BREWERY:

CARLSBERG TAPS INTO PROCESS WATER REUSE WITH ONSITE TREATMENT

‘A DREAM TO ACTUALLY DO THIS.’

Water is an essential ingredient to producing beer. No water, no beer. Most of the water used traditionally, however, does not end up in the beer. At Carlsberg in Fredericia, Denmark, around 60-65% of the total water usage goes to cleaning purposes. This includes everything from equipment, floors and surfaces to pipes and tanks to bottle- and can washers and more, including cooling towers and boiler plants. This is called process water. The Carlsberg Group was using on average 3.4 litres of water per litre of beer produced globally in 2015. Its ambition was to bring it down to below 1.7 l, or reducing water consumption by 50% across Carlsberg Group by 2030. Through a broad collaboration, the company wanted to build an onsite wastewater treatment and purification plant. This would clean that water in a safe, drinking water-quality application to make sure the company could reuse the water again in the brewery for cleaning processes. They called it the Total Water Management (TWM) plant.

50%
Carlsberg’s goal in reduced water use by 2030 globally

PROCESS WATER
Used for cleaning vessels, tanks, pipes, machinery, surfaces, bottles and cans and more

1800 m³/day
Amount of **PURE and recycled water** sent back to the factory **for reuse**, or 90% of the treated water.

REUSING 90% PROCESS WATER

The TWM plant has a daily capacity for 2,000 m³ of incoming process water, of which 90% – or 1,800 m³ – is recovered and recycled. Grundfos pumps and dosing systems cover 95% of the pumps on site, helping along every step of the process, says Andreas Kirketerp, Manager of the TWM plant. The brewery relies on the process water to operate, so pump and system reliability is vital. In addition, the turnkey wastewater treatment plant provider Pantarein Water appreciated the complete dosing solution from Grundfos. “Grundfos pumps have a software with flow control. And that guarantees that you’re dosing what you need to be dosing,” says the company’s Bryan de Bel.

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OUTCOME

- 90% of process water reused after treatment – or 1,800 m^3/day
- Water savings 560,000 m^3/year
- Proven technology ready for scale-up in water-scarce regions

CLOSING THE CIRCUIT

"This is such a paradigm shift for so many people," says Søren Nøhr Bak, Expertise Director of Water in Food and Beverage at NIRAS, Carlsberg's engineering consultancy partner. "Can you actually recycle water in a food and beverage industry? And yes, it has demonstrated it is possible to do that. We have a technology that allows us actually to safely, reliably to produce drinking water out of process effluent. It's fantastic. This is something we can really look into implementing in all the places where we have water scarcity. All the places where we are not treating the wastewater. Think of what we can do. We can actually recycle, and we can close the circuit, making water available again."

"This has been a dream for many years to actually do this."

Anders Kokholm
Brewing Director
Carlsberg Denmark

Sources

Information in this article came from interviews with all sources on-site at Carlsberg and NIRAS in September and October 2021, and via online video chat with Pantarein in October 2021.

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