INDUSTRY Heat and power plants
APPLICATION Hydrogen production

Water treatment for alkaline electrolysis

HySynergy I 20MW is one of the largest green hydrogen production projects in Europe, led by Everfuel. The hydrogen produced is supplied to the nearby refinery in Fredericia, Denmark, providing zero-emission fuel for mobility and industrial partners.

The HySynergy I project uses alkaline water electrolysis (AWE) technology, which requires a steady supply of 4500 liters per hour of ultrapure water with conductivity below 5 µS/cm.

Water intake is city water free of chlorine that has already undergone aeration and sand filtration. With a particular focus on metal ions and organics, the quality level of the make-up water could be met by the following water treatment steps; Ion exchange softening as a pre-treatment for the reverse osmosis system, membrane filtration with a double-pass reverse osmosis system and CO^2 removal by chemical dosing.

By 2030, the HySynergy project aims to ramp-up green hydrogen production to 1 GW.

Technical data

- Water source: City water without chlorine
- Flow (max): 4500 L/h
- Conductivity: < 5 µS/cm

Units in plant

- Softening unit type SMH 602-F
- Brine tank
- Double-pass reverse osmosis type DPRO C3-6/3
- Dosing tank with mixer
- Dosing pump type DDC 6-10 AR
- Feed water tank 2 x 5000L
- Booster pump type CRNE 15-3