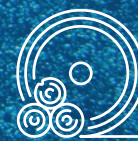


Optical Brightening Agent (OBA) Purification in Chemical Plant



Pulp & Paper

High-Temperature Nanofiltration Improves Recovery and Reuse Efficiency of Valuable Papermaking Compound

The Challenge

With increasing global demand for paper products, pulp and paper manufacturers rank among top water users. Since the Indonesian pulp and paper market employs over one million workers – directly or indirectly – and provides nearly \$4 billion USD annually in foreign exchange, the government is eager to expand production capacity. However, the industry also faces challenges on a national level, including growing environmental regulations and escalating production costs. At the same time, manufacturers continue to look for ways to improve their plant's water footprint, boost operational efficiency and reduce overall environmental impact.

Optical brightening agents (OBAs) are additives used by paper manufacturers to enhance the “whiteness” of finished products interested in reducing OBA purification time.

Their process liquid from operations contained 4% NaCl and 19% OBA, with operating temperatures ranging from 45 to 55°C. In order to concentrate and recover the OBAs, the NaCl content needed to be reduced to $\leq 0.5\%$.

The standard NF membranes used for this process have a maximum temperature limit of 45°C. Operating above that limit results in shorter membrane life and poor separation.

The Solution

The Water Solutions team worked with the chemical plant to explore options for optimizing their OBA purification process. Recently introduced FILMTEC™ Specialty Membrane XUS290508 High Temperature Nanofiltration Elements were recommended as a suitable solution to meet the customer's plant needs.

Offering a unique combination of features, the new NF technology is capable of operating at temperatures up to 70°C. This provides the chemical plant with the option of reducing

Fast Facts

Project:	OBA Purification, Chemical Plant
Location:	Cikarang, West Java Province, Indonesia
End-user:	Confidential
Key Solutions:	Specialty Membrane XUS290508 High Temperature Nanofiltration Element

Key Benefits:

- OBA rejection of >99%
- Sustainability improvement





the size of the plant's cooling and heating systems. The robust 34 mil feed spacer allows for maximum active membrane surface area and, at the same time, reduces the impact of fouling, enhances pressure drop across the pressure vessel and improves cleaning effectiveness.

The chemical plant has a total of 10 trains, each with a different configuration array installed with standard NF membranes. Specialty Membrane XUS290508 High Temperature Nanofiltration Elements were applied to Train #3. Below are the operating details of the trial OBA purification:

Operating Details	
Purpose of System:	To purify and concentrate OBAs
Operation Mode	Batch
Array	3 vessels, 3 elements/vessel
Operating Temperature	45–55°C
Feed Quality	19% OBA, 4% NaCl
Target Product Quality	30% OBA, ≤0.5% NaCl
OBA in permeate	0.005% (max. 0.1%)
Operating pressure	Max. 20 bar (end of circulation)
Flux	10 Lmh
OBA Product Flow	27m ³ /h

The Results:

- OBA rejection was >99%.
- The NaCl content of the process liquid was reduced to ≤0.5% NaCl.

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