



PREDICTABLE
OUTPUT.
FOR LIFE.

BMF
BEER MEMBRANE
FILTRATION

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BEER MEMBRANE FILTRATION

Whether operating a small craft brewery or supervising high volume output in the largest breweries, brewers all over the world strive for the best and most consistent beer quality.



Bundle of hollow fiber membranes

The Pentair Beer Membrane Filtration System (BMF) enables a sustainable brewing process and a working environment free of health and safety risks. Pentair delivers beer membrane filtration systems, their components and related services from small to large scale solutions.

With our BMF system, you save on waste disposal and product loss, and also benefit from measurable improvements in beer taste and stability – resulting in pure consistency.

IN-HOUSE MEMBRANE TECHNOLOGY

A BMF makes use of proprietary membrane technology. A membrane is a thin polymer layer with pores working as a sieve in the shape of a fiber. Turbidities like yeast and proteins are retained while beer flows through the pores. The membrane is used for many filter run-cycles, which is possible

because of an optimized cleaning protocol. The membrane is made from poly ethersulphon (PES) which is known for its great compatibility with food & beverages, and can withstand cleaning agents and high temperatures. Thousands of membrane fibers form a module, and 4-18 modules are packed to a membrane unit.

THE BEST COMPONENTS

While the membranes are the heart of a Pentair BMF system, the components and design are equally important. Pentair uses high-quality standard components, many from our own portfolio, including process valves and inline measurement equipment for turbidity, gravity, carbon dioxide and oxygen.

OPTIMIZED CLEANING

By using a back flush with caustic, typically 5-10 times before the membranes are regenerated, the lowest possible water and chemical consumption is reached. A maintenance-free jet stream pump used is a smart solution to control the chemical dosing.

EFFICIENT SYSTEM DESIGN

The robust BMF system is automated in several platforms and PLC configurations. Pentair delivers the BMF system on a turnkey basis.

Typically, Pentair's BMF system consists of an unfiltered beer tank, the membrane filter system, and a filtered beer tank, along with a designated cleaning agent cabinet. In existing breweries, reuse of the current tanks in the filter line is possible, which helps minimize capital expenditures.

BMF systems offer unique features with the PES membranes, the optimized filtration process, and the ideal cleaning procedure. The optimized filtration process withstands large amounts of yeast, and yeast even has a positive effect on the run volumes. Because of this, preclarification of beer with a centrifuge is not necessary. These solution features help breweries save on Capex and energy use, plus help avoid expensive maintenance costs. As a result, the brewery benefits in the areas of sustainability, quality, operation, and expenditures.



Membrane insert in a stainless steel housing

PREDICTABLE OUTPUT

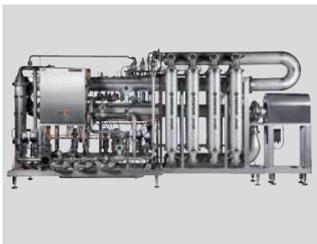
BENEFITS

- ◆ **Sustainability**
 - Low energy consumption because of no centrifuge
 - Solid waste stream is reduced by up to 50 percent
 - Safe and hygienic work environment
- ◆ **Beer Quality**
 - Consistent beer quality
 - Better taste stability due to no iron pick-up
 - Permanent barrier to beer- spoiling bacteria
- ◆ **Operation**
 - Predictable output
 - Non-stop beer flow
 - Simple process provides easy operation
 - Easy to fully automate
 - Less labor—No DE-handling
- ◆ **Cost Level**
 - Beer loss down to 0.1 percent, with no pre- and after run tank
 - Fixed cost for membranes per hectoliter—predictable and simple
 - Low OPEX through maximized run volume
 - No downtime



A PENTAIR BMF FOR EVERY BREWERY

BMF +FLUX SMART



Capacity: 3,000 hl,
up to 14,000 hl per day

The BMF +Flux Smart System consists of a proprietary Smart Steering controller and multiple membrane units. The core of the design is that the membrane units are able to filter and clean independently of each other, making it a self-foreseeing beer filter. The Smart Steering controller decides which unit has to run, at which flow rate, and which unit is available to do a cleaning. This implies reduction of down time to zero! At every second of the day, the BMF is used at its maximum; no matter what happens, it will have a predictable output.

BMF +FLUX



Capacity: 300-900 hl/h

The BMF+Flux System filters more beer in a smaller footprint than any other available technology. Pentair's BMF is designed to be a future-proof system as skids can be added to the filter line as needed. Pentair's BMF+Flux is the choice for large breweries that need either batch processing and a customized solution. As with all of Pentair's BMF systems, breweries can be assured of a safe and hygienic working environment.

BMF+18 COMPACT



Capacity: 75-250 hl/h

The BMF-18 Compact System offers a turnkey filtration solution for breweries with an annual output of up to 1,500,000 hectoliters and a capacity from 75-250 hl/h. The BMF-18 Compact is premounted as a stand-alone, containerized unit and can be quickly put into operation with the first filtered beer available in just two weeks after start-up. Operating in batch processing, the BMF-18 compact requires limited manual labor as the main process steps are fully automated.

BMF+FLUX COMPACT S4



30-60 hl/h

The BMF+Flux Compact S4 is ideal for batch processing in small breweries with a typical annual output of 10,000-100,000 hl, and a capacity from 30-60 hl/h. The BMF treats beer with up to 10 million yeast cells per milliliter, and features user-friendly start-stop production. The BMF can filter a wide range of beers including: full malt, dark beers, low alcohol, and high bitterness. The Compact S4 is easy to integrate into a brewery's production process.

OPTIMIZING PERFORMANCE. FOR LIFE.

Operating a state-of-the-art brewery requires just-in-time processes, minimized production losses and compliance with tough quality regulations. This is why it is so important to have precisely planned service intervals, trained service personnel and an outstanding supply of original spare parts.

Our dedication to your system continues after the sale. Through comprehensive lifecycle management, Pentair ensures that your installation operates at optimal performance. Pentair's Service Level Agreements are offered worldwide. They include monitoring of the system via the Internet to help diagnose operational problems, a short engineer response time of 24 hours and faster access to system components. This keeps downtime to a minimum in case of emergency.

Proper planning is key, and maintenance costs can be significantly reduced through accurately planned service intervals. Preventative maintenance helps to minimize maintenance time and unscheduled downtime. All of this contributes to a lower Total Cost of Ownership.

Pentair supports you in creating custom made service plans that perfectly fit your requirements. In addition, Pentair offers plant audits that may relate to processes such as energy savings, increasing operational reliability or the expansion/upgrading of an existing installation. Audits can be carried out externally by means of a simulation or directly on-site.

For operation and service personnel, Pentair offers classroom and hands-on trainings on specific projects. Do not hesitate to contact us for more details on our training program.

FOR A RELIABLE AND EFFICIENT OPERATION

- Maximum operation uptime
- Reduced maintenance costs
- Variety of service options to choose from



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