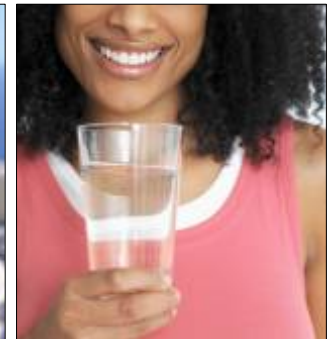




# DOW FILMTEC™ HRLE-440i

Dow Water & Process Solutions  
Economic Results

*from lab & pilot experience*

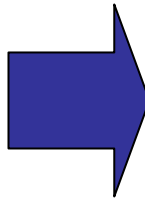




# Increased SiO<sub>2</sub> Rejection with HRLE-440i can reduce energy costs by over 30%

## BOILER FEED WATER

- Well water for EDI feed
- Capacity 2,500 m<sup>3</sup>/d
- Softener-RO-EDI
- 80% Recovery
- Flux of 23.6 LMH
- Feed TDS 167 ppm & 15 ppm SiO<sub>2</sub>
- Permeate SiO<sub>2</sub> <0.08 ppm
- Temperature 5-15°C
- HRLE-440i vs. BW30HR-440i



Increased SiO<sub>2</sub> rejection enables the use of HRLE membranes reducing system OPEX due to lower energy consumption

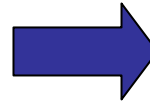
OPEX	Case I BW30HR-440i Max T & High FF	Case II HRLE-440i Max T & High FF	Case III BW30HR-440i Min T & Low FF	Case IV HRLE-440i Min T & Low FF
Electricity (\$/yr)	\$49,184	\$34,128	\$93,349	\$61,229
Pass 1 Electricity (kwh/m <sup>3</sup> )	0.49	0.34	0.93	0.61
Energy Saving (\$/yr)	\$0	\$15,056	\$0	\$32,120
Energy Saving (%)	0%	31%	\$0	34%



# Increased Boron Rejection → reduce chemical costs by 30%

## SW 2<sup>nd</sup> PASS

- Municipal 2-pass SWRO plant
- Capacity 300,000 m<sup>3</sup>/d
- 42.5% System recovery
- Feed TDS 41,100 ppm
- Feed B 5.43 ppm
- Permeate B <0.3 ppm
- HRLE-440i vs. LE-440i



Blending increased by 5%

- 60 pv or 480 elements less
- Reduced chemical consumption
- Price of water reduced by 0.2 UScts/m<sup>3</sup>



2<sup>nd</sup> pass pH lowered  
from 10.2 to 9.9

Yearly Cost Calculation	Unit	LE-440i	HRLE-440i
Caustic dose	mg/l	12.25	8.5
Caustic (50%) dose	ton/d	7.37	5.1
Chemical Cost	\$/d	\$ 2,578	\$ 1,787
Annual cost	\$/yr	\$ 941,053	\$ 652,254
Annual saving	%	0%	31%

