

Project name : Case: Date: 10/2/2012 3:27:
Project title:

Prog-Version: 1.1.78 * Update: 21Jun10-Ch ** El-Version: 2549 * Update: 12.May.2010

1. RO-SYSTEM DATA

Feed water type Brackish Surface
Feed temperature 70.00 deg.F (design)
RO feed pressure 126.30 psi after 3 years
Total diff.-pressure 16.11 psi feed - brine, incl. dP manifolds+pipe
Brine pressure 110.20 psi at exit from last bank
Design period 3.00 years
Fouling Factor 0.81 after 3 years
Salt passage increase 52.00 % after 3 years (15% per year)
Silt density index 4.00 in RO-feed (SDI_15)
System recovery 70.00 %
System feed flow 100.00 Gpm = 144000.00 Gpd
Product flow 70.00 Gpm = 100800.00 Gpd
Average system flux 0.43 m/d = 17.83 l/m2/h = 10.5 GFD
Brine flow 30.00 Gpm = 43200.00 Gpd
Feed salinity 3137.80 mg/l as ion
Product salinity 25.78 mg/l as ion after 3 years
Brine salinity 10395.05 mg/l as ion

2. BANK DATA

		1	2	3
Membrane Elements Type		TM720L-	TM720L-	TM720L-
		400	400	400
Membrane Elements	pcs	12	8	4
Elements/Vessel	pcs	4	4	4
Pressure vessels	pcs	3	2	1
Recovery rate	%	40.62	36.08	20.99
Feed flow	Gpm	100.00	59.38	37.96
Product flow	Gpm	40.62	21.42	7.97
Average flux	GFD	12.19	9.64	7.17
Brine flow	Gpm	59.38	37.96	29.99
Feed pressure	psi	126.30	121.36	116.94
dP elements	psi	4.95	4.42	6.74
dP manifolds+pipe	psi	0.00	0.00	0.00
Brine pressure	psi	121.36	116.94	110.20
Perm. pressure	psi	0.00	0.00	0.00
Lead element				
Feed flow	Gpm	33.33	29.69	37.96
Product flow	Gpm	3.63	2.97	2.24
Flux rate	GFD	13.06	10.69	8.05
Last element				
Product flow	Gpm	3.12	2.37	1.75
Product:Brine ratio 1:		6.34	8.01	17.16
Brine	Gpm	19.79	18.98	29.99
Net driving press. psi		76.43	57.94	42.38

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3. WATER ANALYSIS as mg/l ion	Orig feed	Treated feed	Conc. Brine	Exp. Permeate
Calcium	374.00	374.00	1240.65	2.58
Magnesium	217.00	217.00	719.84	1.50
Sodium	156.00	156.00	515.08	2.11
Potassium	22.60	22.60	74.24	0.47
Chloride	24.00	24.00	79.46	0.23
Sulfate	1870.00	1870.00	6212.20	9.06
Bicarbonate	473.00	471.76	1531.62	9.91
Carbonate	0.60	0.60	6.98	0.00
Fluoride	0.60	0.60	1.95	0.02
Free CO2	43.37	44.26	50.26	44.19
Total as ion	3137.80	3137.18	10395.05	25.78
Total as meq/l	43.88	43.88	145.43	0.36
EC uS/cm	2916.45	2915.90	8729.66	28.81
CO2 EC uS/cm	7.52	7.59	8.10	7.59
pH Value	7.18	7.18	7.58	5.58
Langelier Index	0.76	0.75	2.15	-4.53
Stiff Davis Index	0.60	0.60	1.54	-4.50

4. PRETREATMENT

Measure against CaCO3-scale : None
 SO4- and CO3-Scale inhibitor: None
 Saturation index in brine : 0.0 max. (Stiff Davis Index)

5. RECOVERY LIMITS

for	IP_Brine	Saturation	Max.Recov.
CaSO4	2.00E-3	307.8%	47.4%
BaSO4	0.00E0	0.0%	95.0%
SrSO4	0.00E0	0.0%	95.0%
CaF2	3.27E-10	147.8%	80.0%
Silica		0.0%	95.0%

6. POST-TREATMENT

Measure against permeate : None

Disclaimer:

The program is intended to be used by persons having technical skill, at their own discretion and risk. The projections, obtained with the program, are the expected system performance, based on the average, nominal element-performance and are not automatically guaranteed. Toray shall not be liable for any error or miscalculation in the program. The obtained results cannot be used to raise any claim for liability or warranty. It is the users 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. For questions please contact us:

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