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atorabi@ut.ac.ir                             $\delta$   
 smadaeni@yahoo.com  
 ghadimkhani\_a@yahoo.com                 $\delta$   
    // :                        // :

)    FILMTEC CSM Toray                                (

/ / /

FILMTEC

/

$\mu s / cm$                                          $\mu s / cm$

%    / l/m .hr

(Tchobanoglus,

.2003)

MD

δ

.(Gryta, et al. ,2006)

.(Wintgens, et al., 2005)

.(Mohsen, 2004)

m

m

.(Buhrmann , et al. ,1999)

m

TDS >

mg/l

μs/cm

(RO)

%

%

$pH \geq \gamma$

)

( ×

.(MWH, 2005)

...

$\mu\text{s/cm}$

RO

(Sheikholeslami, and Zhou, 2000)

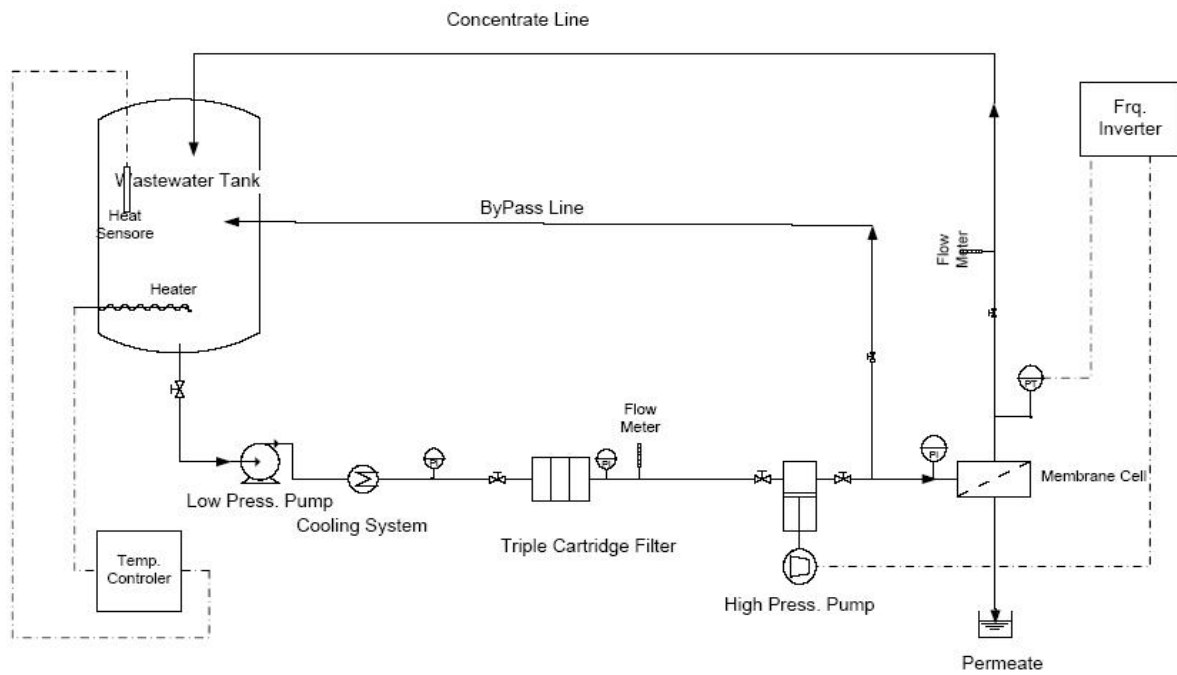
mm

سیلهٔ محفظهٔ فشار /  $\times \text{cm}$

(  $\times \text{cm}$  )

(Sadr ghayeni, et al. ,1998)

( )



( )

/

RO

Toray TM.810  
 Saehan CSM-RE2521-SR  
 DOW FILMTEC SW30-4040

pH

( )

$3.0 \pm 0.5 / \Delta^{\circ}C$

CON510 EUTECH  
 pH pH510

:( )

| FILMTEC SW30-4040 | CSM-RE2521.SR | Toray TM 810     |                      |
|-------------------|---------------|------------------|----------------------|
| /                 | /             | /                | %                    |
| /                 | /             | /                | ( )                  |
| TFC               | TFC           | TFC <sup>2</sup> | l/m <sup>2</sup> .hr |
| /                 | /             | /                | pH                   |
|                   |               |                  | pH                   |
|                   |               |                  | (ppm)                |
|                   |               |                  | SDI                  |

ppm NaCl :

(. / )

(2-TFC :Thin Film Composite)

$3.0 \pm 0.5 / \Delta^{\circ}C$

...

(Al-Bastaki, 2004) ( /m<sup>2</sup>.hr)

( )

FILMTEC ( ) / / / (Bar)

FILMTEC

RO

(Bacchin, 2006) ) SDI ( SDI< SDI

FILMTEC /

/ / l/m<sup>2</sup>.hr

( ) / l/m<sup>2</sup>.hr

FILMTEC /

ORP mV ORP (Byrne, ORP .2002) pH

( )

(Oh, 2009) ( / ) pH= ( ) μs/cm pH ) / / pH pH ( )

( ) /

( )

)

( / m/s

) %

%

(

RO

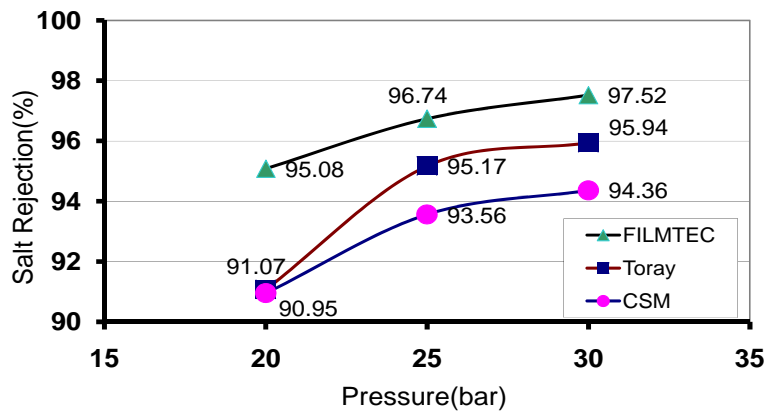
: ( )

| (%) | (l/m <sup>2</sup> .hr) | ( $\mu s / cm$ ) | (m/s) | ( ) |  |                                  |
|-----|------------------------|------------------|-------|-----|--|----------------------------------|
| /   | /                      |                  | /     |     |  | <b>Toray TM 810</b>              |
| /   | /                      |                  | /     |     |  |                                  |
| /   | /                      |                  | /     |     |  |                                  |
| /   | /                      |                  | /     |     |  | $\mu s / cm$                     |
| /   | /                      |                  | /     |     |  |                                  |
| /   | /                      |                  | /     |     |  |                                  |
| /   | /                      |                  | /     |     |  | <b>CSM-RE2521<br/>SR</b>         |
| /   | /                      |                  | /     |     |  |                                  |
| /   | /                      |                  | /     |     |  |                                  |
| /   | /                      |                  | /     |     |  | $\mu s / cm$                     |
| /   | /                      |                  | /     |     |  |                                  |
| /   | /                      |                  | /     |     |  |                                  |
| /   | /                      |                  | /     |     |  | <b>FILMTEC<br/>SW30<br/>4040</b> |
| /   | /                      |                  | /     |     |  |                                  |
| /   | /                      |                  | /     |     |  |                                  |
| /   | /                      |                  | /     |     |  | $\mu s / cm$                     |

...

:( )

| % |                               |       | (permeate) |   |     |
|---|-------------------------------|-------|------------|---|-----|
| / | Na <sup>+</sup>               | mg/l  |            |   |     |
| / | K <sup>+</sup>                | mg/l  | /          |   |     |
| / | Ca <sup>+</sup>               | mg/l  | /          |   |     |
| / | Mg <sup>+</sup>               | mg/l  | /          | / |     |
| / | Ba <sup>+</sup>               | mg/l  | /          | / |     |
| / | Sr <sup>+</sup>               | mg/l  | /          | / |     |
| / | NH <sub>4</sub> <sup>+</sup>  | mg/l  | /          |   |     |
| / | CaCO                          | mg/l  | /          | / |     |
| / | Cl                            | mg/l  | /          | / |     |
|   | PO <sub>4</sub> <sup>3-</sup> | mg/l  | Nil        | / |     |
|   | SiO                           | mg/l  | Nil        |   |     |
| / | F                             | mg/l  | /          | / |     |
| / | NO <sub>3</sub> <sup>-</sup>  | mg/l  | /          |   |     |
|   | O                             | mg/l  | Trace      | / | COD |
| / | HCO <sub>3</sub> <sup>-</sup> | mg/l  | /          | / |     |
| / | SO <sub>4</sub> <sup>2-</sup> | mg/l  | /          |   |     |
|   |                               |       | Nil        | / |     |
|   |                               |       | Nil        | / | Cu  |
|   |                               |       |            | / | pH  |
| / |                               | μs/cm |            | / | EC  |



:( )

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|                                  |                         |
|----------------------------------|-------------------------|
| 7-Flat Sheet                     |                         |
| 8-Cross Flow Velocity            |                         |
| 9-Bypass                         |                         |
| 10-Permeate                      |                         |
| 11-Concentrate                   |                         |
| 12-Frequency Inverter            |                         |
| 13-Temperature Controller        |                         |
| 14-Heater                        |                         |
| 15-Cooling System                | 1-Reverse Osmosis       |
| 16-Flux                          | 2-Make Up               |
| 17-Electrical Conductivity       | 3-Zero Blow Down        |
| 18-Silt Density Index            | 4-Land Application      |
| 19-Oxidation Reduction Potential | 5-Membrane Distillation |
|                                  | 6-Membrane Cell         |

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