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best practices

Safeguard cheese production with 100% cleaning coverage of tank shadow areas in Scandinavia

Evaporators raise process flexibility, product quality, and productivity in Colombia

Water and energy savings pay back plant upgrades in only four months in South Africa

Global drinks giant blazes a trail on sustainable water in the Philippines

Sustainability begins at home: Showcasing water efficiency in India



Safeguard cheese production with 100% cleaning coverage of tank shadow areas

A major regional dairy, Scandinavia

To increase cheese production by expanding its milk reception, a large Scandinavian dairy turned to the Beritech Group, an experienced tank and system builder.

The ask? To guarantee complete cleaning coverage for two new 30-metre-high raw milk silos with bottom-mounted agitators.

The answer? Beritech recommended Alfa Laval top-mounted tank cleaning devices for use together with Alfa Laval PlusClean® cleaning nozzles with wide centre slots for high-impact cleaning of tank shadow areas. When paired with a top-mounted cleaning device, PlusClean guarantees 100% tank cleaning coverage, up to 80% savings in water and cleaning media costs, and no product contamination.





Bent Larsen,
Beritech Group CEO.

A higher level of hygiene

To ensure food safety and no product contamination in the milk reception tanks, Beritech recommended Alfa Laval top-mounted cleaning devices and PlusClean cleaning nozzles. The PlusClean targets shadow areas underneath the agitator blades, where cleaning by direct jet impact from the top-mounted tank cleaning devices is not possible although indirect surface wetting takes place.

“Complete cleaning coverage, measurable savings, and no product contamination. That’s true customer value,” says Beritech Group chief executive officer Bent Larsen. “We always aim to optimize customer processes, increase productivity, and ensure food safety and quality.”

Eliminating contamination risks

In the past, the dairy had to compromise on its hygienic standards and sustainability goals to ensure sufficient cleaning coverage, using tank cleaning devices that were completely submerged in the product. This meant compromising on sustainability because these cleaning devices require operation at high flow rates. In addition, they are not fully drainable or self-cleaning, posing the risks of blockage and of creating new shadow areas. Moreover, maintenance of these devices requires tank entry by a service technician.

In contrast, the PlusClean together with the top-mounted cleaning device provides 100% cleaning coverage. Engineered to clean shadow areas that other tank cleaning devices miss, it ensures that no residue or microbes remain on surfaces underneath the agitator blades. Unlike maintenance for static spray balls and rotary spray heads, the PlusClean is integrated into the tank walls or bottom and has no moving parts inside the tank. All maintenance takes place outside the tank.



The Alfa Laval PlusClean® cleaning nozzle is installed flush with the tank wall or bottom. It provides 100% cleaning coverage, up to 80% savings in water and cleaning media, and no product contamination.

Worry-free hygiene with cleaning validation

To validate hygienic process conditions after cleaning, the dairy conducted swab tests to validate tank cleaning. Test results confirmed that there were no contaminants or biofilm build-up on the backsides of agitator blades.

Faster, precision tank cleaning

Two minutes of every main CIP cycle is all it takes for the PlusClean’s dedicated, high-impact spray fan to remove all contaminants from the backsides of the agitator blades. While the blades rotate at 40% of the regular operating speed, the cleaning nozzles perform their duty, hitting the underneath of the blades with direct high-impact jet spray.

“Complete cleaning coverage, measurable savings, and no product contamination. That’s true customer value.”

Bent Larsen, CEO, Beritech Group,
Alfa Laval Authorized Service Partner

Up to 80% savings in water and cleaning media

Because the high-impact spray fan hits the shadow areas during a short period of time, very little water and cleaning media goes to waste. Compared to static spray ball and rotary spray head technologies, the Alfa Laval PlusClean cleaning nozzle cuts water and cleaning media consumption by up to 80% thanks to optimized operating pressure and flow rates. These savings help the dairy achieve its sustainability goals.

Fast return on investment, low total cost of ownership

Low capital costs, low operating costs and low maintenance requirements ensure fast return on investment. After being activated more than 1,000 times, the PlusClean continues to safeguard process and product safety and boost productivity on the dairy’s cheese production lines.

How to contact Alfa Laval

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100004448-1-EN 2110



Evaporators raise process flexibility, product quality, and productivity

**A leading premium soluble
coffee company, Colombia**

A leading global premium soluble coffee company produces quality 100% Colombian freeze-dried coffee for worldwide consumption. To explore more sustainable solutions for its plant, the company teamed up with Alfa Laval for a 4,000 l/h-capacity AlfaVap evaporator to concentrate coffee extract for downstream freeze-drying. The result? More compact, economical evaporation systems, energy-efficient separators and decanters, and a long-term partnership, including service and support.



Process flexibility and product quality key

The coffee company wanted to improve process efficiency and meet its sustainability goals. To enhance its sustainability credentials, the coffee maker installed a compact, double-effect Alfa Laval plate evaporator. More economical than shell-and-tube evaporators, the plate evaporator extracted the soluble compounds from the fresh, roasted 100% Colombian arabica dissolved in hot water yet retained the coffee's intensity and flavour.

"The Alfa Laval plate evaporator improved the production process at our plant and delivered great results – exceptional coffee taste and aroma," says the project manager in charge of factory development. "It easily integrated with our plant's control systems, making operation and maintenance easy."

"Our business relies on Alfa Laval. So do coffee aficionados the world over."

**Coffee company project manager
for factory development**

33% lower installation costs than shell-and-tubes

About one-third the height of shell-and-tube evaporators, the Alfa Laval evaporation system cut installation costs by 33%. Unlike shell-and-tubes, no costly, time-consuming, last-minute welding is required. Fully assembled and factory tested, the Alfa Laval evaporators ensure trouble-free assembly on site. Its reduced size means low hold-up volumes, which increase the evaporation rate and enhance product quality.

Energy-efficient, space-saving concentration

To prevent any loss of product quality due to thermal impact, the Alfa Laval evaporator removes water from the coffee under vacuum conditions at very low temperatures (below 66°C or 150.8°F). Its compact size minimizes energy losses when transporting the coffee through the evaporator and thermal losses due to shorter exposure to heat transfer surfaces.



Flexible operation at various evaporation rates produces final concentrations according to coffee producer's requirements.

Large evaporator increases capacity, pilot unit tests new products

Success with this evaporator prompted the coffee producer to invest in a 10,000 l/h-capacity Alfa Laval plate evaporator as well as a 200 kg/h pilot unit for product development.

Glocal support and service – and sustainable optimization

Fast response to the company's requests for support and service comes from local Alfa Laval service engineers and the nearby service centre as well as through remote assistance from Alfa Laval's evaporation experts in Denmark and Italy.



The compact Alfa Laval AlfaVap plate evaporator for high heat transfer efficiency and low operating and maintenance costs.

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100003890-2-EN 2301



Water and energy savings pay back plant upgrades in only four months

**International ice cream producer
in South Africa**

For decades, the production facilities of a leading South African ice cream producer had expanded, using various component suppliers and leaving the service and maintenance tasks quite complex, time consuming and with a costly stock of many different spare parts.

As part of the upgrade strategy, the company wanted to operate production equipment from one supplier only and to invest in equipment that would allow them to fulfil the sustainability goals of the company, including savings on water, energy and carbon footprint.

The first step was to replace ten valves with Alfa Laval valves mounted with ThinkTops that will potentially save 165,000 litres of CIP liquid every year with corresponding cost and energy savings.





Hulisani Mudau,
Technical Director
at IPS.

Going standard saves cost and simplifies maintenance

When the leading South African ice cream producer decided to simplify and upgrade their production equipment, they contacted their long-term service partner IPS (Innovative Processing Solutions) to assess the current set-up and plan the right path forward.

Standardization became a keyword in the upgrade project alongside strict requirements to hygienic performance and high reliability. After the initial assessment, IPS proposed to base the upgrade solution on Alfa Laval components in order to increase efficiency in daily production and in maintenance routines.

The proposed solution resounded with the customer, and as a first step IPS replaced ten valves with Unique Mixproof valves from Alfa Laval, each with a ThinkTop to optimize Cleaning-in-Place.

Moreover, with IPS as Authorized Alfa Laval Service Partner, the ice cream producer got easy access to genuine spare parts, a well-planned maintenance plan and fast technical support to avoid costly downtime.

“We are proud to support the growth journey of one of the leading ice cream producers in the world. Our close partnership with Alfa Laval allows us to make a real difference for the customer in achieving their goals of a more standardized and efficient manufacturing set-up, lower maintenance costs and more sustainable ice cream production”, says Hulisani Mudau, Technical Director at IPS.

Saving 165,000 litres of water for CIP every year

IPS used Alfa Laval’s Joules calculator to estimate the water and energy savings of the new equipment. Compared to the old solution, the new set-up is expected to save 165,000 litres of water every year, translating into a cost saving of EUR 70,000 including reduced energy and chemical costs. Additionally, costs are saved for reduced waste water handling but this is not included in the calculations.

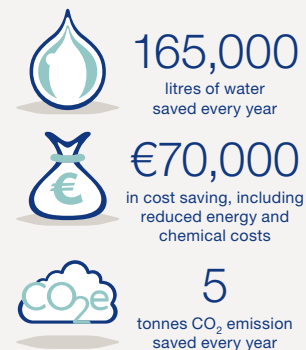
“Joules is an excellent tool to calculate savings before the actual investment. We used Joules to document the potential savings of different solutions, which provided valuable input to the decision process around the upgrade strategy of the plant”, says Hulisani Mudau.

The water savings translate into significant savings on energy consumption for pumping and cost savings for purchase of water, chemicals and energy. At the same time, the load on the waste water treatment facilities is reduced.

Based on the positive experience of the first production upgrades, the upgrade project will continue in the coming years in order to continuously improve productivity, cut maintenance costs and realize substantial savings on water and energy.

Facts about the solution

The ten DN50 Unique Mixproof valves are each mounted with an Alfa Laval V70 ThinkTop, which cuts water consumption during CIP by up to 90%, whilst reducing contamination risks by confirming the cleaning. The savings on CIP liquid translate directly into significant savings on energy and costs for water heating, pumping and wastewater treatment as well as reduced use of chemicals. A simple and sustainable upgrade that in this case paid back in just four months and promises a long and reliable service life.



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100009747-1-EN 2302



Global drinks giant blazes a trail on sustainable water use with optimized wastewater treatment technology

Beverage producer, Philippines

The company estimates that a 132 percent water replenishment rate per bottle produced is currently being achieved at its manufacturing and bottling plants across the Philippines through water management schemes, operational efficiencies, and community water projects.

A key driver in achieving this success is the company's water strategy, which closely aligns with local government policy on water use in the Philippines with its strong focus on sustainable resource management and recycling.



The company's water management systems are best-in-class and just one facet of an entire infrastructure that also includes the integration of energy efficiency and sustainable packaging into the company's operations. From water stewardship and responsible energy use to ensuring that the company's bottles are returnable and 100 percent recyclable, the company is committed to securing that its service to local communities is anchored on sustainability.

Treatment of the waste water produced in the beverage manufacturing and bottling process is a central focus for the drinks producer, alongside a 31 percent decrease in absolute water consumption and an improvement in its water-use ratio – the amount of water used per litre of soft drink produced.

And to improve wastewater treatment at two of its manufacturing plants in the Philippines, last year, the company installed two new decanters from Alfa Laval as part of an upgrade project: an ALDEC 45 is now in operation on one site, and commissioning was completed in August 2022 on an ALDEC 10 at a second plant.



ALDEC G3
Alfa Laval ALDEC G3 decanter centrifuges are the latest generation of sludge dewatering equipment for municipal and industrial wastewater treatment plants, designed to set a significantly higher stand.

Additional operational adjustments on the advice of Alfa Laval experts focused on optimizing and improving performance and included the insertion of polymer, which was hitherto absent from the wastewater treatment process at the two plants.

“The original decanters operating at these sites were between 15 and 20 years old, and the customer was seeking to upgrade to improve their operation's overall performance and efficiency. These new ALDEC models are around 35-40 percent more efficient with respect to energy and cake dryness,” explains Jayson Galleta, Sales Manager for Alfa Laval in the Philippines. “Sustainability and resource management are important drivers for them, and with our decanter technology, the water quality is at such a high level that it can be used in the wider municipality for irrigation, or it can be safely returned to the environment.”

Specific parameters on cake dryness are also a requirement in the Philippines for the safe and legal disposal of solid waste, and Jayson confirms that the customer is very satisfied with the 0.3 percent cake dryness delivered by Alfa Laval's decanter technology.



Feedback has been positive overall, says Jayson, who continues: “They are extremely happy with how the decanters are running and with the clearness of the water and the dryness of the cake that is produced, which really brings home what a difference the decanters are making. They have also confirmed that the technology will improve efficiency and save money overall.”

Water stewardship has long been a business imperative for this customer, but the company aims to do more to increase water use efficiency in the production of its beverages and to help communities address local water resource challenges such as the availability of clean water. The company's wastewater treatment facilities now enable it to process used water to a quality viable for reuse or return to the ecosystem in line with its sustainability ambitions.



Water savings

31 percent reduction in the use of water. The quality of the cleansed water allows for the reuse of the water for irrigation or release into nature without further treatment.



Energy savings:

35-40 percent more energy efficient than the previous solution.



The rapidly growing cities in the Philippines struggle to provide new inhabitants with clean water and sanitation. While 99 percent of the one-fifth of the wealthiest people have access to clean water and sanitation, only 80 percent of the poorest quintile enjoy the same luxury. Contaminated water is linked to the transmission of diseases such as cholera, dysentery, hepatitis A, typhoid - or just simple diarrhoea, which kills around 361,000 children under the age of 5 years worldwide every year. (UNICEF, 2017)

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100016450-1-EN 2305



Sustainability begins at home: Showcasing water efficiency

Wastewater treatment plant, India

In India, Alfa Laval has achieved its targets to recycle all wastewater, collect rainwater and bring liquid discharges to zero at its Pune facility with the installation of a new wastewater treatment plant using Alfa Laval's own technology.

The plant, which has capacity to treat 90m³ of wastewater per day, was installed and commissioned in 2021 and incorporates a membrane bioreactor (MBR) at the heart of the process and an ALDEC G3 decanter, which has replaced the traditional sludge drying beds used for dewatering.

"Sustainability is at the core of our business principles and saving water is essential," explains Subhasis Das,

Managing Director of Alfa Laval India. "We believe that sustainability begins at home and with this goal in mind and the aim of achieving zero liquid discharge, we have built a new wastewater treatment plant."

To achieve the objective of 100 percent water recycling, the project team discussed the scheme with several water consultants and contractors before selecting one to execute the project.

The scope of the work included the installation and plant commissioning with the capacity to handle effluent – alkalis, acids, paints, thinners – from several different sources, including a paint booth, effluents from the decanter factory, the high-speed separator factory, the aseptic module manufacturing unit, and the factory for pump, valves, and fittings as well as sewage from kitchens and washrooms of factories.

Two MBR modules were installed to consistently achieve the stringent outlet parameters throughout the plant's operation. The outlet of the MBR modules is directly recycled back to washrooms and gardening, which ensures that 100 percent of the inlet is reused, thus saving on raw water usage.

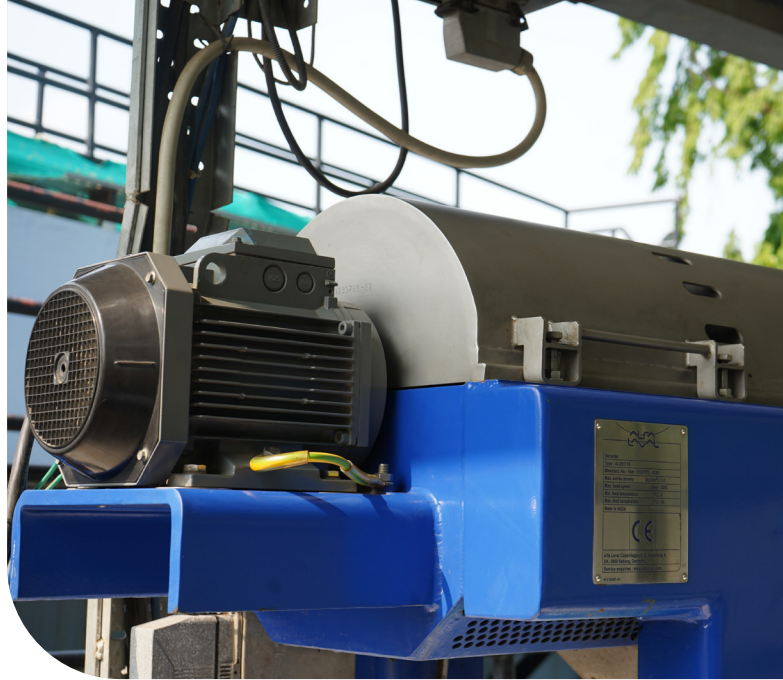


MBR Membranes

Membrane bioreactor technology is a future-proof solution for treatment of both municipal and industrial wastewater. It allows you to maximize resource recovery, minimize costs and implement a circular-economy perspective in your operations. Alfa Laval's membrane modules for bioreactors bring together the advantages of hollow fibre and flat sheet technologies. With Alfa Laval MBR membranes, you get trouble-free wastewater treatment at a low operating cost.

The centrate from the decanter goes directly to the inlet of the treatment plant, and the cake now free of harmful substances to the greatest possible degree is used as a fertilizer for gardening. With the help of this treatment plant, Alfa Laval India has ensured that no water goes into the drain and is entirely recycled for internal usage

Also, the plant recently has storm water drain lines equipped with rainwater recharge pits to ensure ground



water is charged. "Integrating Alfa Laval products in the overall plant design was a challenge. The plant's performance has enabled us to consistently treat our wastewater and circulate it back into gardening and flushing applications; treated waste water is reused, and this has reduced freshwater consumption by 12,000 cubic metres or 12 million litres," says Sanjay Marne, AL India's Health, Safety & Environment Manager."



ALDEC G3

Alfa Laval ALDEC G3 sludge dewatering centrifuges are the latest generation of sludge dewatering equipment for municipal and industrial wastewater treatment plants, designed to set a significantly higher standard for both process performance and environmental impact in sludge thickening and dewatering applications.

Alfa Laval products have helped us comply with strict environmental regulations and also enabled us to demonstrate to customers that we walk the talk when it comes to our water-saving and circularity goals under sustainability."



Clean water:

By achieving the reuse of 100 percent of water at its plant in Pune, Alfa Laval has saved 12,000 cubic metres or 12 million litres of water a year.



Chemicals:

By handling effluents in a much better way, Alfa Laval in India has secured the safe removal of chemicals like acids, alkalis, paint residues etc.



Pune is one of the fastest growing cities in India with a population that doubled in numbers from 1.6 million people in 1991 to 3 million in 2011. The population is expected to grow to 6 million by 2032. Efforts to safeguard water security and protect the city against flooding are high on the city's agenda to enable a sustainable development. In 2019, the city had a conservatively estimated requirement for 1,357 million litres of clean water a day and a water deficiency of around 200 million litres a day. (Hindustan Times, 2019)

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