





AlfaFlash

Next Generation ZLD Technology

EnviroTech 2019

Calgary, Alberta



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Global Technology Waste Evaporation and ZLD

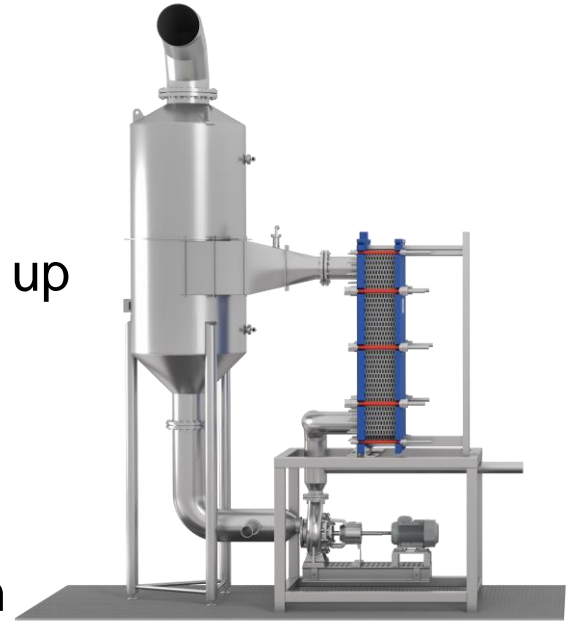
Why Minimize (Waste = Cost + Risk)

- **Reduce Waste Transportation**
 - Reduces cost (trucking \approx \$3 / m³ / hr)
 - Reduces risk of release (environmental liability)
 - Reduces risk of transportation accidents (safety)
- **Reduce Waste Disposal**
 - Reduces cost (disposal facility gate fee \approx \$15 / m³)
 - Reduces risk of production limits due to disposal availability
- **Reduce Water Intake Requirements**
 - Reduces cost (sourcing and transportation)
 - Reduces risk of production limits due to water availability
- **Convert Waste to Value Products or Energy (emerging trend)**



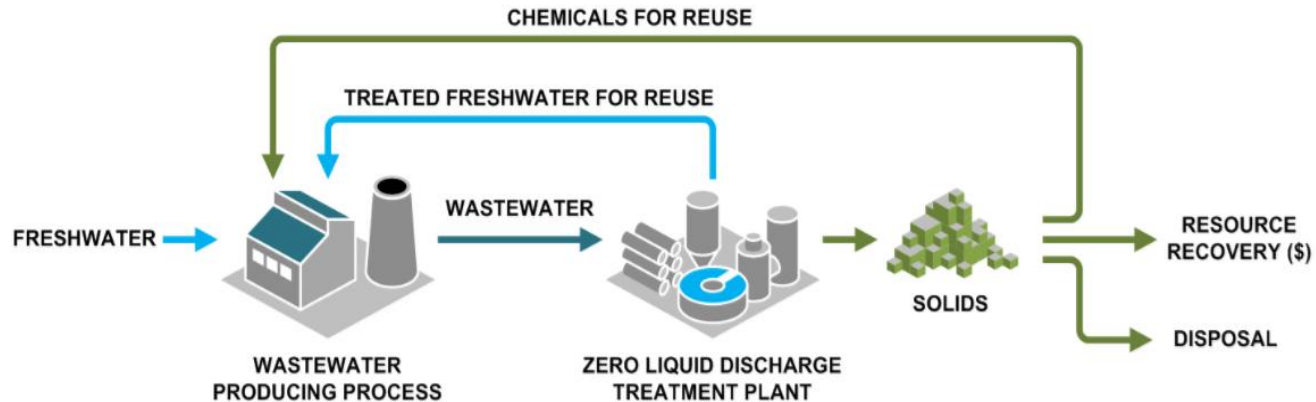
What is AlfaFlash

- Forced circulation evaporator with a specialized plate and frame heat exchanger
- For NaCl based brines can operate with up to 50wt% TS (Total Solids):
 - 30wt% TDS (Dissolved Solids)
 - 20wt% TSS (Suspended Solids)
- Coupled with dewatering equipment can achieve up to 85wt% TS discharge.



What is ZLD?

Reducing industrial wastewater quantity and maximize recycling as much as **technically AND economically** practical.



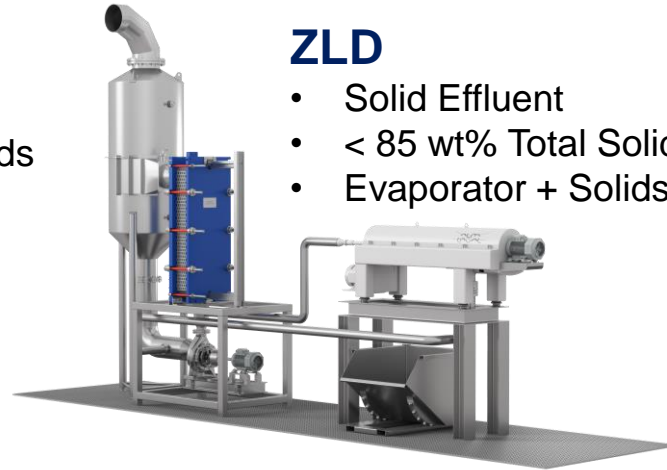
Source:
Wikipedia

Minimum vs Zero Liquid Discharge



MLD

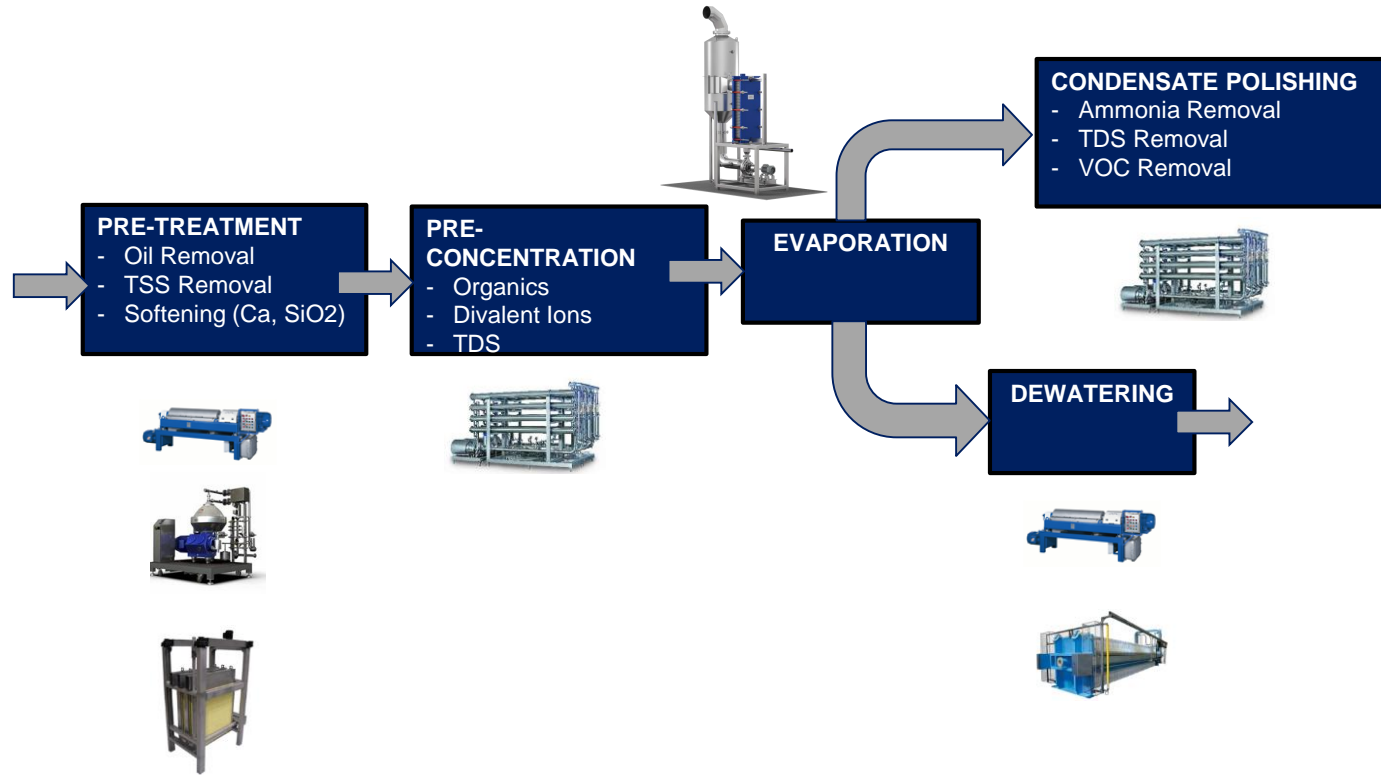
- Liquid Effluent
- < 40 wt% Total Solids
- Evaporator Only



ZLD

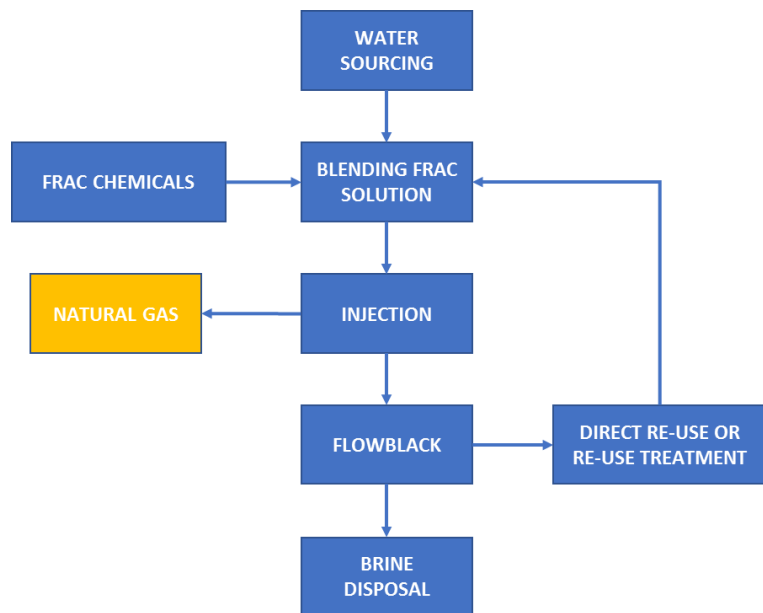
- Solid Effluent
- < 85 wt% Total Solids
- Evaporator + Solids Dewatering

ZLD Toolbelt

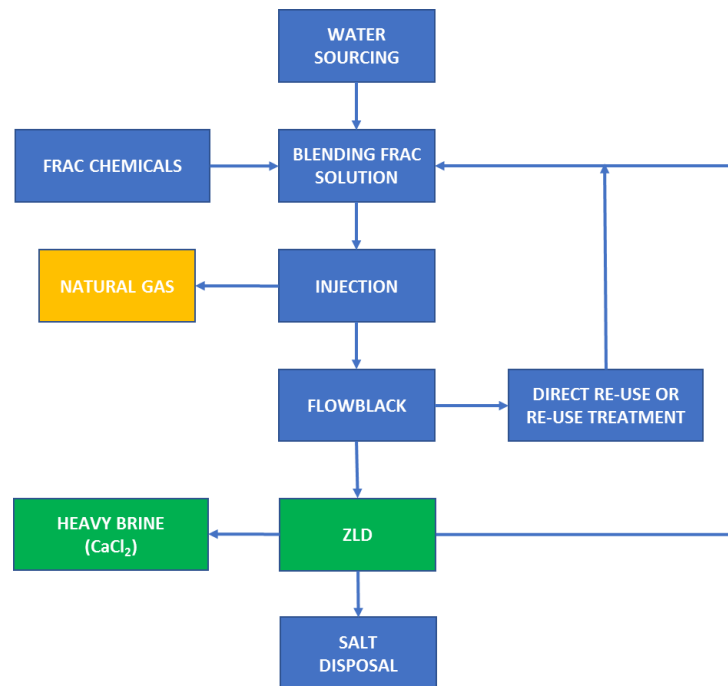


Shale Gas

CONVENTIONAL

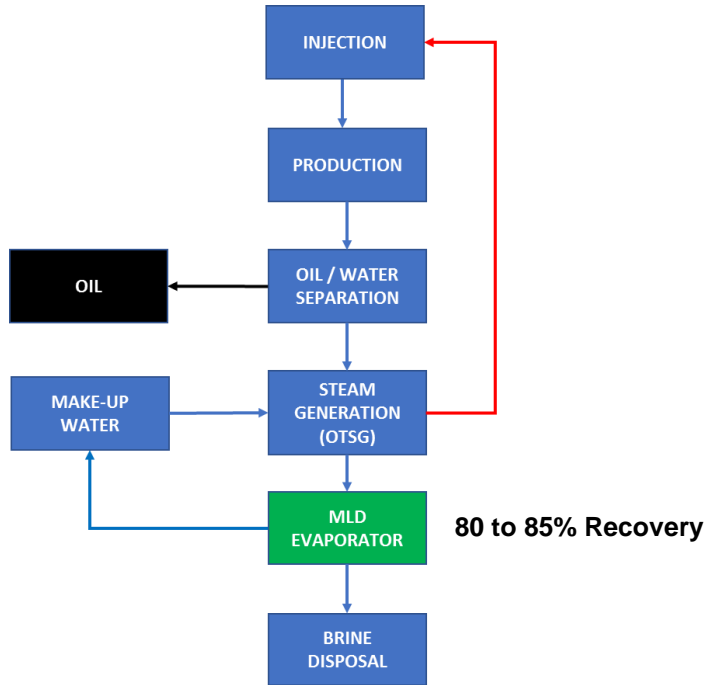


ZLD

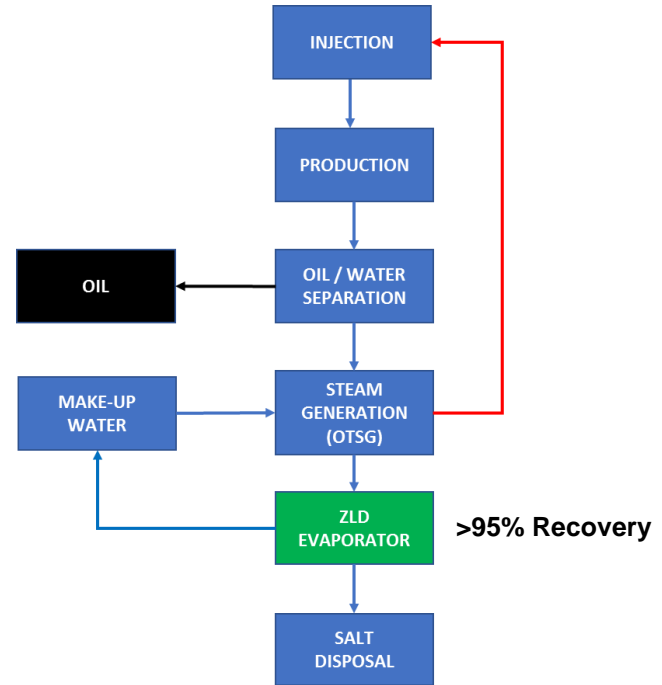


SAGD (OTSG)

CONVENTIONAL

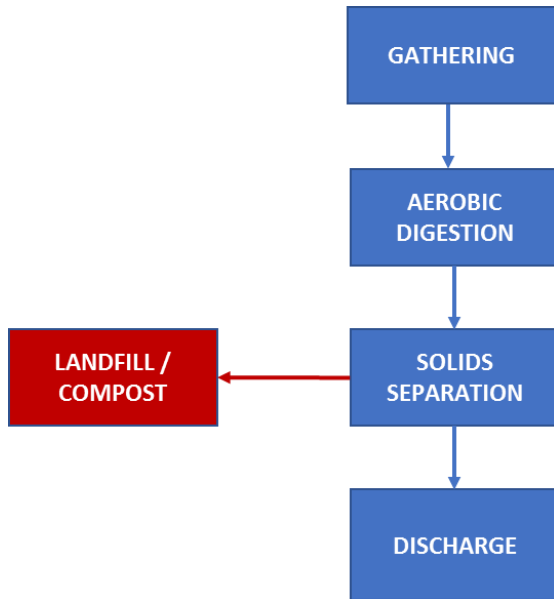


ZLD

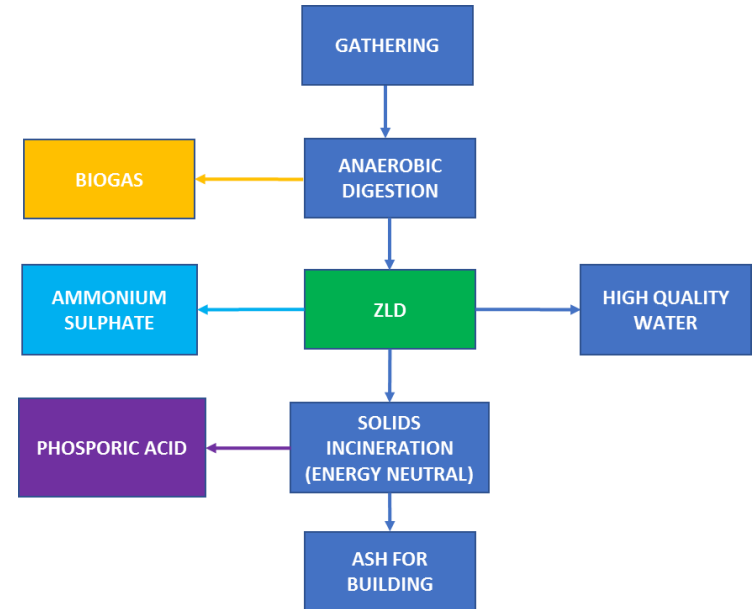


Municipal Wastewater Treatment

CONVENTIONAL



ZLD



ZLD Evaporator Cost Feasibility

