



Application Bulletin

SUPRADisc™ II Modules Satisfy Many Challenges With One Solution

Overview

Fluids such as corn syrup, yeast extract, enzymes, or edible oils often contain fine suspended solids which must be removed in order to achieve various goals, such as visual clarity, bioburden reduction, trap filtration, protection of downstream ion-exchange columns or crossflow membranes, protection of spray drying nozzles from plugging, and load-out filtration.

Often these solids loads are too high for traditional cartridge filtration, due to the fact that the contaminant holding capacity of cartridges is limited by available surface area and void volume, causing premature plugging.

It is also often the case, that such fluids may exhibit higher viscosities, which results in the need for larger cartridge sizing than is cost-effective.

On the other end of the spectrum, it can sometimes be difficult to justify the investment of expensive solids handling hardware such as centrifuges, crossflow membranes, pressure leaf, plate and frame, or sheet filters on short notice, or when the applications are located at downstream points of the process, where the contaminant loads are not excessively high.

SUPRADisc II lenticular filter modules provide a quick and cost-effective solution for handling these fluids and providing excellent filtrate quality.

The Challenges

- A major high fructose corn syrup producer needed to polish corn syrup and achieve subsequent heat-resistant spore removal to meet the specifications of its beverage customers.
- A powdered yeast producer was receiving raw yeast extract of varying quality which needed to be spray dried. They were faced with having to remove particulate fines in order to avoid plugging downstream spray dryer nozzles. Timing constraints dictated that a solution needed to be in place quickly.
- An enzyme producer who was blending liquid enzyme with various additives to tailor-made recipes was receiving raw liquid enzyme from overseas suppliers exhibiting variable quality and bioburden loads, which were often on the high end of an acceptable spectrum. It became necessary to reduce microbial counts in the incoming raw material, as subsequent handling steps downstream were unable to keep the microbial counts within acceptable limits.



Pall SUPRADisc II

- An edible oil producer needed final polishing filtration of olive oils to remove organics, colloids and triglycerides at cool temperatures, to avoid flocculation in the bottle and during storage.
- A gelatin producer needed additional life out of their current lenticular filtration process on a high value fluid stream, in order to prolong their batches and reduce change-out cost.

The Solution

SUPRADisc II modules were chosen by all of these producers due to their versatility, longer service life, extreme robustness before, during and after filtration, steaming, and sanitization, and ability to satisfy the full range of physical and microbiological removal requirements dictated by the applications.

Additionally, the corn syrup producer realized up to 15 % longer life on their downstream membrane cartridges by installing **SUPRADisc II** modules in place of a comparable prefiltration solution. The yeast producer quickly implemented the necessary filtration in a time-sensitive situation without needing to invest in a sheet filter. The gelatin producer increased their batch length by 15 %.

SUPRADisc II modules consist of depth filter sheets contained in a closed system. They are available in a wide range of removal ratings, to achieve coarse to fine filtration and microbiological reduction.



Their rigid support hardware provides both upstream and downstream support, rendering them resistant to back pressure, vacuum shocks, and media deformation or damage. Each sheet of filter media is individually separated from the next, so they do not come into contact with each other, thus eliminating blinding of the media and inefficient use of the filtration area.

Filter aids contained in varying amounts within the filter media enhance the filtration due to adsorption. The relatively high void volume within the depth filter media makes it possible to hold higher levels of solids than typical cartridge filters. Finally, the modules can handle up to 2.5 barg (36 psid) differential pressure in particle-removal applications.

Steaming for up to 21 cycles / 121 °C (250 °F) causes no deformation of the modules. The unique module backflushing capability provides an additional option to increase module life.

The Benefits

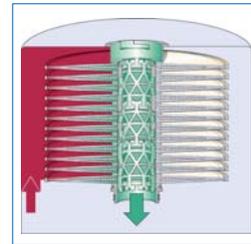
Food producers can achieve cost-effective particle filtration or bioburden reduction with SUPRADisc II modules:

- High solids holding capacity due to combination of depth filtration and adsorption effects
- Maximized utilization of the effective filter sheet area and high throughput due to optimal inlet distribution
- Ease of handling and quick filter media change-out
- Resilience to back pressure shocks due to rigidity of the hardware support structure
- Prolonged service life of 20-50 % possible due to backflush capability
- Elimination of contamination risk with a closed filtration system
- Increased process yields due to elimination of drip losses and the ability to pressurize fluids out of the filter housings
- Versatility in process applications due to wide range of removal capabilities
- Compatibility with various types of fluids and operating temperatures

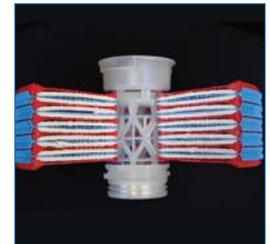
- Resistance to heat during steaming or heat sanitization
- Compact design with up to 20 m² of filter area in one housing
- Minimized water and cleaning chemical consumption

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. Easy to install and simple to use, our systems satisfy a wide range of filtration requirements. Our Total Fluid ManagementSM approach offers customers solutions to address the needs of an entire process, encompassing filtration products, services, systems and training.



Direction of Flow



No cell blockage due to new separator technology



SUPRADisc II modules and housings



Pall Food and Beverage

New York-USA
 +1 516 484 3600 telephone
 +1 866 905 7255 toll free

Visit us on the Web at www.pall.com/foodandbev

Pall Corporation has offices and plants throughout the world. For Pall representatives in your area, please go to www.pall.com/contact

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