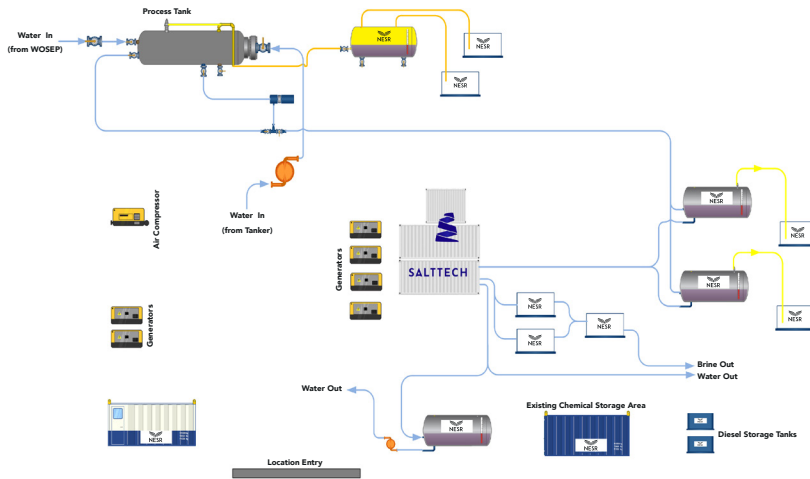




NESR GCC CIRCULAR PRODUCED WATER TO FRESHWATER

Proves Water Circularity in GOSP, Unconventional Frac & Other Applications

NESR GCC Case Study Process Flow Diagram (PFD)



• PRE-TREATMENT OBJECTIVES:

- Scavenge H₂S in produced water to less than 10 ppm to allow for further processing.
- Remove suspended hydrocarbon to DyVaR30 pilot unit acceptable operating limit.
- Achieve maximum feed throughput volume of the DyVaR.
- Safely vent H₂S free effluent away from the operating area.

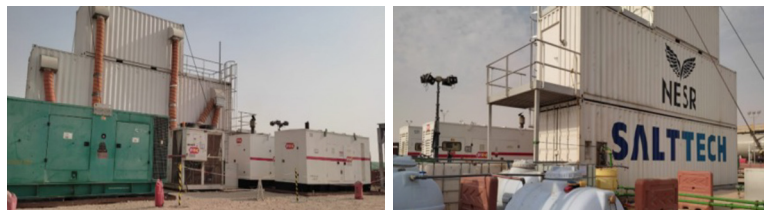
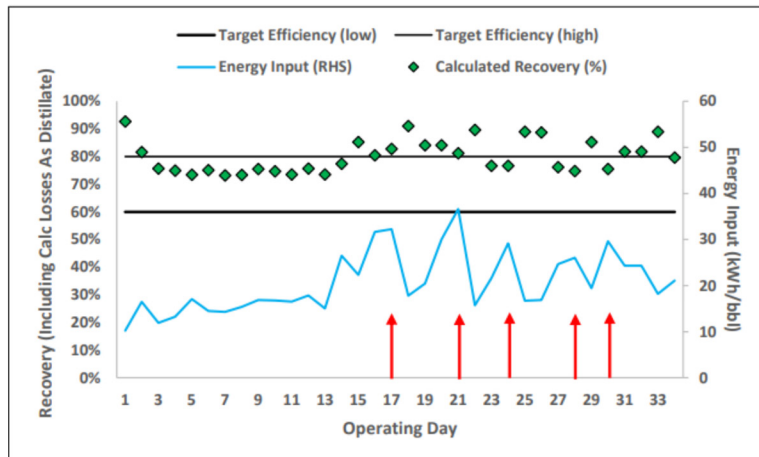


Figure - Aggregate Results for recovery & Energy Efficiency (Red Arrows Indicate Flush/CIP)

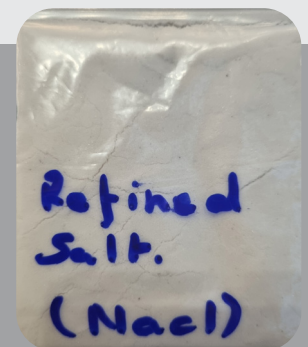


*Recovery Calculated Assuming Vapor Losses (thru Chimney) Included In Distillate | Red Arrows Indicate Flushing/CIP Cycle

• DYVAR OBJECTIVES:

- Treat input water up to 250,000 ppm TDS to freshwater at 200 ppm TDS or better.
- Achieve 60-80% water recovery, as a measure of process efficiency.
- Potentially yield salt crystals in the ZLD slurry, to evaluate the efficacy of a mineral recovery.

99.6%
Pure NaCl
Recovered



• SUCCESSFUL DYVAR WATER TREATMENT PILOT DELIVERED

- 80-90% Recovery on up to a maximum of 85K ppm input stream – Optimal yield vs. energy/opex
- Primary treatment objective achieved < 100 ppm output – Proved produced water → freshwater
- Mineral & Salt recovery – Recovered 99% pure NaCl
- DyVaR is the optimal high-TDS PW solution wrt 1) recovery/waste, 2) energy intensity, and 3) distillate (+salt) quality
- Multiple Circular Economies in Flare-to-Forest™ Concept: 1) Flare/Solar (power unit), 2) Water, and 3) Salt