



## Dow Water & Process Solutions

# DOW FILMTEC™ ECO PLATINUM-440i Demonstrates Stable Performance Under Challenging Operating Conditions

### FAST FACTS

**Location:** Tarragona

**Operation:** Challenging Conditions

**DOW FILMTEC™ RO Element:**  
ECO PLATINUM-440i

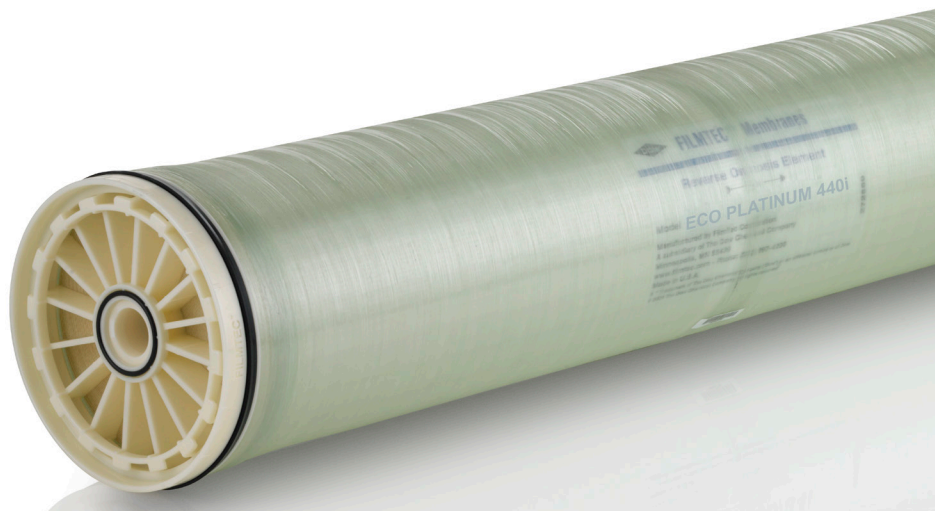
**Flux:** Up to 40 LMH

**Feed Water Type:** River Water

**Inlet TDS:** 500 to 1,100 ppm

**Inlet TOC:** 1.5 to 2 ppm

**Inlet Iron:** 0.005 to 1.6 ppm



DOW FILMTEC™ ECO elements offer all industry leading benefits of high quality fabrication coupled with a unique combination of low energy, high salt rejection and fouling resistance features, delivering superior permeate quality and stable long term operation.<sup>1</sup>

### Operating Conditions

A trial was conducted at Dow Water and Process Solutions' Tarragona Global Water Technology Center to evaluate product stable performance and robustness over time for the ECO PLATINUM-440i. ECO PLATINUM-440i was operated under challenging conditions, with daily start-ups and shut-downs during six months without compromising the element mechanical stability.

The feed source was Ebro river water with a total dissolved solids (TDS) ranging from 500 to 1,100 mg/L, total organic carbon (TOC) between 1.5 and 2 mg/L and iron content between 0.005 and 1.6 mg/L. The recommended design flux for surface water that has Silt Density Index (SDI) below 3, is 22-29 L/m<sup>2</sup>h (LMH).<sup>2</sup> However,

with the trial's objective, the permeate fluxes were ranging from up to 40 LMH.

In Figure 1, the distribution of the permeate fluxes achieved over the six months in operation is presented.

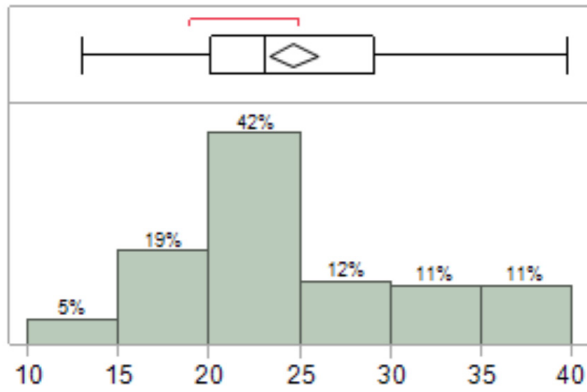
### Data Analysis

Permeate flow, salt rejection and pressure drop evolution are presented in Figures 2-4. The raw permeate flow and rejection were normalized using a normalization tool called FTNORM<sup>3</sup> and the accuracy of the normalization was also supported using Dow's Reverse Osmosis System Analysis (ROSA)<sup>4</sup> design tool. Differential pressure was normalized using a modified version of FTNORM, considering changes in viscosity and cross flow velocity.

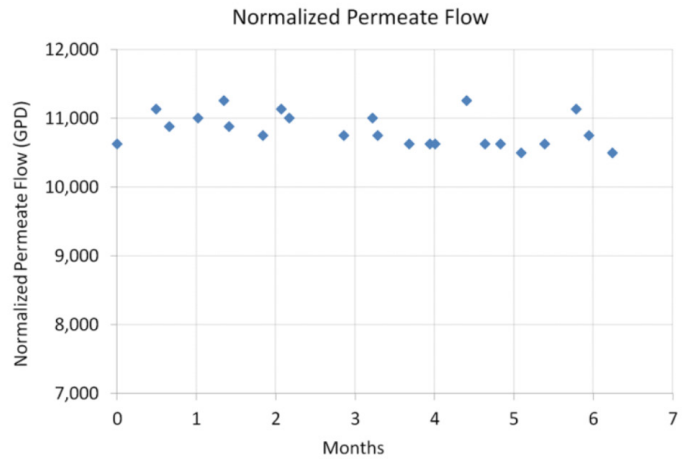
### Stable Performance

After six months of operation without cleaning, DOW FILMTEC™ ECO PLATINUM-440i provided stable, high-quality permeate with almost no permeability loss. Additionally, pressure drop remained remarkably low and constant across the whole trial. Last but not least, high TOC rejection of over 95% was achieved.

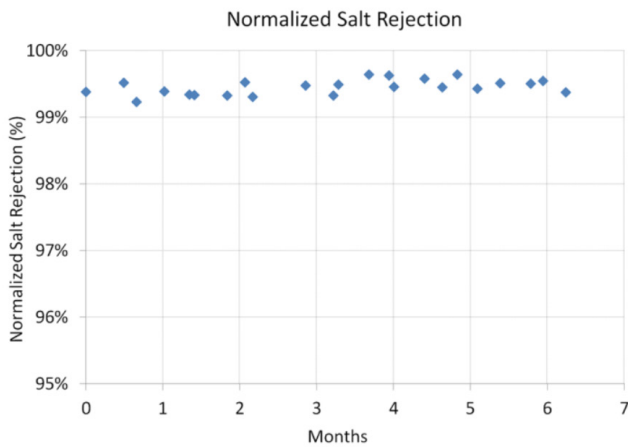
**Figure 1:**  
Distribution of the fluxes during the experiment.



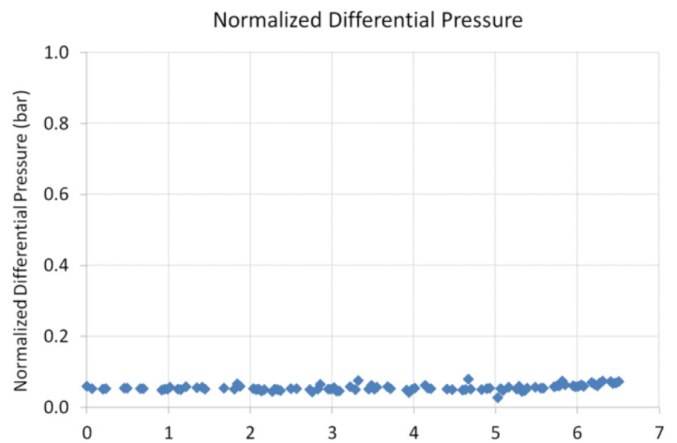
**Figure 2:**  
Normalized permeate flow during six months of operation.



**Figure 3:**  
Normalized salt rejection during six months of operation.



**Figure 4:**  
Differential pressure during six months of operation.



<sup>1</sup> <http://www.dow.com/en-us/markets-and-solutions/products/dowfilmtecbtrackishwaterreverseosmosis8elements/dowfilmtececoplatinum440>

<sup>2</sup> <http://www.dow.com/webapps/include/GetDoc.aspx?filepath=liquidseps/pdfs/noreg/609-21010.pdf>

<sup>3</sup> <http://www.dow.com/en-us/water-and-process-solutions/resources/design-software/ftnorm-software>

<sup>4</sup> [http://www.dowwater.custhelp.com/app/answers/detail/a\\_id/3184/kw/rosa](http://www.dowwater.custhelp.com/app/answers/detail/a_id/3184/kw/rosa)

**Call our Customer Information Group**

North America 1 -800-447-4369  
 Europe + 800 3 694 6397  
 China 400-889-0789  
 Latin America + 55-11-5184-8722

[www.dowwaterandprocess.com](http://www.dowwaterandprocess.com)

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