

Cost Savings and Process Improvement for Flavor Producers

Overview

When deciding on a food or beverage, people are very much guided by their sense of taste and smell. The specific taste and smell of foods and beverages is due to the presence of specific chemical compounds. Often, the flavor is not sufficient and natural flavorings in concentrated form are added to the food.

Natural flavorings are derived from foods like fruits, vegetables, or herbs. Modern food technology is used to separate the flavors from the food. In order for these flavorings to be marketable, the raw ingredients must be passed through a rigorous filtration process to ensure clarity and colloidal stability.

With its Marksman™ Series high capacity filters, Pall Corporation has changed the way food and beverage manufacturers filter their products. Marksman large, six-inch diameter filter cartridges combine the efficiency and performance of standard filter cartridges with the easy handling of filter bags. Marksman filters are simply inserted in existing size 1 or 2 bag filter housings without the necessity of any modification to the housing. The key is the unique sliding flange (patent pending), which provides the flexibility to adjust the support basket, making Marksman Series filters as easy to use as bag filters.

The Challenge

A large producer of natural ingredients for the food and beverage industry turned to Pall to help optimize its filtration system. The company was using a cumbersome and expensive filtration process that was negatively impacting both costs and product quality.



Two filtration steps were required to filter the flavorings adequately — both steps used high-performance filter bags of polypropylene with a retention rating of 1 µm. The first filtration step involved collecting the product in tanks and processing it in batch form. Generally, during this step, waxes were retained that could lead to precipitation during further processing. In order to effectively remove these deformable particles, the company carried out this filtration at 44°F (6.67°C). The second filtration step was then used to remove secondary hazes and precipitations.

In order to ensure the required hourly output of 5 m³, size 2 filter bags were used in the first filtration step and size 1 in the second filtration step. The service life of the filter bags was not sufficient to filter even one batch. The bags had to be changed 10 times per batch. This resulted in high costs, but more importantly, exchanging the bags and properly disposing of them was labor-intensive.

In addition to these significant costs, the filtrate quality was unsatisfactory. Pressure shocks during process start-up resulted in the breakthrough of particles through the filter bags.



The Solution: Marksman Series Filters

Pall Food and Beverage recommended that the flavor producer test high capacity filters to determine if a better filtrate quality after a single filtration step would eliminate the need for a second filtration step to remove secondary hazes or precipitates.

The product tested was the Marksman Poly-Fine® II filter – a high capacity filter with a filter medium of pleated polypropylene* and a retention rate 1 µm. It was inserted into a size 2 bag filter housing.

After testing the Marksman filters, the company observed none of the breakthrough of retained particles that usually resulted from system pressure shocks when filter bags were used. The product showed colloidal stability so that no secondary haze appeared during further processing. By using Marksman filters, a second filtration step was no longer necessary.

After a successful test phase, the Marksman filters were integrated into the company's filtration process. Nearly four batches of the raw product could now be filtered with one Marksman high capacity filter.

The result: a 25% reduction in the cost of filters, an optimized filtration process, and significantly improved filtrate quality.

* Materials meet FDA requirements for food contact.

The Benefits

Replacing cumbersome and ineffective filter bags with Marksman Series filters provided this company with considerable cost reduction, streamlined production, and significantly improved filtrate quality.

Marksman filters provide:

- Lower costs
- High surface area for exceptional dirt-holding capacity
- Unique sealing device that adjusts to fit in most bag filter housings
- Easier changeouts than conventional filter cartridges

About Pall Corporation

Pall Corporation is the largest and most diverse filtration, separation, and purification company in the world. Pall serves the food and beverage industries with advanced membrane filtration technology and systems engineered for reliability and cost effectiveness. Membrane processes can concentrate products without heat, purify and clarify, selectively remove constituents, and minimize effluent. Unique space-saving membrane filtration systems are easy to install, simple to use, and satisfy a wide range of filtration requirements—from removing particulates and spoilage microorganisms to providing high-quality air and gases.

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