



Hybrid CDI/SWRO System For Sea Water Desalination

System Benefits

- Incremental Capex recouped in 2 years from 25% reduction in power use
- 95% recovery will double the output of SWRO
- 5% waste results in lower environmental damage
- Longer life of membranes, lower opex

We specialize in high salinity applications of CDI. CDI's most salient feature when used in high salinity sea water is

1. The first two stages in series reduced TDS of 45,000 ppm to 30,000 ppm
2. Kills and filters 6 log reduction in microbes
3. Removes 75% of hardness

These benefits are the nemesis for RO systems. by reducing the TDS

1. THE RO pressure is decreased by 20%; it's RO recovery is increase from 30% to 45%
2. The decrease in hardness will result in less chemicals used
3. The removal of microbial content results in less fouling, less chemicals used.

The system will be modified.

1. Where UF might be used as the pretreatment; now CDI will be used
2. CDI now feeds the RO
3. The waste streams are processed through a CDI waste recovery unit. The purified water is reduced to 45,000 pm and reused in the feed stream;
4. The overall system recovery is increased to 95%. The waste stream is much smaller
5. The power used is 25% less.

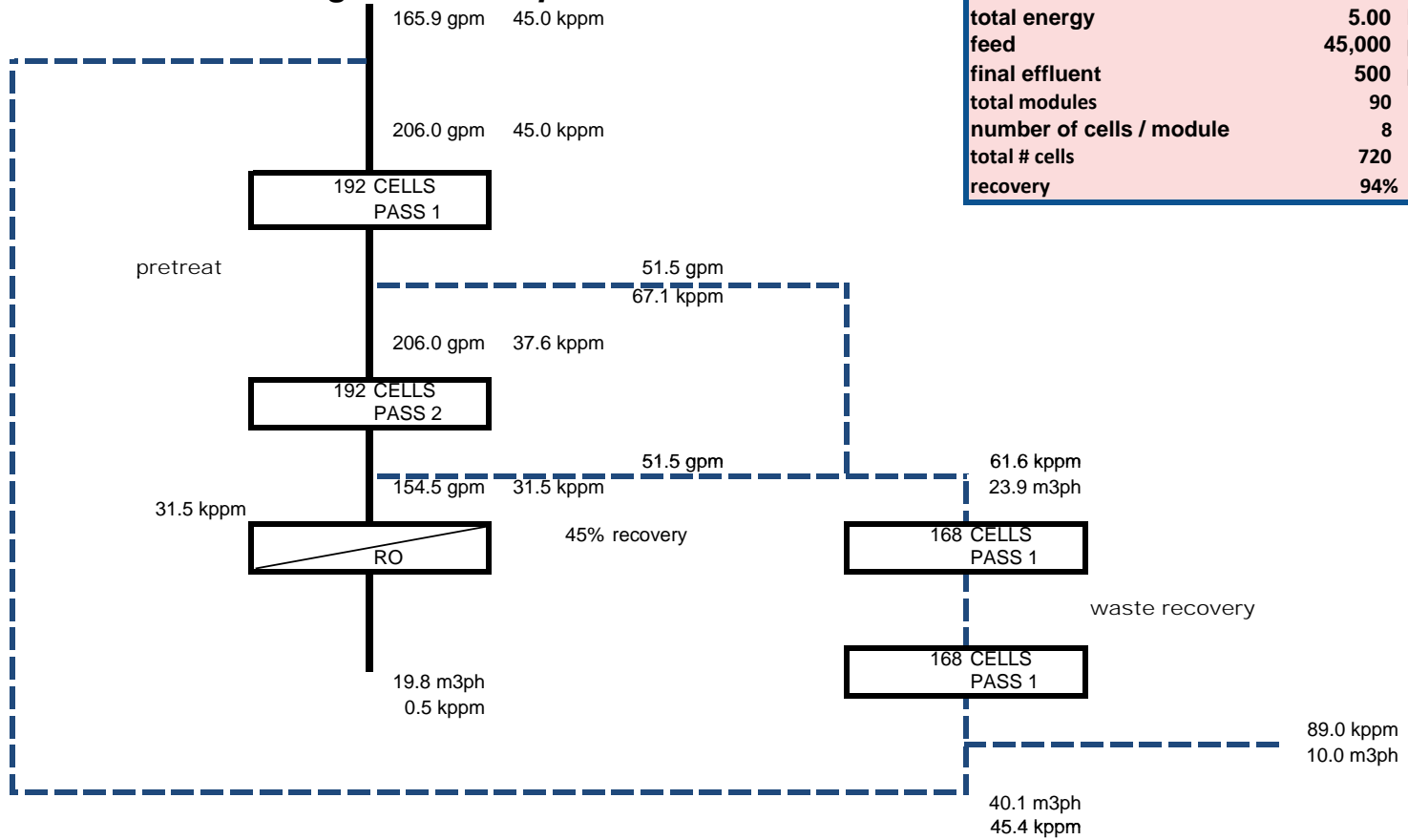
How the Hybrid CDI/SWRO system can be used

1. Stand alone New system
2. Retrofit existing RO.

Attached is 500m³/day plant



Integrated High Salinity Process using the new Supercell revised



total Capital	\$1,210,150
flow product water	474 m3/day
total energy	5.00 kwh/m3
feed	45,000 ppm
final effluent	500 ppm
total modules	90
number of cells / module	8
total # cells	720
recovery	94%