Beer filtration rethought

Optimized service life and higher performance in beer filtration

While Kürzer, a Düsseldorf-based brewer of Altbier, may have "Mach's kürzer" ("make it shorter" in English) as their motto, the principle applied to the filtration system at the craft brewery is actually "make it longer": The newly developed backflushable Becodisc R+ stacked disc cartridges offer a 30 percent longer service life on average and are compatible with previous equipment. As a result, existing installations at the brewery can remain intact and no downsizing of the connected bar is required.

After 140 years, a new Altbier - a type of top-fermented dark beer - has emerged from Düsseldorf

The beer industry is experiencing a boost thanks to the ongoing trend toward craft beer. While there has been a downward trend in overall sales for some years, emerging specialty breweries are now breathing new life into the market. And the recipe for success? Operate on a small and regional scale. Kürzer is proof that this can be achieved even in regions where claims have long been considered as firmly established: The craft brewery is the first to be established in Düsseldorf's old town after 140 years and is named

The backflushable BECODISC R+ stacked disc cartridges from Eaton are available in 12-inch or 16-inch versions. They offer a long service life as well as a high filter performance and are compatible with standard equipment.

Pictures: Eaton/Kürzer

after the street in which it resides - Kurze (Short) Street. Kürzer also takes great pride in brewing traditional Altbier in the state capital. The concept has worked: Sales are increasing, Altbier is in demand. Kürzer sells several thousand hectoliters to thirsty customers every year.

Filtration brings a long shelf life and a subtle luster

Most of the beer is drank on site. From the on-site bar, guests have a direct view into the brewery and can watch the processes involved in producing the beer that waiters bring to their tables. "On average, it only takes around 14 days from the time the beer is finished to sold at Kürzer," says Désirée Meinhardt. The sales manager from Eaton's Filtration Division looks after several other breweries in the region besides Kürzer and is acquainted with the specific features and requirements of the industry.

For the filtration process, Kürzer relies on Eaton technology to work with particular care and to preserve as many flavoring ingredients as possible. Various filter aids and stabilizers are used for the centrifugal high-performance filter (CHF). With the Becodisc® stacked disc cartridges, Kürzer uses depth filtration media consisting of Becopad® premium depth filter sheets. These are filter sheets made of high-purity cellulose fibers that are already established on the market. They offer the desired turbidity and microbial reduction, while retaining the flavoring components of the Altbier. In the brewery, they are used in the perfectly matched Beco Integra Disc™ cartridge housings, which Eaton offers in various designs.

A stacked disc cartridge consists of several filter cells that are stacked on top of one another and connected to each other. Depending on requirements, 5 to 17 cells can be connected to each other to form a compact filtration unit. When used in stacked disc cartridge housings, they offer all the advantages of an enclosed filtration system and score particularly well due to their small footprint and high hygiene standards.

Longer service life without conversion

The previously used standard stacked disc cartridges are flushed and sterilized in the direction of flow for cleaning purposes. This procedure is in-

tended to avoid any damage to the filter medium that can occur if backflushed. "Anyone who backflushes standard stacked disc cartridges not only risks damage that is both extensive and obvious but potentially also causes damage composed of microcracks that are not visible to the naked eye," explains Meinhardt. "In both cases, proper filtration is no longer guaranteed."

At least that was the case to date. With Becodisc R+, Eaton's filtration experts have now developed a new option: backflushable stacked disc cartridges. In terms of filtration quality, they match up to the standard configuration with Becopad premium depth filter sheets, but thanks to their backflushing capability they offer a significantly longer service life. "This was exactly what we wanted for filtration: to preserve the characteristic taste of our beers and optimize the filtration process through longer service life," says Michael Burkhardt, master brewer at Kürzer. The project partners jointly agreed to use the brand-new Eaton development in practice.

Optimized design for high cost efficiency

The special feature of the new design

The BECO INTEGRA DISC cartridge housings are available for 1 to 4 stacked disc cartridges and in 12-inch or 16-inch versions and meet all industry-specific requirements.

is a special honeycomb-shaped polyester fabric is located between the individual filter cells of the Becodisc R+ stacked disc cartridge. "This acts like a drainage system, keeping the individual filter cells spatially separated from each other and in a dimensionally stable, correct position relative to each other during filtration and backflushing," explains Meinhardt. This design has such a positive effect on the stability of the stacked disc cartridge that up to 20 backflushing cycles are possible. Furthermore, it supports the full use of the filter surface and optimizes the flow distribution, all in all resulting in excellent filtration performance and a long service life. Despite this modification, the handling remains simple, as usual, and existing stacked disc cartridge housings with standard flat adaptors can still be used. "As a result, users do not need any additional backflushing kits that would increase costs and thus reduce cost efficiency," emphasizes Meinhardt.

Becopad 220 premium depth filter sheets made of high-purity cellulose are used for the newly developed, backflushable stacked disc cartridge. "Filter sheets made of cellulose have a much higher burst resistance and a better backflushing capacity than filter sheets with a mixture of cellulose, diatomaceous earth and perlite," explains the sales manager. The Becopad premium depth filter sheets also retain flavoring components such as the hop oils and thus have a positive effect on the taste of the beer.

Twice the performance, longer service life

The practical tests in the Altbier brewery confirmed the technical characteristics of the new, backflushable stacked disc cartridge. Together with Eaton's filtration specialists, Kürzer conducted numerous filtration operations, which achieved a total output of up to 100 hectoliters per square meter of filter area—about twice the previous performance. The stacked disc cartridges withstood the backflushing operations without issue, and the result was also satisfactory: "In terms of filtrate quality, no examples of turbidity reduction and microbiological germ retention were found," Meinhardt happily reports.

The results also gave Kürzer reason to celebrate as, despite the optimization effects, the use of Becodisc R+ stacked disc cartridges does not necessitate changes to the equipment. As a result, brewers can continue to filter in the way they have done before and use the stacked disc cartridges for considerably longer. "There is no need for a new procedure or a new approach," says Meinhardt, emphasizing the continuity in the brewing process. "We were particularly pleased that cost efficiency was improved in several respects," confirms Burk-hardt. Due to the all-round positive experience with Becodisc R+ stacked disc cartridges, Kürzer is now relying on the solution from Eaton in the long term—including in the already initiated expansion of plant capacity. Their aim is for the capacity of the filtration system to grow in equal measure. As a result, Kürzer is also expected to order a further stacked disc cartridge housing from Eaton, in addition to the stacked disc cartridges already delivered, in order to successfully achieve further growth in sales at Kürzer. ←

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