

BEER MEMBRANE FILTRATION

HOW EINBECKER BREWERY CONTINUES TO MAKE HISTORY WITH PENTAIR® BMF®

WITHOUT EINBECK, THERE WOULD BE NO BOCK

Believed to have been founded before 1378, Einbecker Brewery, in Einbeck, Germany, is one of the oldest breweries in the world.

The town of Einbeck was said to have dominated the European beer market during the fourteenth century and was noted for its bock beer, a strong dark beer of German origin. This is a testament to the town's historic slogan, "Ohne Einbeck, gäb's kein Bockbier", which translates, "Without Einbeck, there would be no bock". This slogan can be found inscribed above the door of Einbecker Brewery.

Einbecker Brewery, the only remaining brewery in Einbeck, is considered the inventor and namesake of this bock beer. That was in the Middle Ages. Today, the brewery is still a bock beer specialist but has significantly expanded its product portfolio to include dark lagers, radlers, pilsners and non-alcoholic beverages.

THE CHALLENGE WITH DIVERSITY

A diverse product portfolio sprouts opportunity, but equally, challenges arise. Einbecker Brewery struggled with a high changeover effort, and product and time loss when processing different products - especially while operating with a kieselguhr filter.

"We used to have two ZHF filters and one PVPP filter. We constantly needed one filter per shift that only operated this system. In addition, there was the steadily increasing volumes of beer loss across the process," explains Christoph Benseler, Technical Director of Einbecker Brewery.

Not to be forgotten: the basic disadvantages of using a kieselguhr filter include potential oxygen and iron entry, in addition to the kieselguhr disposal cost and dust problems caused by the use of diatomite powder.

"These were all factors in choosing beer membrane filtration technology," Benseler sums up.

THE SWITCH TO BEER MEMBRANE FILTRATION

In May 2019, the Pentair BMF System went into operation at Einbecker Brewery. The comprehensive filter line, which includes beer stabilization, blending, and carbonation, equipped Einbecker Brewery with a filtration system that could offer non-stop beer flow, except during periods of required maintenance and repair, and predictable output.

The system design is based on Pentair's market leading expertise in beer membrane filtration. A smart steering controller directs three single membrane units, each with an available capacity of 80 hl/h; this is the reason why it is called a smart beer filter line. The units filter and clean independently of one another, making it a self-operating filter system. The smart steering controller decides which unit runs, at which flow rate, and which unit can switch to cleaning mode.

THE ESSENTIAL FLEXIBILITY EINBECKER NEEDED

Since the installation of the smart Pentair BMF System, Einbecker Brewery experienced the much-needed flexibility they required in their filtration process. "With the Pentair BMF system, you can use it to filter at 25hl, 75hl or even 90hl per hour," says Benseler.

In principle, it can even be possible to filter three beers in parallel or only one on three lines with the appropriate peripherals. Up to 270hl per hour is possible in batch mode. But that's not all in terms of increased flexibility.

As Benseler points out: "You can also produce 200hl at short notice or temporarily pause the filtration process if, for example, the pressure tank is not ready."

Additionally, Einbecker Brewery can now filter beer on beer or filter light beer on dark beer.



Pentair BMF System at Einbecker Brewery, Germany



Pentair BMF System at Einbecker Brewery, Germany

HOW DOES THE PENTAIR BMF SYSTEM WORK?

In practice, two membrane filter units are continuously at work in Einbecker while the third is being cleaned or rinsed. One of the two membrane filter units is operated at a higher flow rate so that the other two can go into rinsing or cleaning with a time delay. With this "interplay", Einbecker filters around the clock on four working days of the week. All beer types and volumes to be filtered can be specified, with the actual filtration running fully automated. The relevant tanks and lines are then cleaned.

"The entire filtration runs along with the brewhouse, fermentation and storage cellar work. There is no longer any need for an employee in the filter cellar, allowing us to free up staff for elsewhere," emphasizes Benseler.

According to Benseler, not only is the membrane filtration is flexible, but also the entire system itself: "In the unfiltrate area, we have the option of stabilizing with silica gel, which does not affect the membrane filtration." Einbecker can bypass the filter for naturally cloudy beers. "Here we have a centrifuge with which we can adjust the turbidity in a reproducible manner. We use this centrifuge for two special beers to clarify with the BMF," said Benseler.

Otherwise, Einbecker really drives everything directly to the membrane filter. With the kieselguhr filter, the entire unfiltrate was pre-clarified using a much more powerful separator.

QUALITY SAVINGS FOR EINBECKER

150hl per hour and four working days mean a total of approximately 15,000hl of filtered beer.

In purely mathematical terms, Einbecker could filter 720,000hl per year without any problems, given their particular system configuration and operating parameters. For comparison: Einbecker currently brews around 600,000 hl per year at their location. The necessary filtration performance is given. But at what cost?

"The general costs of filtration has fallen," explains Benseler. A key factor here is the reduction in pre-carriage, intermediate and post-carriage which can be lowered by membrane filtration from over 40,000hl to less than 5,000hl per year. Benseler continues: "It is more energy-efficient, there are lower personnel costs."

As an individual item, the chemical and membrane costs have of course increased. "The bottom line is that we are still making significant savings," says Benseler happily.

And what about the most important thing, the beer quality? Benseler summarizes: "The results - be it in the forcier test or in the internal tastings - have been positive. For me, in view of the sum of the advantages, there is no alternative to beer membrane filtration; that is simply state-of-the-art technology at its best."

CHEERS TO THE FUTURE WITH PENTAIR BMF

For Einbecker Brewery, Pentair BMF provided the flexibility they needed to filter multiple batches at once, to the quality they uphold themselves to.

As the market leader in beer membrane filtration, Pentair has a broad portfolio of BMF Systems to choose from to suit your specific brewery needs.

To find out more about Pentair Beer Membrane Filtration Solutions, visit our website.

KEY FACTS



LOCATION:
EINBECK
GERMANY



START-UP:
2019



CAPACITY:
CA. 600.000 hl pa



APPLICATION:
BEER MEMBRANE
FILTRATION

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