



Optimization cuts Cleaning-in-Place time by 37% and increases plant productivity

VitaLys, Esbjerg, Denmark

Case story



Alfa Laval Rotary Jet Heads cut Cleaning-in-Place (CIP) cycle time of lysine fermentation of beet or cane sugar for lysine production and raise productivity at the VitaLys production plant.

Danish company VitaLys, Northern Europe's leading producer of liquid amino acids for the animal feed industry, reduced the cleaning time required for the tanks used in its lysine fermentation process by 37%. Replacing existing tank cleaning devices with Alfa Laval Rotary Jet Heads enabled VitaLys not only to cut the time required for a Cleaning-in-Place (CIP) cycle of its main fermentation tanks, but also to raise overall plant productivity.

The production of amino acids, such as lysine, for use as natural, environmentally friendly animal feed additives plays a fundamental role in animal nutrition as well as an essential role in ensuring the world's food supply. Responsible for producing approximately 22,000 tons of lysine each year, VitaLys decided to undertake process optimization as part of its strategy to improve plant efficiency and increase productivity.

Optimizing the CIP process

The lysine production line at the VitaLys plant in Esbjerg, Denmark, is centred around two 450 m³ main fermentation

tanks. The fermentation of beet or cane sugar for a single batch of lysine requires approximately 100 hours or three to four days. To prevent cross-contamination and secure high product quality, the main tanks undergo thorough cleaning and sterilization. Inside the tanks, the presence of various components, including a large agitator, cooling coils, air spargers and baffles, make effective CIP a major challenge.

VitaLys turned to Alfa Laval for assistance in optimizing the CIP of their lysine fermentation tanks. Alfa Laval recommended replacing the original tank cleaning equipment. The equipment consisted of an under-dimensioned rotary jet head cleaning device and spray sticks that required manual insertion into tank openings at critical junctures, for example, near the coils.

"Using the spray sticks was a very time-consuming and inconvenient way to clean the tanks," says Tommy Mortensen, production manager at the VitaLys plant. "We experienced too much downtime due to this manual cleaning process, so we started a CIP optimization project together with Alfa Laval.

37% reduction in CIP process time

By replacing the original CIP equipment with two high-impact Alfa Laval Rotary Jet Heads TZ-74SC in each tank, VitaLys immediately increased productivity and reduced cleaning time.

“As a result of the CIP optimization project, we cut our CIP cycle time by 37%, from four hours to just two and a half,” comments Mortensen. “This savings in time translated into increased plant productivity, enabling the production of up to four more batches per year. Plus the breakeven point on our investment in new Alfa Laval Rotary Jet Heads was less than two months, so obviously we are quite happy.”

Automated, self-cleaning hygienic design

Designed for hygienic applications such as many biotechnology applications, Alfa Laval Rotary Jet Heads provide exceptional cleanability due to the high-impact three-dimensional jet pattern that provides coverage of the entire tank surface and effectively removes hard-to-clean residues. This contributes to ensuring the hygienic conditions required for batch production. These automated self-cleaning machines also comply with 3-A standards and EHEDG design criteria for hygienic equipment.

“Our operators are also very happy with the new CIP procedure,” Mortensen continues. “Eliminating the use of manual spray sticks means lower risk of potential cross-contamination. Plus the Alfa Laval Rotary Jet Heads are able to effectively clean the feed valves where residual sugar easily fastens, so this cleaning procedure also becomes part of the automated CIP system since the valves no longer require manual cleaning.”



The Alfa Laval Rotary Jet Head provides exceptional cleanability, better end-product quality, greater overall productivity and reduced operating costs.



Responsible for producing 22,000 tons of lysine each year, VitaLys optimized the CIP process in its main fermentation tanks thereby raising plant productivity.

Trustworthy partner

Optimal performance, unmatched reliability, solid hygiene and sound operating economy are just a few of the reasons why VitaLys teamed up with Alfa Laval to improve the CIP process at their plant.

Alfa Laval Rotary Jet Heads are backed by the Alfa Laval global network of Service Partners that extend equipment performance through the Alfa Laval 360° Service Portfolio. Through Alfa Laval's broad range of spare parts, equipment and services you get the support you need when you need it, performed by skilled and knowledgeable staff. Service kits and top quality spare parts, designed for durability and performance, are also available.

Using the Alfa Laval 360° Service Portfolio, you can maximize the reliability and uptime of your equipment. The result is superior performance throughout the equipment life cycle – performance that puts you ahead of competition.

Key benefits

- 37% reduction in CIP process time
- Increased plant productivity
- Payback of new installation within two months
- Reduced risk of cross-contamination

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How to contact Alfa Laval

Contact details for all countries are continually updated on our website. Please visit www.alfalaval.com to access the information direct.