

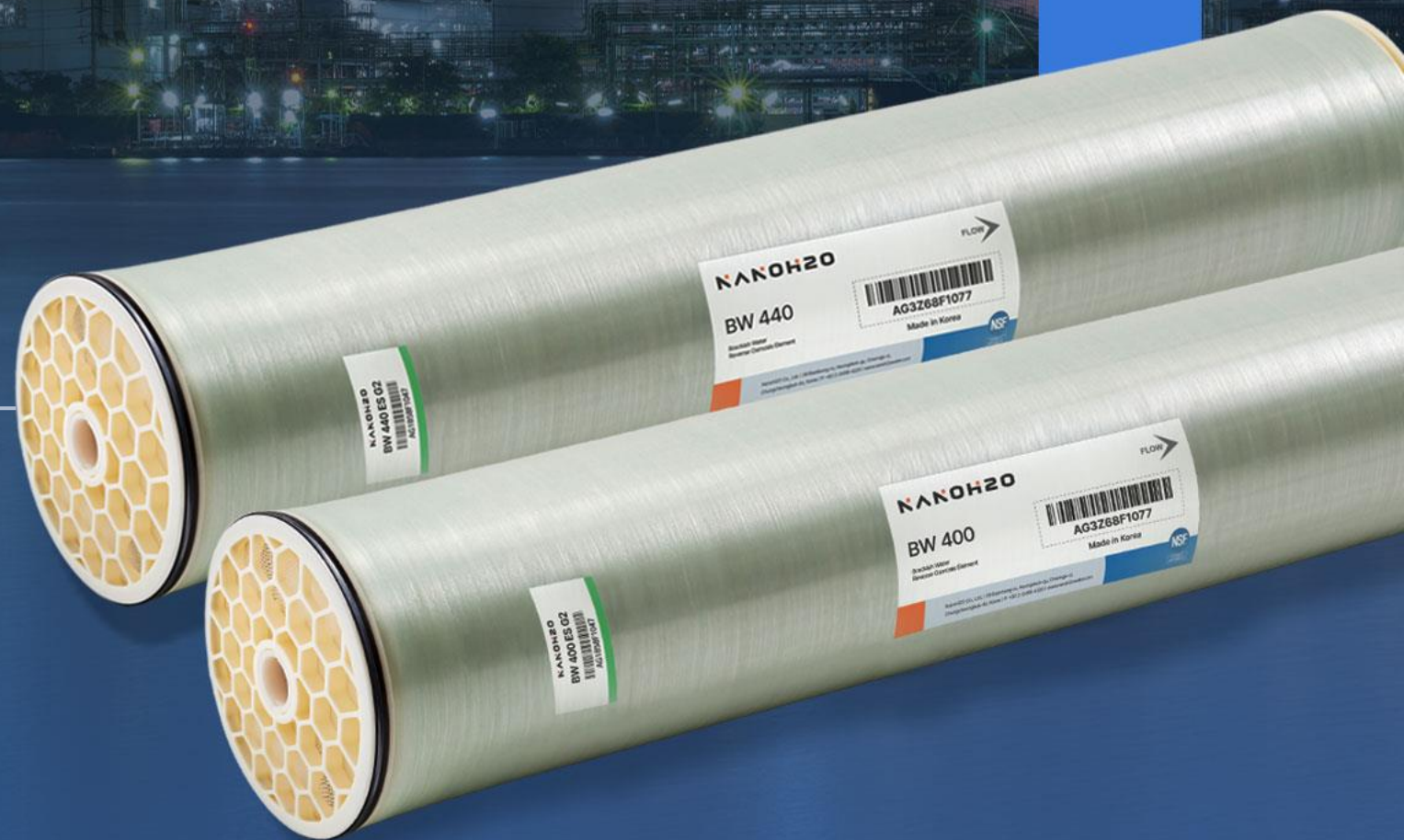
CONFIDENTIAL



INNOVACIÓN Y COMPROMISO

# BW ES G2

Introducing  
Next-generation  
NanoH2O™ BWRO Membrane



NANO H2O



# Energy-Saving BWRO Membrane Product Line

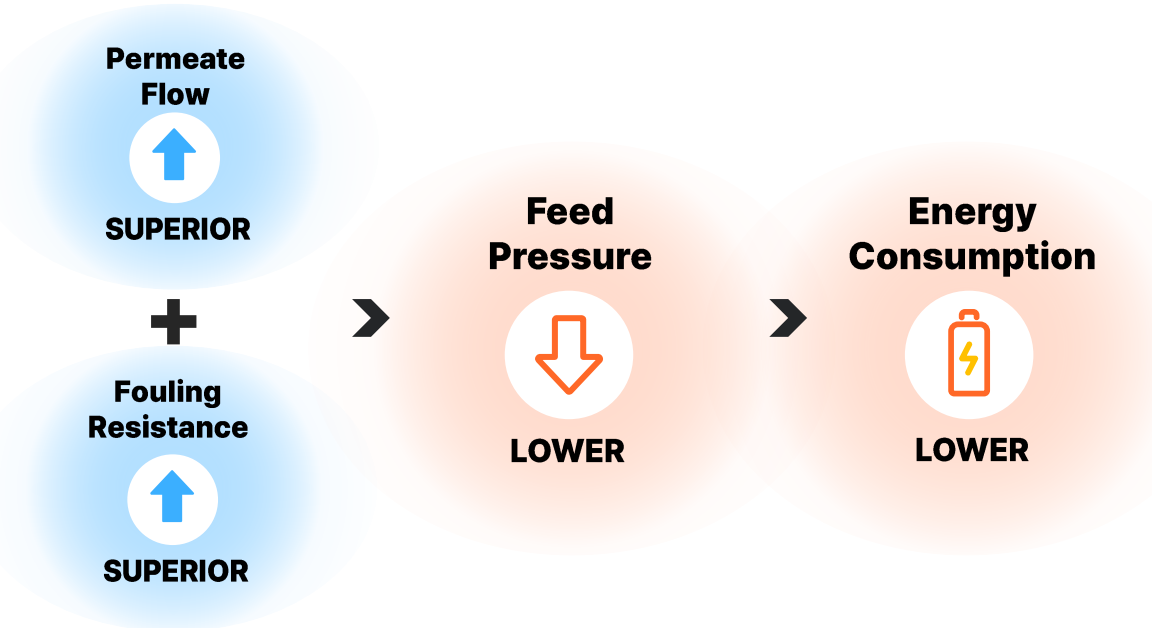


Product Model	Active Area (ft <sup>2</sup> )	Permeate Flow Rate (gpd)	Stabilized Salt Rejection (%)	Feed Spacer (mil)
BW 400 ES	400	10,500	99.6	34
BW 440 ES	440	11,550	99.6	28
BW 400 ES L	400	10,500	99.6	34, low dP
BW 440 ES L	440	11,550	99.6	28, low dP
<b>NEW</b> BW 400 ES G2	400	<b>Upgrade</b> 12,300	<b>Upgrade</b> 99.65	34, low dP
<b>NEW</b> BW 440 ES G2	440	<b>Upgrade</b> 13,500	<b>Upgrade</b> 99.65	28, low dP

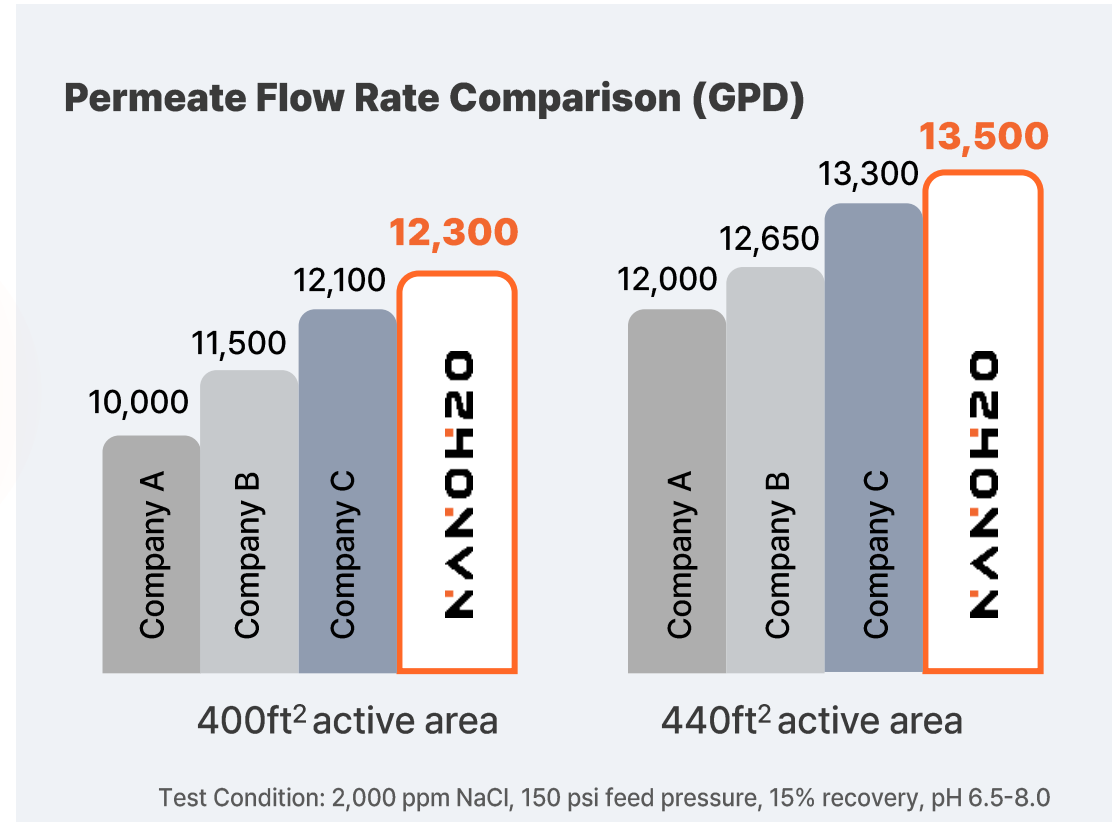
Test conditions : 150 psi, 2,000 ppm NaCl at 25 °C (77 °F), pH 7, Recovery 15%

# Value Proposition

BW ES G2 is a leading BWRO membrane, delivering the highest flow in the energy-saving class while achieving lower differential pressure and long-term stable performance through advanced spacer technology—reducing feed pressure and maximizing energy efficiency.



1) Estimated energy consumption and feed pressure by actual field test on slide 7.



## Comparison of Differential Pressure

BW ES G2 is equipped with a low dP spacer for a significant reduction in differential pressure and long-term stable performance.

### BW ES G2 Differential Pressure

1

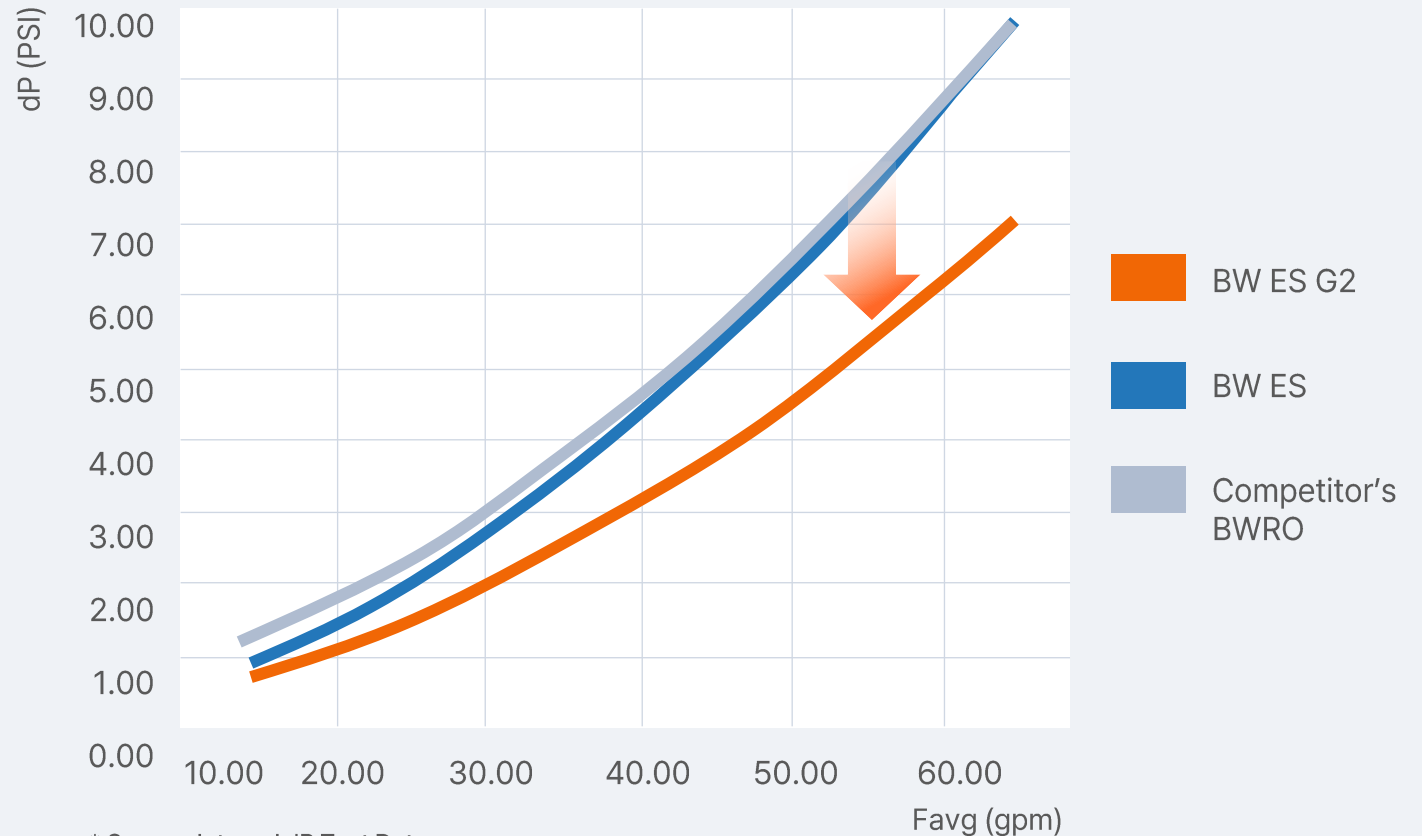
Compared to a RO element with a standard spacer (BW ES)

**↓ 35%**

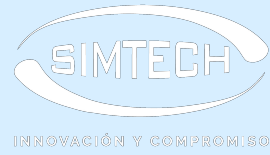
2

Compared to a Competitor's BWRO

**↓ 40%**



\* Source: Internal dP Test Data



# **Proven Performance: Field Test Results**

## Pilot Test 1

# LCD Manufacturing Plant, Korea



### Objective

To validate the field performance and energy efficiency of BW ES G2 membranes applied for Ultra Pure Water (UPW) process in an LCD manufacturing plant.

### Approach

A comparative field evaluation was performed using two RO trains equipped with BW ES G2 and reference BW ES membranes, focusing on permeate flow, feed pressure, and operational stability.

<b>Industry</b>	LCD
<b>Start-Up Date</b>	OCT. 2025
<b>Feed Water Intake</b>	Process water
<b>Application</b>	Ultra pure water for LCD production
<b>Plant Configuration</b>	8 : 3 configuration, 2 Trains five elements per pressure vessel
<b>Recovery</b>	75%
<b>Project Capacity</b>	1,200 m <sup>3</sup> /d
<b>Feed Temperature Range</b>	26° C (77° F)
<b>Membrane Model</b>	Train A : BW 400 ES G2 Train B : BW 400 ES
<b>Total Number of Elements</b>	110
<b>Feed Pressure Range</b>	5-7 bar

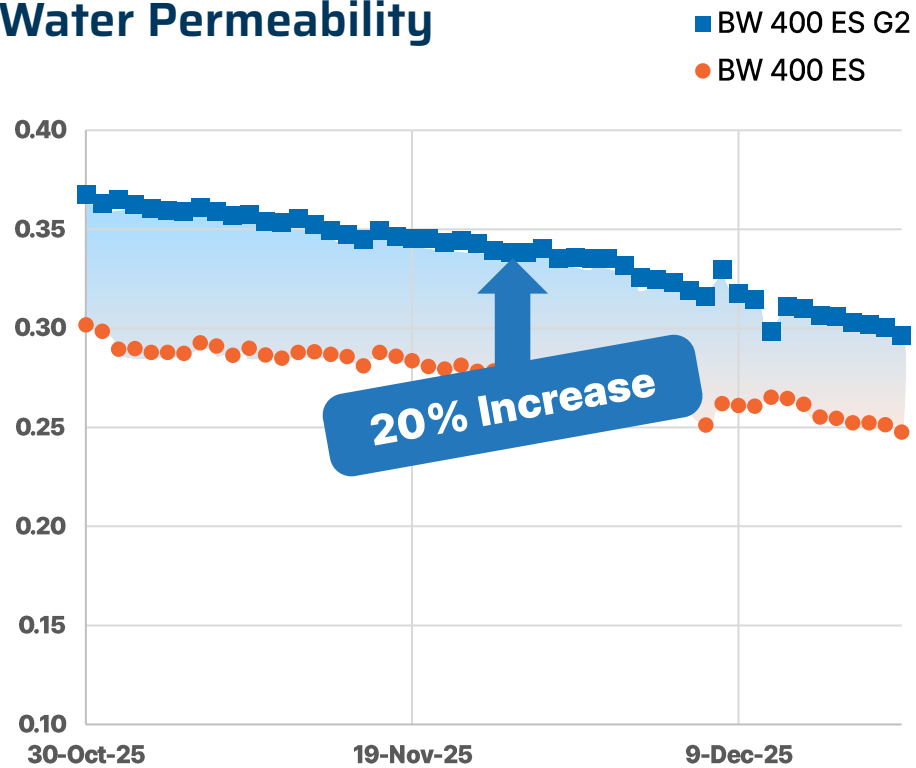


INNOVATION BY COMPROMISE

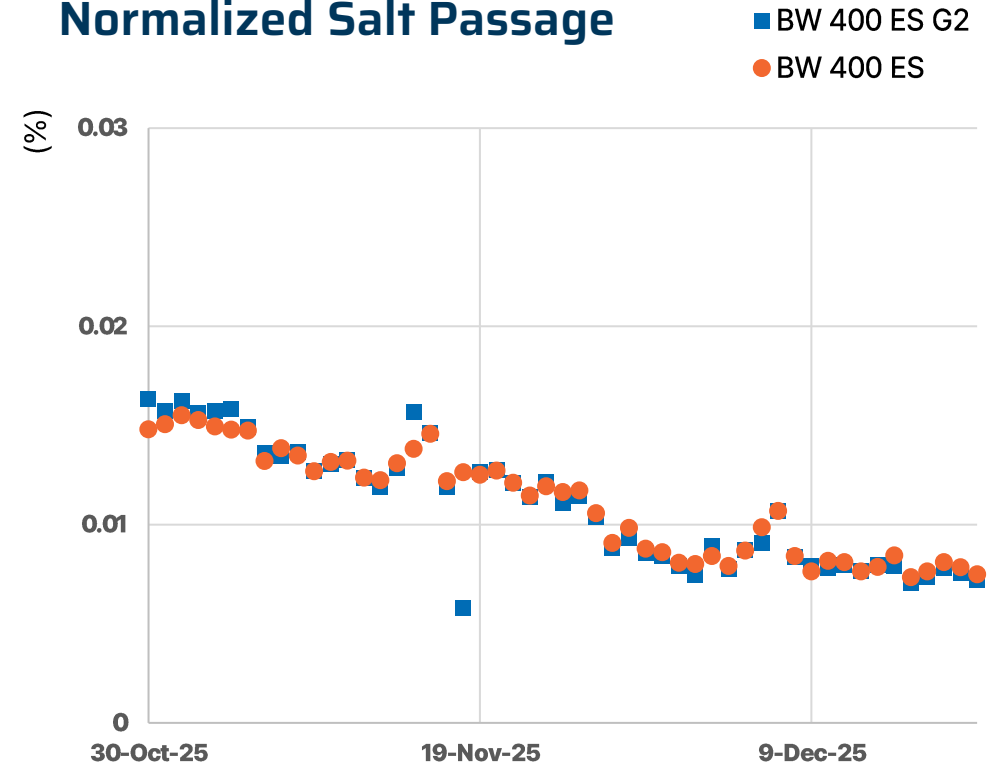
## Water Permeability & Normalized Salt Passage

With BW ES G2, higher permeability is achieved while maintaining similar salt passage at lower feed pressure and lower  $\Delta P$ , providing equivalent performance with reduced energy consumption and pressure loss compared with a standard BW product.

### Water Permeability



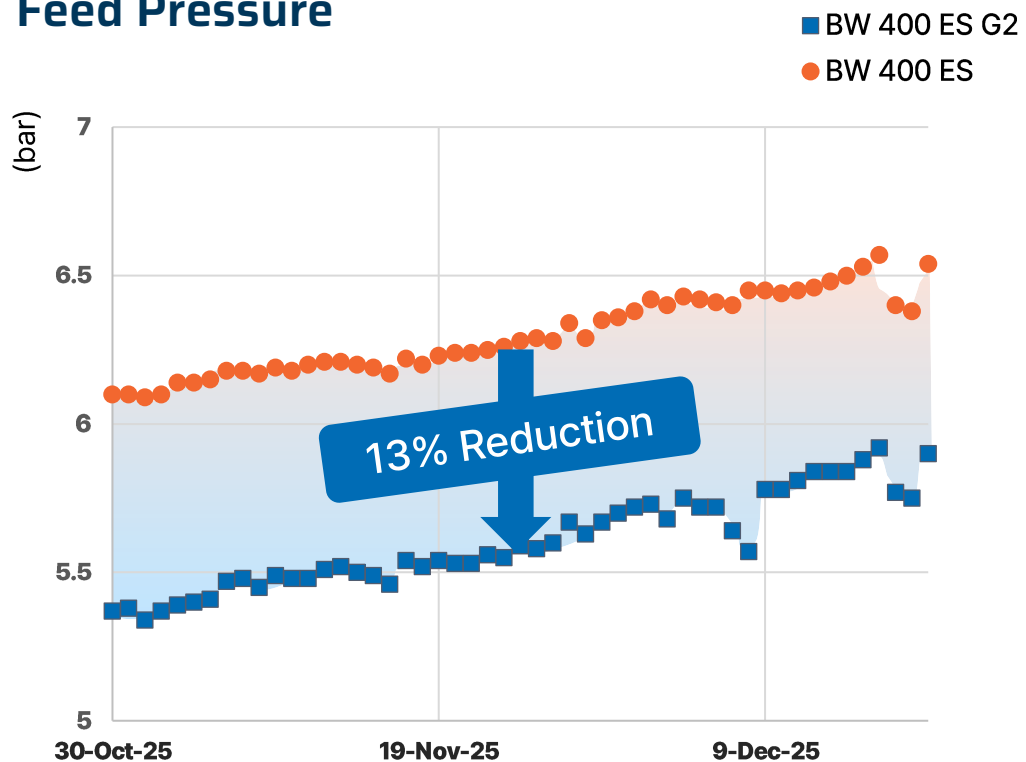
### Normalized Salt Passage



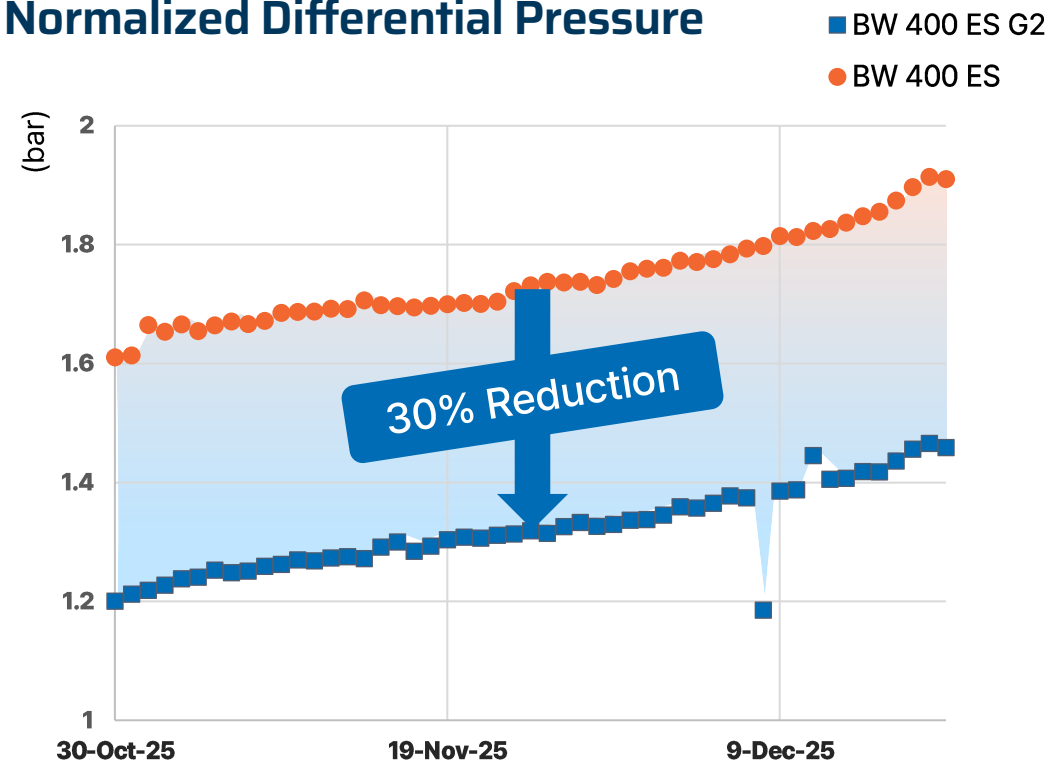
# Feed Pressure & Normalized Differential Pressure

BW 400 ES G2 delivers 13% lower feed pressure and 30% lower normalized  $\Delta P$ , resulting in higher energy efficiency, improved operational stability, and extended cleaning intervals.

## Feed Pressure



## Normalized Differential Pressure





### Objective

To validate the performance and energy efficiency of BW ES G2 membranes under real groundwater conditions through direct comparison with a competitor membrane.

### Approach

The performance of the BW ES G2 was evaluated using parallel RO trains operated under identical conditions by comparing permeate flow, feed pressure, and differential pressure stability.

<b>Client</b>	BGNDRF
<b>Start-Up Date</b>	NOV. 2025
<b>Feed Water Intake</b>	Groundwater
<b>Application</b>	Drinking water production
<b>Plant Configuration</b>	1 : 0 configuration, 2 Trains Seven elements per pressure vessel
<b>Recovery</b>	50%
<b>Project Capacity</b>	137 m <sup>3</sup> /d
<b>Feed Temperature Range</b>	26° C (77° F)
<b>Membrane Model</b>	Train A : BW 400 ES G2 Train B : TMG20D-400
<b>Total Number of Elements</b>	14
<b>Feed Pressure Range</b>	6-9 bar

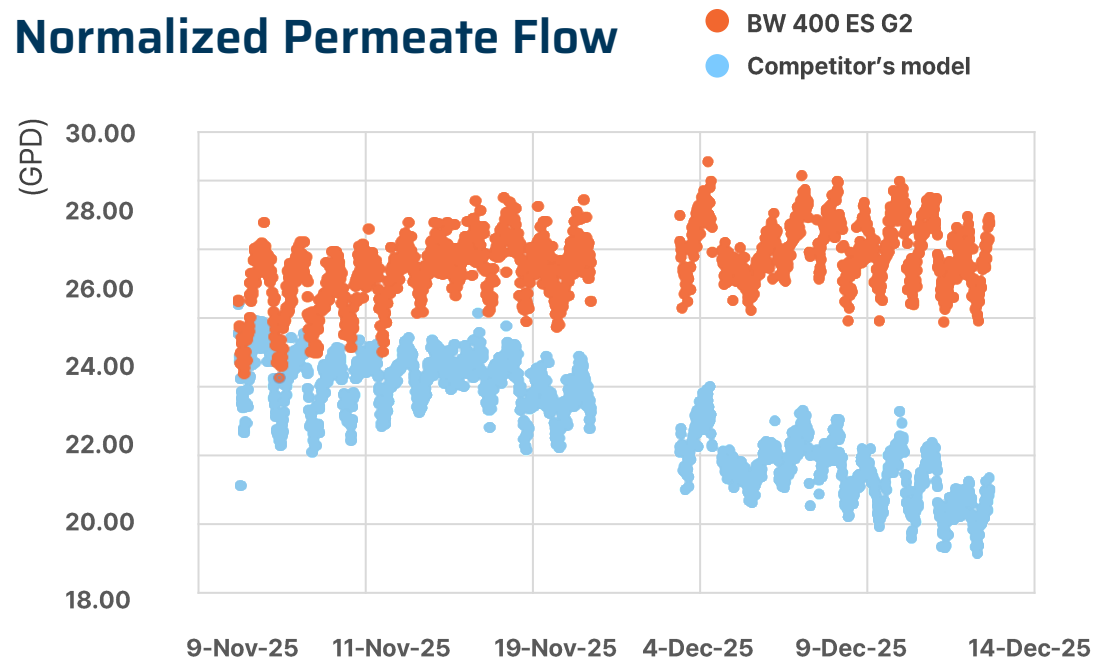




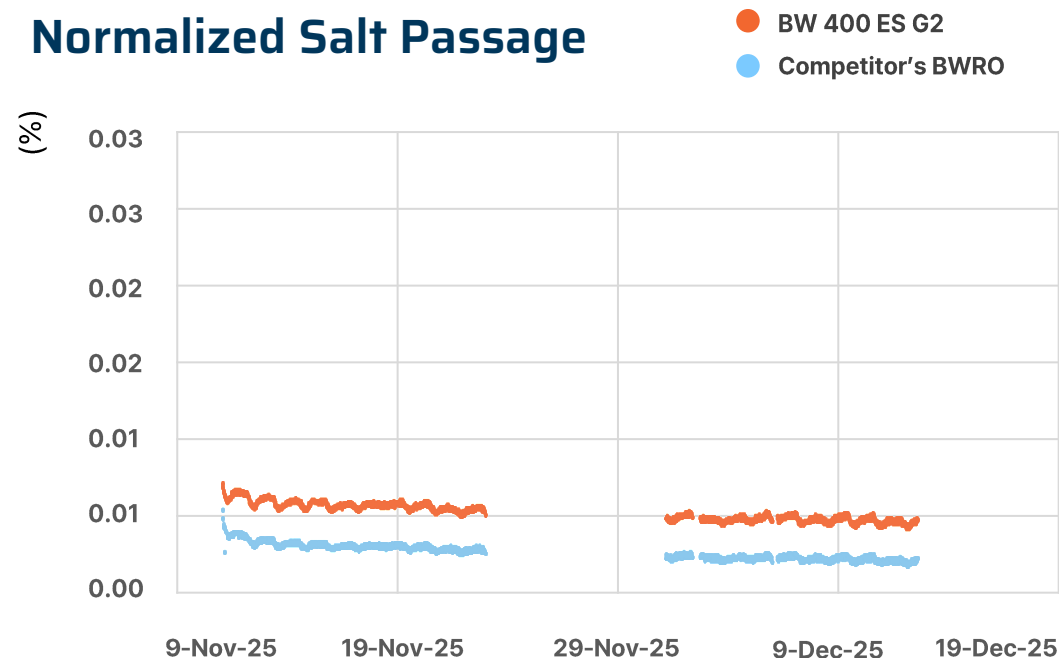
## Normalized Permeate Flow & Normalized Salt Passage

- The normalized permeate flow of the BW 400 ES G2 is higher than that of a comparable competitor BWRO element. During operation, the BW 400 ES G2 maintains stable and consistent performance.
- The normalized salt passage of the BW 400 ES G2 was observed to be higher than that of the comparator element; however, this reflects the model's inherent removal characteristics rather than a degradation in rejection efficiency.

### Normalized Permeate Flow

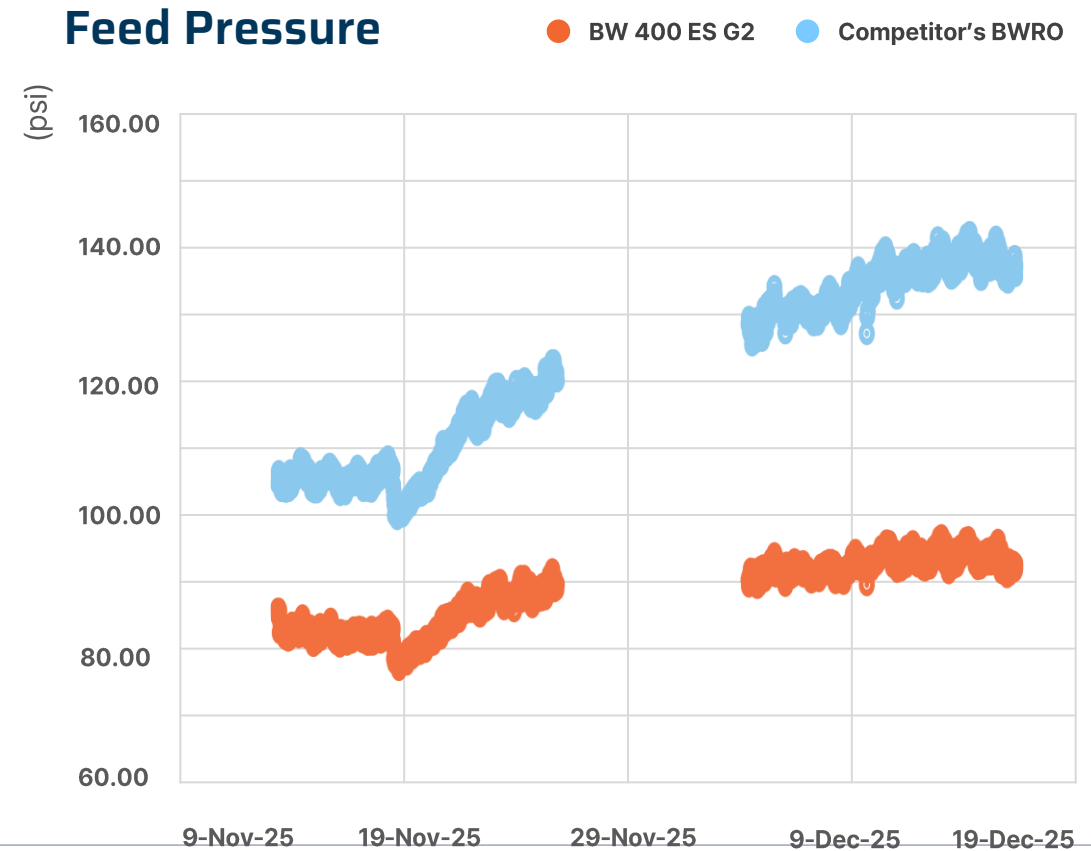


### Normalized Salt Passage



## Lower, More Stable Feed Pressure Performance

- BW 400 ES G2 operates at **lower feed pressure** compared to a comparable competitor BWRO element and maintains **stable pressure performance** throughout the operation period
- This stable low-pressure operation indicates higher energy efficiency, improved operational reliability, and performance stability.



# BW ES G2

## Next-generation Energy Saving BWRO Membrane with Proven Reliability

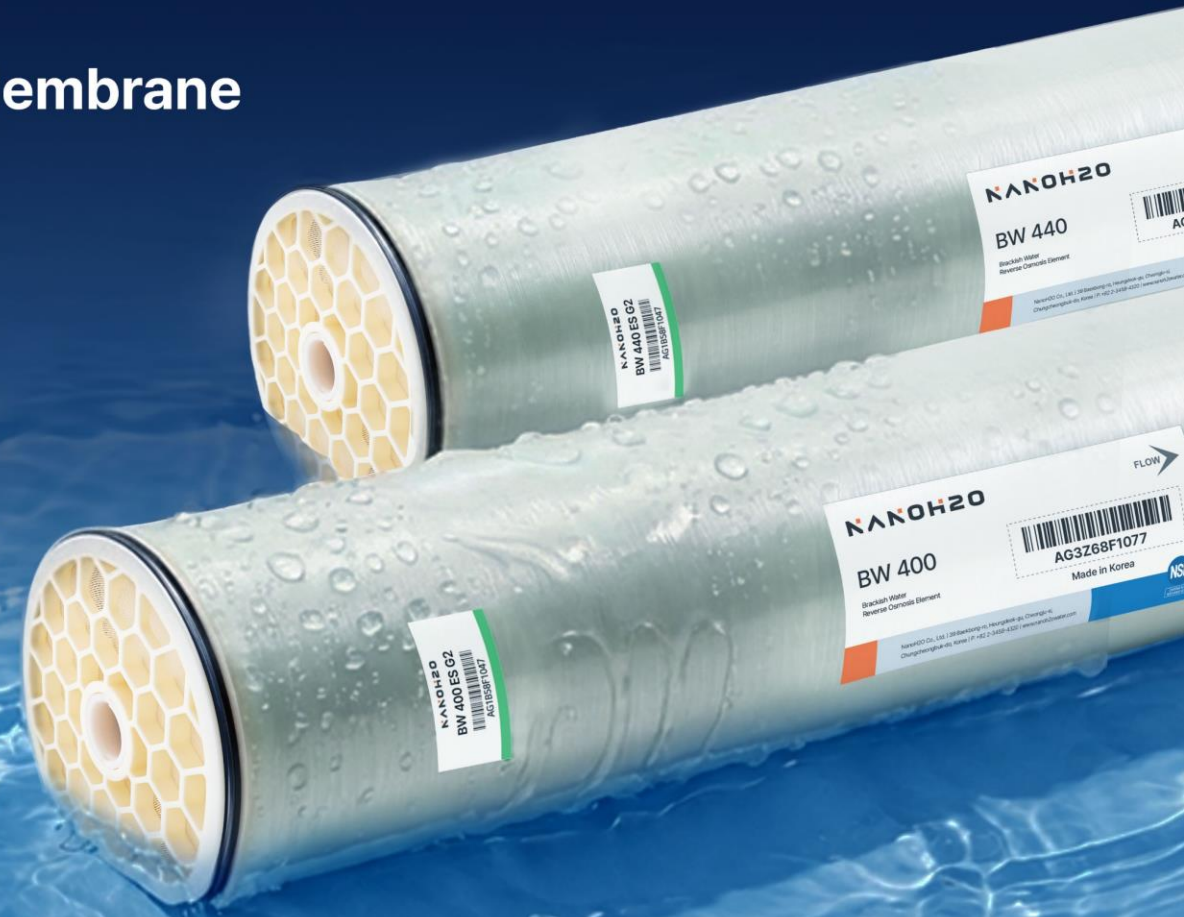
During field operation,  
**BW ES G2** demonstrated:

Compared with a standard BW ES model



During field operation,  
**BW ES G2** demonstrated:

Compared with a competitor element





E.O.D

**NANO H<sub>2</sub>O**

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