

Cold water operating experience of Seaguard UF as pretreatment to SWRO

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ABSTRACT

Numerous tests around the world have proven that ultrafiltration (UF) provides optimum pre-treatment for seawater desalination based on reverse osmosis membranes (SWRO). Ultrafiltration will remove all suspended solids and will provide a substantial reduction in microbiological activities. Plugging of RO spacers is completely eliminated and the RO cleaning frequency can be substantially reduced. The main obstacle against use of ultrafiltration membranes for SWRO pre-treatment has always been the higher operating cost of ultrafiltration when being compared with conventional pre-treatment. A new membrane has been designed with the aim of achieving the lowest whole of life cost while enabling membrane desalination of the most difficult to treat seawater. This article will describe operational experience of several other pilots operating at lower temperatures in the UK and China. It shows how the results of pilot projects can be translated into a technical and commercial evaluation of the best pretreatment option for the desalination of water from low temperature water sources. The technical details of design of a demonstration plant in the Netherlands are described. The Evides demonstration plant uses the new Seaguard ultrafiltration membranes. This plant is fed from the river delta formed by the Meuse, the Scheldt and the Rhine river in the south western part of the Netherlands. The ultrafiltration pretreatment to seawater reverse osmosis is a prerequisite to use of this seawater for membrane desalination. It furthermore explains the decision making process for selection of pretreatment for the Thames Gateway SWRO project. This plant is fed by water from the River Thames that is strongly influenced by tidal effects.

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