

Efficient Tank Cleaning

Lechler at Work with Major Craft Brewers in the USA

Small things with big impacts – that's the case with nozzle technology in tank cleaning as well. Even though nozzles may seem inconspicuous, their significance should not be underestimated. Powerful products have a significant influence on the efficiency and quality of the CIP (Cleaning in Place) process. Effective and resource-efficient tank cleaning is a crucial factor in modern large breweries, and automation plays an essential role in this regard.

In 2021 and 2022, Lechler, a supplier of innovative cleaning technology, collaborated with Krones subsidiaries Evoguard and Steinecker to equip two significant breweries in the USA with advanced nozzle technology.

Three partners, one goal – synergy of all components

Steinecker, an expert in energy-efficient and sustainable brewing processes with decades of experience in integrated plant construction, manages the entire project execution for breweries. This includes everything from plant planning and engineering to implementation. A central aspect is the reliable and efficient cleaning of various tanks and equipment.

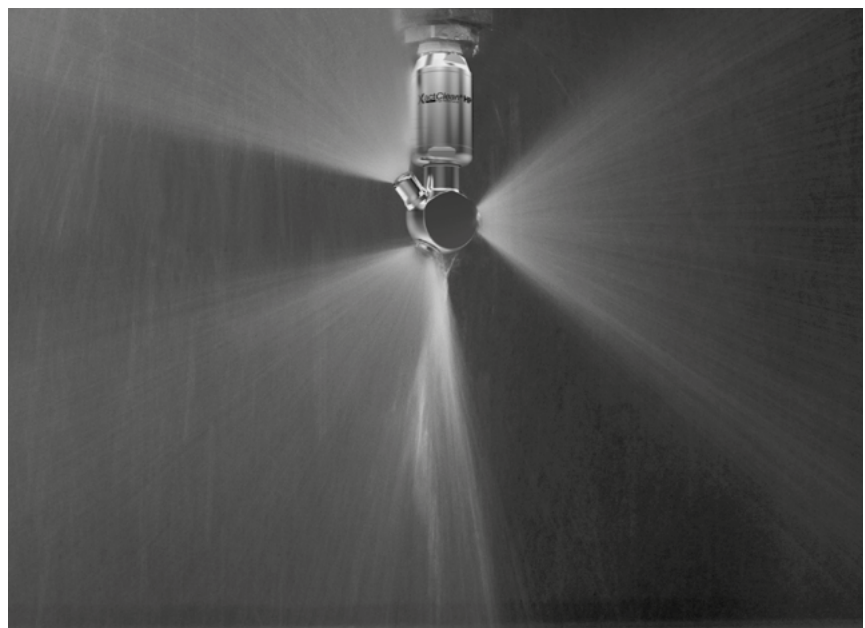
For this complex task, engineers rely on the number one nozzle technology provider in Europe, Lechler, based in Metzingen, Germany. Highly automated processes involving the handling of liquid or gaseous media require the use of tank safety systems.

Evoguard's tank dome valves meet these requirements. The longstanding cooperation between the valve and pump manufacturer within the Krones Group and Lechler ensures seamless integration between cleaning technology and tank dome valves.

In addition to tank dimensions, the level of contamination is a crucial factor in nozzle selection. For this reason, the installed nozzles vary depending on the project. The concept of cleaning efficiency classes introduced by Lechler in 2014, which categorizes the entire portfolio, allows for a transparent and traceable selection process. The classification ranges from simple rinsing to light and medium soiling, all the way to stubborn dirt. With the help of custom simula-



Lechler Xactclean HP rotary cleaner. (All images Lechler)



tion software, it can also precisely demonstrate the impact achieved with each nozzle technology or where, for example, spray shadows might be expected due to installations. The expert guidance from Lechler has enabled the ideal nozzle selection for both breweries mentioned in the USA. "Thanks to the simulation software Tankclean, end customers can see how the nozzles work and what limitations exist at an early stage of the project," confirms Dr. Michael Becker, Head of Process Engineering at Steinecker.

36 rotary nozzles for fermentation and storage tanks

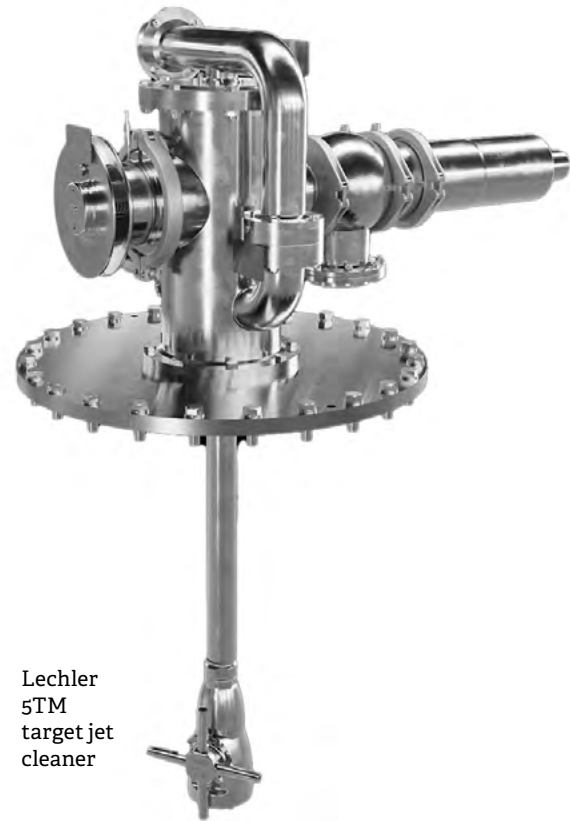
The Greenfield project completed by Steinecker in 2022 for the Athletic Brewing Company in Milford, Connecticut, USA, comprises 26 fermentation and storage tanks in two different dimensions. In addition to tanks with a diameter of 2.4 m, there are 2-batch tanks with a diameter of 3.3 m. Lechler provided the appropriate nozzle technology for tanks with a gross volume of 283 hl and 545 hl. Due to the dimensions, existing conditions, and expected contamination, a Lechler Xactclean HP rotary nozzle was chosen. The Xactclean HP rotary cleaner creates a high impact and uniform coverage even at low pressure, thanks to specially designed flat jet nozzles. The controlled rotation makes the cleaner highly effective and capable of operating at higher pressures than a free-

rotating product. The nozzle offers high operational reliability due to its robust drive unit and simple maintenance concept. "Especially in craft breweries, we often deal with different volumes. Cleaning technology needs to be adapted accordingly. Lechler provides flexible solutions, making them the ideal partner," says Dr. Michael Becker. This allows for the optimal choice to ensure reliable cleaning while minimizing resource use.

The 5TM target jet cleaner for large tanks and stubborn contamination

In 2021, Stone Brewing, based in Richmond, Virginia, decided to rely on Steinecker's expertise during a capacity expansion. Twelve new fermentation and storage tanks with a diameter of 4.5 m needed to be cleaned with a single nozzle. Due to the larger tank dimensions, with a height of 12.2 m and a gross volume of 1,548 hl, the choice in this case was a Lechler 5TM series target jet cleaner. With effective full jets combined with gear-controlled rotation, this robust cleaner enables the cleaning of tall tanks with stubborn contamination while significantly reducing media consumption compared to static spray ball solutions often found in such cases. Cost considerations go beyond the initial purchase price by including ongoing operational and resource costs.

The 5TM target jet cleaner effectively



Lechler 5TM target jet cleaner



Product portfolio



cleans the tanks at Stone Brewing due to its long reach and deep cleaning action. Components installed at the tank bottom for Steinecker's continuous fermentation concept pose no problem for the cleaner. The dynamic fermentation process is from Steinecker, while Evoguard handles the engineering and production of the components. Poseidon ensures effective cold hopping with optimal extraction and mixing, as well as higher yeast vitality and lower beer losses. However, this also increases the demands on the cleaning technology, which is fully met by the chosen nozzle technology.

It's worth mentioning that many breweries don't always have a full tank, and different volumes may be present. This can result in stubborn contamination at lower points in the tank. While the fluid running down the tank wall creates a considerable cleaning effect due to the resulting shear stress, target jet cleaners can provide additional powerful cleaning to these areas by directly impacting

the surface. In contrast, other solutions like traditional spray balls have a significantly weaker effect in such cases. Peter Kagerer, Product Manager Valve Technology at Evoguard, also confirms this: "Especially in large tanks with varying fill levels, there are many reasons to choose a target jet cleaner. Lechler offers highly reliable products, and the efficient cleaning process also contributes to environmental protection."

Another capacity expansion at Stone Brewing is already underway, and once again, Lechler's nozzle technology will ensure sustainable tank cleaning.

Conclusion

With a wide portfolio and individual consultation in the field of tank cleaning, Lechler can provide suitable nozzle technology for every application and customer requirement. These efficient products support sustainability by reducing resource consumption. Additionally, cleaning times are often reduced, leading to shorter downtimes

and higher output, resulting in a double financial impact. Lastly, the maintenance-friendly design of the two featured nozzles allows for quick on-site maintenance, further reducing downtime. If desired, maintenance can also be carried out by Lechler's experts. The collaboration between the Krones Group and Lechler offers customers a comprehensive package that is ideally coordinated. This ensures that the full potential of the systems is realized for the customer. ←

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