aquafortus™-NTR

Maximum Non-Thermal Recovery

Non-Thermal Zero Liquid Discharge for **Produced Water**

The System

PetroH2O Recovery has combined the world's most advanced zero liquid discharge technology with the "Best in Class" ultra-filtration ceramic membrane and a powerful electro-oxidation technology. The combination of these three proprietary and patented technologies creates an unparalleled system designed to economically treat "high TDS" (greater than 50,000 mg/L) produced water to surface release and reuse quality requirements.

For desalinating levels below 50k mg/L we utilize the best in class RO and EDR. For ZLD in TDS levels below 50k mg/L we can add Aquafortus to the end of any desalination process to treat the brine concentrate. This can eliminate the need for an injection disposal well.

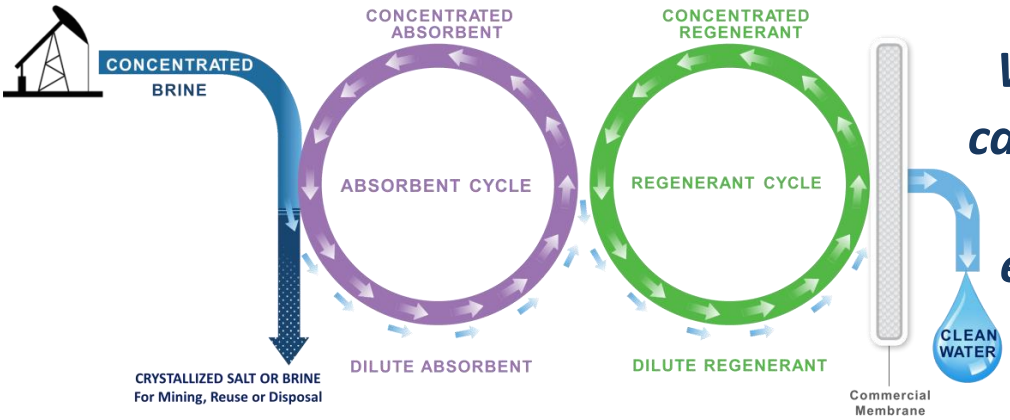
The Non-Thermal Crystallizer

Aquafortus™-NTR zero liquid discharge technology is a novel liquid-to-liquid crystallizer that promotes the formation of salt crystals via a proprietary direct contact crystallization process using Aquafortus' patented materials, the AQF Absorbent and the AQF Regenerant.

Aquafortus™-NTR works by a two-stage solvent exchange process with the AQF Absorbent acting as a transfer medium for water. When a pretreated produced water (brine) contacts the AQF Absorbent, the water is absorbed and the remaining salts instantly crystallize. The AQF Regenerant removes water from the AQF Absorbent allowing it to be continually reused in the system.

Aquafortus™-NTR features:

- ✓ ***Produces clean water. Recovers 95% of the water.***
- ✓ ***Reduces wastewater to dry salt.***
- ✓ ***Uses 80% less energy than thermal evaporators.***
- ✓ ***Uses 96% less energy than thermal crystallizers.***
- ✓ ***Flexible as a "stand-alone" solution for "high TDS" produced water or for treating brine concentrate from other "low TDS" desal technologies.***
- ✓ ***Flexible as a crystallizer or producing a reusable brine.***



With Aquafortus™ you can achieve surface release, beneficiary reuse and eliminate injection wells.

Contact Information:
2600 E. Southlake Blvd.. Suite 120-387
Southlake, Texas 76092
(214) 906-0330

Schedule a Pilot Today

www.petroh2o.com

PETRO H_2O RECOVERY

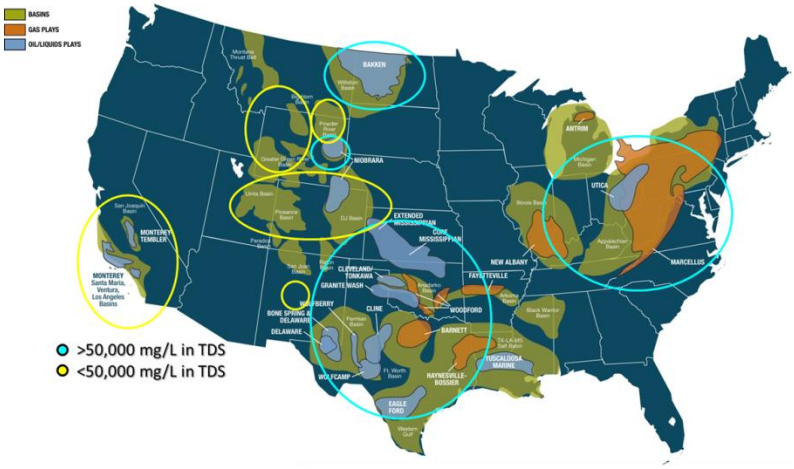
Process Flow, Pretreatment & Why

Oil & Gas Applications:

- ✓ Zero liquid discharge
- ✓ Product concentration
- ✓ Volume reduction
- ✓ Resource recovery

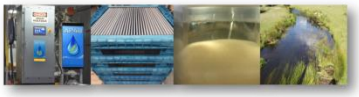
Why Aquafortus™-NTR for Oil & Gas:

- ✓ ~75% of Produced Water is 50,000 PLUS mg/L in TDS, AQF can address 100%
- ✓ AQF-NTR "Efficiency Sweet Spot"- 70,000-300,000 mg/L



Pretreatment

Pretreatment, pretreatment, pretreatment. It is crucial to any produced water treatment process to maximize economics and produce a superior filtrate-brine.



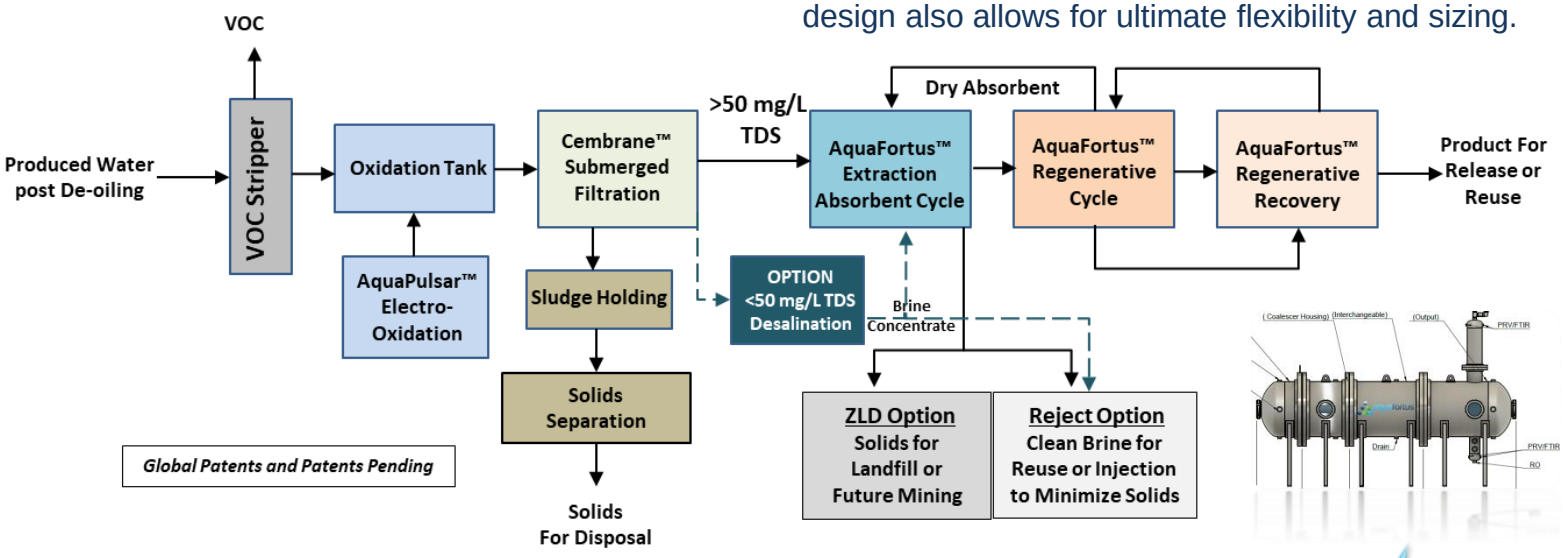
OXIDATION

Our hyper oxidation technology, AquaPulsar™ produces mixed-oxidants directly in the effluent for disinfection. The technology is based on an electro-oxidation process in which oxidation reactions occur by applying an electric current between proprietary non-sacrificial electrodes, generating multiple oxidants directly in the effluent for oxidation of organic and inorganic contaminants. Unlike electrocoagulation, it uses only electricity to create the chemistry inside the treatment reactor.

FILTRATION

The Cembrane™ ceramic silicon carbide flat sheet membrane insures the quality of the filtrate-brine fed to our Aquafortus™ extraction process. Cembrane™ is our "WORKHORSE". It is durable, non-corrosive, easy to maintain and operates with a maximum flowrate and minimal power. This is crucial in the oil and gas industry. The modular design also allows for ultimate flexibility and sizing.

Process Flow



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