

Carlsberg

Reducing water consumption by 50 %

BLUE FOOT 
unbreakable membranes™

PROJECT

Customer	Carlsberg
OEM - partner	Pantarein
Location	Fredericia, Denmark
Sector	Food & Beverage - Brewery
Project type	New Installation
Product	Phase 1: IPC® Flex Navy 2W24 (48 modules)
Start-up date	January 2021
Capacity	100m ³ /h

CHALLENGE

The Carlsberg Group has the ambition to move towards ZERO carbon emissions and ZERO water waste at its breweries, including a target to halve water usage. The goal is to reduce water usage from 3.4L of water per L beer at the 2015 baseline to 1.7L of water per L beer by 2030. In 2019, Pantarein was awarded the project to achieve this goal at Carlsberg's first brewery. Pantarein in turn selected Blue Foot to supply the IPC®-membranes for the MBR which treats the wastewater.



Case Study

Carlsberg

SOLUTION

The first combined wastewater treatment and biogas production plant is built in Fredericia, Carlsberg's home base and flagship brewery, where all new technologies are tested, demonstrated and evaluated. In the first stage of the plant the wastewater is treated in an upflow anaerobic sludge blanket (UASB) reactor in which biogas is produced and used to generate electricity for the plant. Afterwards, the partially treated water enters an aerobic membrane bioreactor (MBR). Blue Foot's IPC® membranes perform the most critical step in the process: extracting treated water from the aerobic sludge, removing all micro-organisms and solids. The MBR permeate is then fed to a downstream reverse osmosis plant and UV-disinfection to reach the required water quality for reuse as process water in various applications within the brewery.

Biogas production out of wastewater with an upflow anaerobic sludge blanket reactor.

Installation of 24 IPC® Flex Navy towers each containing 2 IPC® Flex Navy modules.

Production of process water by closed circuit reverse osmosis and UV-treatment.

RESULTS

The wastewater treatment plant with Blue Foot IPC® membranes enables the Carlsberg brewery in Fredericia to save more than 500 million L of water/year and recycle 90% of their process water. In 2022, the water consumption level per L beer is reduced from 3.4L per L beer to 2.5L per L beer. This level will be reduced even further to 1.7L per L beer by expanding this successful set-up to other Carlsberg plants. With regards to the energy production resulting from the anaerobic waste water treatment, Carlsberg becomes self-sustainable for 10% of their energy requirements by producing biogas and by reusing hot water. The Blue foot IPC® membranes enable MBR operation at the lowest TCO in the market, which offers another advantage for the Fredericia plant.

