

DECO WATER TREATMENT PLANT IN TERNEUZEN, THE NETHERLANDS

Since 2000, the DECO water treatment facility has produced demineralized water, cooling tower supply water and ultrapure water for the Dow Benelux B.V. ("Dow") production facilities in Terneuzen, the Netherlands. A combination of FILMTEC™ membranes and DOWEX™ ion exchange resins are used to produce demineralized water.

The plant has an integrated membrane system that consists of a continuous microfiltration unit and a two-pass reverse osmosis unit with FILMTEC™ membranes. It was originally designed to desalinate estuary water, but the water source contained high chemical and biological variability, which led to operational challenges like biofouling and high maintenance costs due to corrosion. In 2006, the plant was re-engineered to treat municipal wastewater originating from the city of Terneuzen. Due to low-pressure feed pumps, process automation adjustments and a different feed water source, the water recovery has increased by 20 percent and operational expenses are half of a seawater-fed membrane system.



The Zeeuws-Vlaanderen region, where Dow's Terneuzen site is located, lacks a freshwater source. By maximizing water recovery via water recycling loops, it is the first time in the Netherlands that domestic wastewater is being re-used on a large scale for industrial use. The initiative has been awarded the Environmental Award 2007 of the Province of Zeeland (Zeeuwse Milieuprijs), the Dutch VNCI Responsible Care Award 2007 and the European Cefic Responsible Care Award 2007.

Fast Facts

- Country: The Netherlands
- Membranes: FILMTEC™ BW30-400/34i-FR, BW30LE-440, XLE-440
- Two-Pass Configuration: 28:16 pressure vessel in the first pass and 16:6 pressure vessel in the second pass
- Quantity: 792 8-inch elements
- Number of Skids: 2
- Design Capacity: 2 X 175 m³/hr
- Quality: Permeate Conductivity < 10 µS/cm
- Owner and Operator: Evides Industriewater B.V.

Publication

J. van Agtmaal, P.A. de Boks, R.Cornips, L.L.M.J. Paping: Evaluation of feed water sources and retrofitting of an Integrated Membrane System, 6th IWA Specialist Conference on Wastewater Reclamation and Reuse for Sustainability, Antwerpen, October 2007.

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