Brine and Industrial Effluent Waste Treatment Process

Using a Robust, Simple to operate Technology

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Brine Treatment

EVAPORATION ZERO LIQUID DISCHARGE PILOT PLANT

Mechinox SA has tested evaporation technology for Brine treatment particularly Mechanical Vapour Recompression MVR/MVC

Advantages of evaporation

- Relatively low energy – High COP
- Reduction ratio is high (> 90 %)
- Simple Process
- Results are good (Aqueous Brine)
- Single Step condensate improvement is high
- Costs R200-220/m^3 treated*
- Few steps in the process (3 Steps are most)

- **Disadvantages**
  - Uses a lot of Energy (Main Driver of the cost)
  - Cannot be used to treat all liquid wastes (Oils need different approach)

*= Dependant on Electrical Tariff

COP= Coefficient of Performance

Findings and Results

We have treated the following in the MVR pilot plant

- Hazardous Aqueous Waste (Pharmaceutical Brine)
- Saline Brine (RO discharge from saline well water)
- Land Fill Leachate
- Towns Water (Purification)

We found the following results and challenges with the MVR

- Brine constituents (tests are important)
- Saline brine is easy to treat and distillate is of good quality, High recovery > 90%, Salt hard to dispose of distillate water is pure.
- High concentrate Brine needs special material considerations.
- Foaming on some Brines (problem for the compressor).

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Other Approaches for Brine treatment

- Convert into useful product (Economic Driver)
- Collaboration other companies brine for their process.
- Saline Brine (RO discharge) can yield input for Acid plant
- Land Fill Leachate (dissolved minerals may be useful)

Thanks for your Attention
Any questions?

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