers testing capabilities for all products from the thinnest to the most viscous, from the smooth to the most chunky. In the laboratory customers can simulate processing conditions in a full-scale processing line. The laboratory consists of mixing equipment and a battery of six Contherms for testing evaporation, heating or cooling processes. A state-of-the-art rhealogy laboratory offers customers food analysis with valid data on the food products processed.

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