

<b>Project name:</b>	Water type: Desalro 2.0 agr	<b>Membrane age:</b> 0
<b>Customer:</b>	Flux loss per year: 5.00%	<b>Safety factor:</b> 1
<b>Username:</b>	Salt passage increase: 5.00%	

**Overall System**

<b>Total permeate flow:</b> 1,600 m3/d	<b>Water source:</b> Seawater-Well (SDI<3)	<b>Feed pressure:</b> 55.14 bar (1P)
<b>Raw water flow:</b> 4,000 m3/d	<b>Raw water TDS:</b> 38,764.04 mg/L	
<b>Total concentrate flow:</b> 2,400 m3/d	<b>Feed osmotic pressure:</b> 27.61 bar	
<b>Overall recovery:</b> 40 %	<b>Concentrate osmotic pressure:</b> 46.55 bar	

**System - Pass1**

<b>Permeate flow:</b> 1,600 m3/d	<b>Average flux:</b> 10.13 lmh	<b>Temperature:</b> 23 °C
<b>RO feed flow:</b> 4,000 m3/d	<b>Water source:</b> Seawater-Well (SDI<3)	<b>Average NDP:</b> 15.03 bar
<b>Concentrate flow:</b> 2,400 m3/d	<b>Feed TDS:</b> 39,240.83 mg/L	<b>Specific energy:</b> 2.11 kWh/m <sup>3</sup>
<b>Recovery:</b> 40 %	<b>Feed osmotic pressure:</b> 27.95 bar	<b>Feed pressure:</b> 55.14 bar
<b>Number of elements:</b> 161	<b>Concentrate osmotic pressure:</b> 46.55 bar	<b>Permeate TDS:</b> 141.14 mg/L
<b>ERD type:</b> Isobaric	<b>Pump efficiency:</b> 88.8 %	<b>Fouling factor:</b> 1
<b>Recirculation:</b>		

	# of vessels	# of elements	RO feed flow	Permeate flow	Conc. flow	RO feed pressure	Conc. pressure	Vessel DP	Boost pressure	Back pressure	Inter-stage pressure loss	Average flux	Perm. TDS
			m3/d	m3/d	m3/d	bar	bar	bar	bar	bar	bar	lmh	mg/L
Stage 1	23	7	4,000	1,601.47	2,398.53	55.14	54.18	0.96	0	1	0	10.14	141.14

**Water Analysis - Pass1**

Species	Raw water	Adjusted feed	Conc. Stage1	Permeate Stage1
Ammonium	0.02	0.02	0.03	0.00
Sodium	11,863.43	12,009.35	19,994.10	50.58
Potassium	415.36	420.47	699.81	2.10
Magnesium	1,433.29	1,450.92	2,418.75	1.40
Calcium	468.66	474.43	790.90	0.45
Strontium	8.46	8.57	14.28	0.01
Barium	0.05	0.05	0.08	0.00
Fluoride	3.77	3.82	6.35	0.02
Chloride	21,406.00	21,669.29	36,082.09	83.21
Sulfate	2,928.23	2,964.24	4,942.68	1.14
Nitrate	2.17	2.20	3.63	0.06
Carbonate	0.48	0.48	0.80	0.00
Bicarbonate	134.66	136.32	226.71	0.94
Boron	4.94	5.00	7.75	0.89
Bromide	69.73	70.58	117.53	0.27
Silica	24.78	25.08	41.78	0.07
CO2	10.31	10.32	10.32	10.32
TDS	38,764.04	39,240.83	65,347.28	141.14
pH	7.15	7.15	7.35	5.17

**Within Vessels - Pass1**

	Position	RO feed flow	Permeate flow	Flux	Element recovery	Element DP	Net driving pressure	Polarization	Feed TDS	Perm. TDS
		m3/d	m3/d	lmh	%	bar	bar		mg/L	mg/L
Stage 1										
LG SW 440 SR	1	173.91	18.29	18.64	10.52	0.20	20.95	1.12	39,236.01	61.97
LG SW 440 SR	2	155.62	14.69	14.97	9.44	0.17	17.61	1.11	43,840.42	84.54
LG SW 440 SR	3	140.93	11.56	11.78	8.20	0.14	14.55	1.09	48,400.41	116.03
LG SW 440 SR	4	129.38	8.96	9.13	6.92	0.13	11.86	1.07	52,714.29	159.50
LG SW 440 SR	5	120.42	6.87	7.01	5.71	0.12	9.56	1.06	56,624.14	218.70
LG SW 440 SR	6	113.54	5.25	5.35	4.62	0.11	7.65	1.05	60,039.22	298.06
LG SW 440 SR	7	108.29	4.01	4.09	3.70	0.10	6.11	1.04	62,935.66	402.66

**Solubility - Pass1**

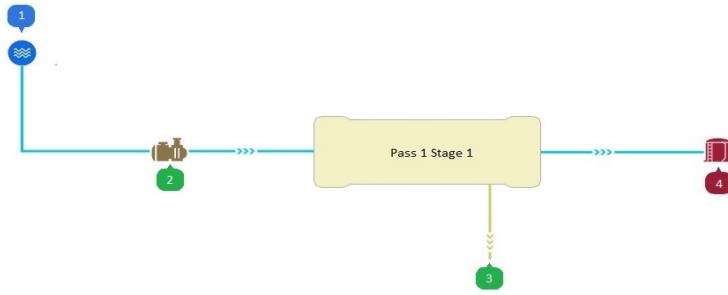
	Solubility calculation	
	Feed	Conc.
LSI	0.08	0.95
CaSO4	25.18 %	48.59 %
SrSO4	15.39 %	34.96 %
BaSO4	184.61 %	270.52 %
CaF2	190.62 %	914.96 %
SiO2	20.73 %	34.53 %
Stiff Davis Index	-1.5	-0.63

## Warnings - Pass1

Disclaimer: LG Chem Design is intended to be used by persons having the requisite technical skill, at their own discretion and risk.

When using LG Chem Design, it is the user's responsibility to make provisions against fouling, scaling and chemical attacks, to account for piping and valve pressure losses, feed pump suction pressure and permeate backpressure. LG Chem shall not be liable for any error or miscalculation in results obtained by using LG Chem Design.

Because use conditions and applicable laws may differ from one location to another and may change with time, users are responsible for determining whether products are appropriate for their use.



#	Stream	Flow (m3/d)	Pressure (bar)	TDS (mg/L)	pH
1	Raw Feed	4,000.00	0.00	38,764.04	7.15
2	1P RO Feed	4,000.00	55.14	39,240.83	7.15
3	1P Brine	2,400.00	54.18	65,347.28	7.35
4	1P Product	1,600.00	1.00	141.14	5.17