



Produced Water from Shale Gas

Highlights

Evaporation of produced water from hydrofracking to recover pure condensate and high quality salt (e.g. NaCl and/or CaCl₂) which can be marketed. The contaminants are concentrated for minimum liquid discharge and heavy metals are removed upstream of the evaporation plant.

Feedstocks

Produced waters from hydrofracking during the extraction of shale gas, which contain salt and other contaminants.

Process Characteristics

1. Pre-treatment by pH adjustment and filtration to remove solid impurities
2. Removal of heavy metals by chemical purification
3. Crystallization of high grade NaCl
4. Recovery of CaCl₂
5. High contaminant loadings can be handled
6. Liquid purge is minimized
7. Plant designed to minimize scaling

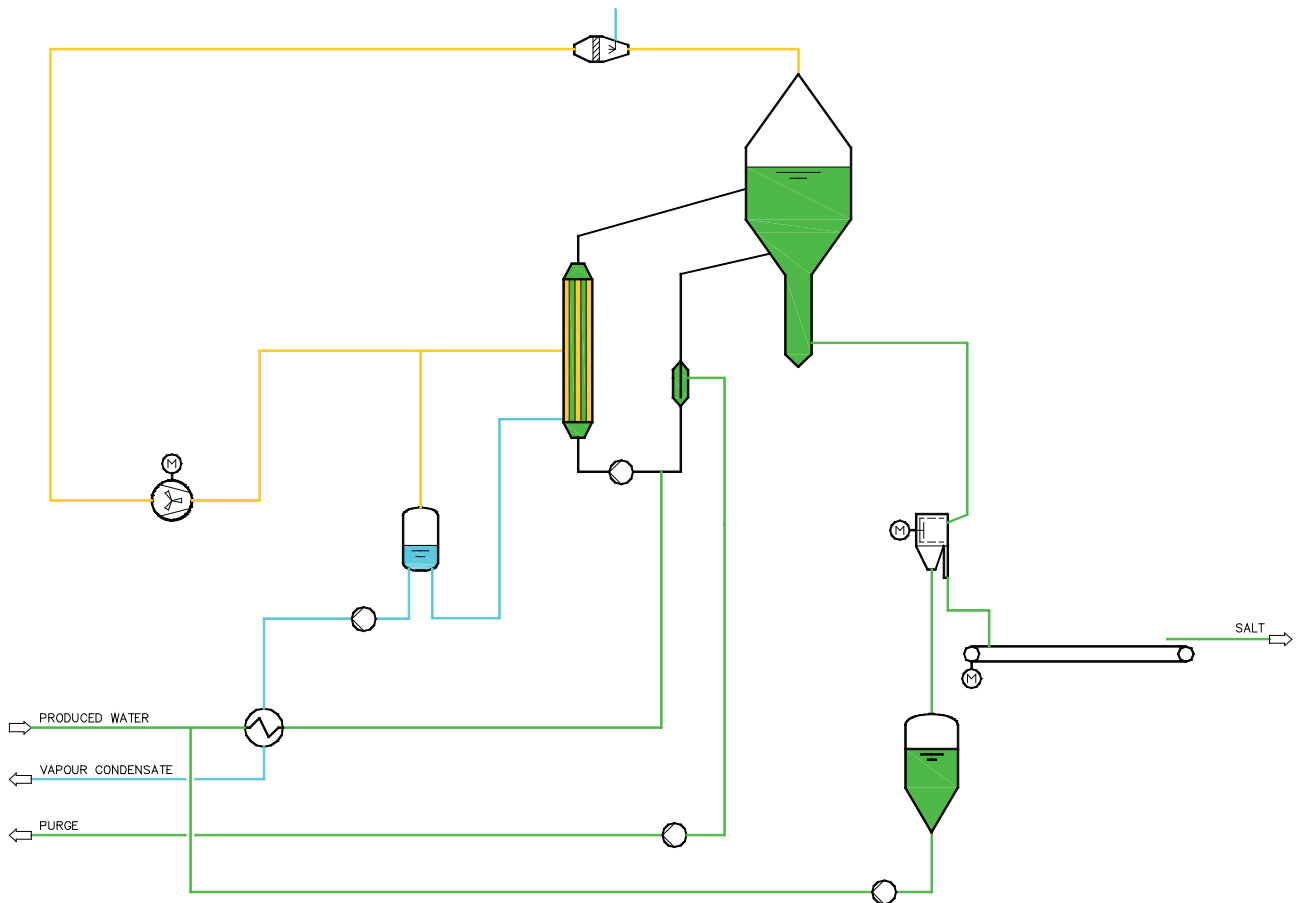


NaCl Crystals



CaCl₂ granules

Typical Flow Diagram



Plant Characteristics

- MVR system to optimise energy costs
- Minimum equipment to reduce investment costs
- Forced circulation evaporators to handle solids
- Special treatment to minimize scaling
- Centrifuge for salt separation and washing to recover a value added product for marketing
- Skid-mounted units for mobile operation available
- Flexible load with turn-down of up to 50 %