



Chocolate manufacturer enjoys sweet benefits of Eaton DCF filters

Location:

India

Segment:

Food, chocolate

Challenge:

A global chocolate manufacturer discovered challenges in its liquid chocolate filtration system which included filtering the products in an open environment. Decreased productivity and product quality forced the company to look for a better solution.

Solution:

Replace vibrating gravity screen with an Eaton DCF-800 mechanically cleaned filter.

Results:

Eaton's DCF-800 mechanically cleaned filter increased efficiency and enhanced the quality of the end product. Higher flow rates resulted in increased productivity, reduced contaminants and both labor and material savings.

The solution put in place by Eaton allowed the customer to better manage the process and reduce the amount of labor required.

The customer is so pleased with the successful operation of the DCF-800 that additional units were ordered.

Background

Whether it's fine chocolates or a common candy bar, chocoholics around the world count on chocolate manufacturers to keep up with demand and consistently deliver sweet treats. A global chocolate manufacturing facility in India is helping satisfy those cravings while keeping up with one of the fastest growing confectionary markets in the world - the Indian chocolate industry, which is presently valued at \$4.8 billion.

As demand and production increased, the company discovered several shortcomings in its liquid chocolate filtration system including the use of a vibrating gravity screen. The facility's chocolate manufacturing process includes filtering liquid chocolate in an open environment before the molding stage.

Because the screen in use relied on the force of gravity to flow the fluid through the process, it had to be located on the second floor of the plant, limiting the configuration of the production line. This flaw resulted in decreased productivity and product quality, forcing the company to look for a solution.

Challenge

Chocolate must be filtered to ensure a high-quality finished product free of contaminants. In addition, there are varying global standards for consistency that create the need for a filtration system capable of handling diverse raw materials.

Increasing productivity and quality by improving flow rate, eliminating external contaminant build-up and reducing operating noise and maintenance time were key to keeping up with increased global demand for this popular confection. Furthermore, ensuring the purity of the finished product by avoiding exposure of the warm liquid chocolate to the atmosphere was important in the success of this operation.

A pump flow rate of 5 cubic meters per hour paired with a relatively high viscosity of the liquid chocolate, 6000 – 8000 centipoise (cP), was no match for the vibrating gravity screen. The screen's frequent clogging, low burst strength, frequent bursting and subsequent repair or replacement, resulted in an excess of unplanned downtime.



Powering Business Worldwide

The company sought recommendations from Eaton, whose industrial filtration systems are used successfully around the globe in a number of chocolate processing applications, including harvesting, fermentation, shell removal, grinding, pressing, deodorizing, cooling and conching.

Solution

Eaton recommended a continuous, enclosed filtration system that best matched the customer's operating process and desired goals, which included continuous operation and a high-quality operating environment.

The DCF-800 performs a self-cleaning action by mechanically scraping collected debris from the filter screen with a disc that travels up and down the screen, parallel to the liquid flow. The collection chamber at the bottom of the filter automatically purges collected debris without halting production in a process that takes less than seven-tenths of a second.

Because the DCF-800 continuously cleans the screen without interrupting production, it maintains a consistently high flow rate and provides the highest quality filtering of the selected media.

Eaton's DCF-800 mechanically-cleaned filter provided several more benefits, including:

- Increased burst strength of 10 bar compared to 7.5 bar in the customer's former system
- Improved plant working conditions due to quieter, enclosed system
- More efficient use of space due to filter's compact design
- Virtually maintenance-free operations and less frequent replacement of parts resulting from fewer moving parts

Results

The replacement of the vibrating gravity screen with Eaton's DCF-800 mechanically cleaned filter has made the filtration process more efficient and enhanced the quality of the end product. Higher flow rates have resulted in increased productivity and reduced contaminants.

The transition to the DCF-800 has also translated into labor and material savings. The low-maintenance operation of the DCF-800 was a welcome change to the customer as the previous system required the system to be shut down for frequent cleaning and replacement. The solution put in place by Eaton allowed the customer to better manage the process and reduce the amount of labor required.

The continuously running production line and the purge valve's open cycle maximum of only seven-tenths of a second has minimized product loss and increased the bottom line.

The customer is so pleased with the successful operation of the DCF-800 that additional units were ordered.

That's great news for chocolate lovers around the world.

Eaton's DCF self-cleaning filter

The DCF mechanically cleaned filters operate at a consistently low differential pressure and deliver simple, reliable operation in which a low initial investment is a key driving factor.



The circular cleaning disc design ensures intimate contact with the screen to thoroughly and uniformly clean the media.



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