

PROCESS WATER RE-USE IN BEER BREWERY (AOP)

(Active: 02/05/2018 – 26/08/2020)

ULTRAAQUA UV successfully collaborated with Carlsberg's Fredericia brewery, Niras, and Pantarein Water Bvba on the "Total Water Recycling Plant" project which was initiated by the nationwide public-private partnership DRIP. With the new, advanced water treatment plant, Carlsberg will now be able to re-use 90% of its process water and save 10% more energy. This will help to cut the total water use in half – from 2.9 hl of water per hl of beer to 1.4 hl of water per hl of beer. The new initiative has made the brewery the first in the world to nearly eliminate water waste and placed Carlsberg above its 2030 sustainability targets.

ULTRAAQUA UV Advanced Oxidation Process (AOP) and Carlsberg

AOP processes are becoming increasingly favored solution due to its effectiveness in applications that require a high level of security and sanitation. However, this method is highly versatile, and to achieve the best security results, it requires experience and a tailored treatment approach. At Carlsberg's brewery, AOP is the last treatment step of the entire treatment plant before reuse of the water. ULTRAAQUA UV's Head of Research and Innovation, Morten Møller Klausen, and his team have conducted comprehensive scalable laboratory experiments and process integrated CFD modeling of selected AOPs. The generated data were used to design a UV-based AOP reactor that will stabilize chemical and microbiological water quality and delay aftergrowth potential before storage and reuse.

"We would like to thank fellow members of DRIP partnership, the Innovation Fund Denmark, the Carlsberg Group, and Søren Nøhr Bak, Expertise Director at Niras for thinking ahead of their time."

Ole Grønborg
ULTRAAQUA UV Disinfection Systems
Director, M.Sc.

DRIP and ULTRAAQUA UV

The implementation of the advanced oxidation process would not be possible without the public-private partnership DRIP (Danish Partnership for Resource and Water Efficient Industrial Food Production). DRIP's goal is to assist in optimizing water consumption across food production processes through the development and implementation of advanced technologies and solutions in Denmark. The collaboration closely involved the Danish Veterinary and Food Administration, the Danish Environmental Protection Agency, and the Danish Agency for Water and Nature Management to provide regulatory guidelines and ensure that they are met. Innovation Fund Denmark was critical in providing the necessary funding for the initiative.

If you have questions about the project or AOP application, please contact ultraaqua@ultraaqua.com



From left to right: ULTRAAQUA Head of Innovation and Research – Morten Møller Klausen, Director of Carlsberg Denmark – Peter Haahr Nielsen, Utility Manager Carlsberg – Lars C. Christensen, ULTRAAQUA UV Director – Ole Grønberg, and Professor at DTU Environment – Hans-Jørgen Albrechtsen

Sources:

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<http://www.climateaction.org/news/carlsberg-promises-to-halve-water-consumption-in-sustainability-pledge>

<https://www.kt.dtu.dk/english/research/prosys/projects/drip>

<http://drippartnership.dk/partnerskabet/>