



Customer Success Story

Subzero Operating Conditions Are No Match for FILMTEC™ Seawater Reverse Osmosis Elements

FAST FACTS

Plants location: Antarctic: Rothera & Signy Research Stations

Operation: Antarctic: Seawater filtration at very low temperatures

FILMTEC™ RO element: SW30-4040

Permeate flow: 15 m³/d (Rothera) and 5 m³/d (Signy)

Permeate flux: < 12 LMH

Feed water TDS: 35,011 ppm

Minimum temperature: -1.5°C

Operating pressure: > 65 bar

OEM: Salt Separation Services, UK



The Rothera and Signy Research Stations, located in the Antarctic, operate 15 m³/d and 5 m³/d seawater reverse osmosis (RO) plants, respectively. Designed and built by Salt Separation Services in the United Kingdom, both facilities were fitted with FILMTEC™ SW30- 4040 Elements in 2003. During operation the elements are exposed to temperatures as low as -1.5°C, yet the elements show no sign of damage and have provided stable performance to the facilities for more than 12 years.

Plant Configuration

The Rothera unit, shown in Figure 1, and Signy unit consist of self- contained skid mounted plants, including: sand filter, cartridge filters, antiscalant dosing (Rothera only), a clean-in-place (CIP) system and rehardener.

Operation & Maintenance

The Rothera Research Station facility has operated for more than 12 years, providing potable water to base personnel.

During that time the elements were replaced twice after several years in operation. During the visit in 2015 the plant was found to be in excellent condition, being maintained on a regular basis by base personnel.

Stable Performance

In the first two and a half months of operation, the normalized salt rejection and permeate flow data was collected almost daily. During this time, the temperatures were between 3.4 and 1.6 °C, as shown in Figure 2 and Figure 3.

The values in Figure 2 are compared to a DuPont system design tool, Reverse Osmosis System Analysis (ROSA). The data values, equal or lower than the ROSA projected values, show excellent element performance.

The normalized permeate flow remained very stable during the data collection timeframe, indicating no effect of long term low temperature operation.



Figure 1: Images of Rothera plant (A. Sand filter and B. RO unit), courtesy of Salt Separation Services, UK.

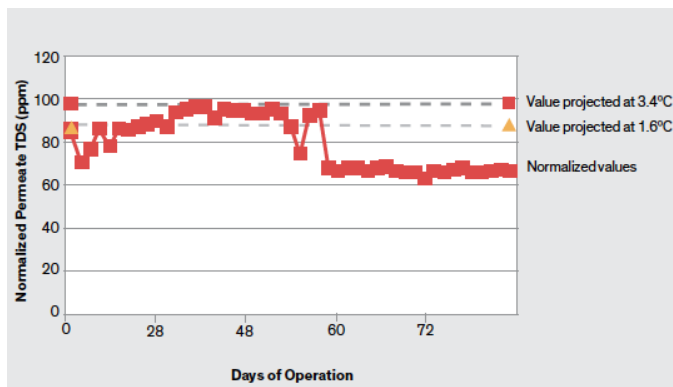


Figure 2: Normalized permeate TDS registered at Rothera plant.

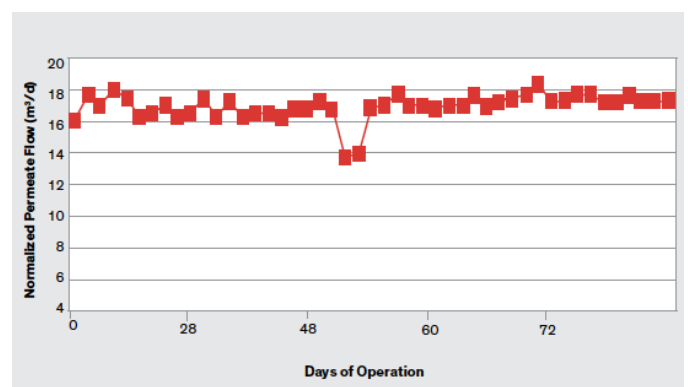


Figure 3: Normalized permeate flow registered at Rothera plant.

www.dupont.com/water/contact-us

No freedom from infringement of any patent or trademark owned by DuPont or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where DuPont is represented. The claims made may not have been approved for use in all countries. DuPont assumes no obligation or liability for the information in this document. References to "DuPont" or the "Company" mean the DuPont legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

DuPont™, the DuPont Oval Logo, and all products, unless otherwise noted, denoted with a ™, ℠ or ® are trademarks, service marks or registered trademarks of affiliates of DuPont de Nemours Inc. Copyright © 2019 DuPont de Nemours Inc. All rights reserved.

Printed in the U.S.A.