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Filter factors for lactose-free processing

There are a few issues to consider when looking at lactose-free ultrafiltration. Colter Marcks of Donaldson explains

The demand for lactose-free dairy products continues to rise among consumers. In fact, the lactose-free market is the fastest growing segment in the dairy industry, with lactose-free milk leading the charge.

The most common process for making lactose-free products is called ultrafiltration (UF), which removes most of the lactose and converts any remaining lactose by adding a lactase enzyme. This works by splitting the milk sugar into its component sugars of galactose and glucose. A special filtration process is needed to create these specialty products in a highly controlled environment.

Below are three important factors and tips to consider when assessing the filtration needs for making lactose-free products:

I. Reliability

Filtration is integral to the development of lactose-free products. Sturdy, dependable filters are pivotal to the processing and manufacturing of a pure product. Reliable filters also keep plant lines running with less downtime, and should include:

- Bacterial log retention value (LRV) of 7 or greater
- Polyethersulfone (PES) membrane media for strong flow characteristics
- FDA CFR Title 21 complaint materials
- Certification to 3-A Sanitary Standards

Tip: Implement integrity testing procedures to ensure the filtration processes for your lactose-free product lines are operating as designed and the filters are not leaving your end product vulnerable to contamination.



II. Durability

The shape and structure of filters matter for different filtration processes. The composition of liquid filters can impact their performance and service life as well as the quality of the final product downstream. Many applications, like lactose-free processing, put stress on filter elements. Processors should ensure the filter quality and capability matches their processing requirements. Consider the following for filters:

- Easy installation without risking damage to the element and media
- Handles tougher working conditions
- Withstands frequent sterilisation cycles
- Long filter life due to durable construction
- Requires less frequent replacements to optimize cost savings

Tip: During filter changes, does it take a long time to install them? Or are you damaging any due to the force needed to snap them into place? Consider the shape of your filters and whether the movement to secure them is a natural. If so, the outer housing and inner media of your filters should work from day one.



III. Availability and Scalability

Partner with a reputable filter provider that meets the facility's needs, is scalable and trustworthy. Look for these essential qualities when selecting a vendor:

- A partner that can avoid downtime and offer a reliable product inventory
- A partner that can grow with your organisation and can scale up or down
- A single-source supplier with deep expertise and strong customer service skills

Tip: Take time to research, read brand reviews and talk with industry experts before choosing a new filter provider. Ask your preferred partners to walk you through product demos and if they offer a pilot program before making a final decision.

Donaldson provides its LifeTec line of filtration elements to dairy companies. They offer long-lasting process protection with high flow rates. Its proprietary line of filters has enabled companies to run efficient filtration processes for the lactose-free market, meet food safety and quality requirements, gain efficiencies and lower production costs. [Dili](https://www.donaldson.com)



Colter Marcks is global engineering manager, process filtration at Donaldson. www.donaldson.com

Drying in manufacturing

Compressed air, known as the fourth utility, is used in manufacturing universally throughout the world. Changing product quality and consistency will always demand that process utilities, such as compressed air, change along with the process. Being able to consistently supply clean dry air allows for maximum yields during development or reducing product loss during product push. Process automation in cold pack areas will also need compressed air to be clean and dry to provide protection to valuable equipment.

Donaldson has introduced the Ultracac Smart dryer, which removes condensate and dries compressed air streams in manufacturing facilities using three stages of separation: filtering, drying and purifying. Highly purified compressed air is critical for food and beverage process applications, such as milk and yogurt.

The dryer provides clean, dry compressed air at critical points of use in industrial production facilities. This, in turn, extends the life of plant equipment, supports product and process integrity,

and helps provide a safe and productive work environment. With three versions — Superplus, Plus and Standard— and a modular design, the dryer can be installed vertically, horizontally or on a wall.


As a compact, stand-alone, plug-and-work solution, all of the Ultracac Smart dryer's components, including the filter elements and the desiccant cartridge, are easy to access and replace. For improved efficiency, the dryer uses a depth filter and Donaldson's UltraPleat filtration technology to optimally separate liquid particles, improve the adsorption capacity of water vapour, decrease pressure loss and save compressed air energy. Additionally, the desiccant cartridge uses a spring-loaded design to help improve adsorption efficiency in the dryer, and the benefits are realised even when the dryer is installed horizontally.

Once installed, the touchscreen display enables plant management teams to interact with the dryer and proactively monitor performance levels, including pressure dew point levels, adsorption

status and other real-time data. Teams will also appreciate the reduced noise level; utilising Donaldson's. The dryer noise emissions are in the 60 dB range, similar to the volume of a normal conversation and quieter than comparable adsorption dryers.

"Proactively monitoring dryer performance is critical to ensure your compressed air is being filtered and dried properly. The costs associated with wet and dirty air can add up quickly due to more frequent filter changes and other unexpected maintenance needs," says Marcks.

The dryer's remote on/off signal can be linked to a plant's central control unit or machine controller. It can also connect to the compressor load signal so that it is only on when the compressor is running. Finally, the dryer's input and output modules give plant management teams flexibility for future integrations.

The UltraPac Smart dryer helps achieve compressed air quality suitable for industrial applications in accordance with ISO 8573-1:2010, ISO 7183 and ISO 3744. 

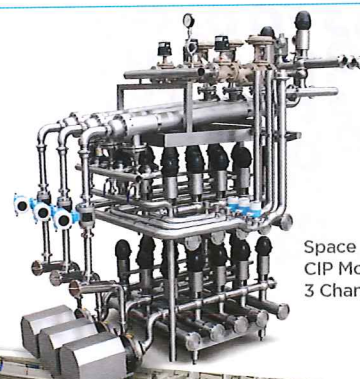
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