Technology Pitch

September 13, 2018

PHR RODI LLC (PHR), dba PetroH2O Recovery

www.petroh2o.com
About Us

- Midstream Treatment O&G
- Surface Discharge
- Beneficiary Re-Use
- FracReady™

JV Partners

- Systems Integration
- Project Testing, Construction, Commissioning
- Technology R&D

- Largest Privately Owned SWD Well operator in U.S.
- Well Testing & Transport

- Capital Funding
- Business Development
- Project Management
- M&A

Proprietary Tech Partners

- Electro-Oxidation
- Ultrafiltration
- Desalination/Extraction
  High TDS <50K

JV Partners

- RODI systems
- Largest Privately Owned SWD Well operator in U.S.
- Well Testing & Transport

Proprietary Tech Partners

- Electro-Oxidation
  AquaPulsar™

- Ultrafiltration
  cembrane

- Desalination/Extraction
  NEXED EDR
  Low TDS <15k
  aquafortus™-NTR
  Maximum Non-Thermal Recovery
Non-Thermal ZLD

NOT Forward Osmosis

U.S. Patent Pending
Why Aquafortus in O&G?

- ~60 million bbls/d-2.5BGD Produced Water
- ~80% of Produced Water is 50,000 PLUS mg/L in TDS
- AQF-NTR “Efficiency Sweet Spot”- 70,000-170,000 mg/L
- 300,000 bbls/d of project pipeline
One Basin Example

10 bbls of Water for Every bbl Oil

TDS
70,000-177,000 mg/L

Ref: 2017 PWWG Study Oklahoma
Another Basin Example
3 mmbbl/d in oil, but 16 mmbbl/d in water

Permian Oil and Water Production

TDS
90,000-220,000 mg/L

Source: DI Desktop, Bernstein analysis
About Aquafortus

One minute video-See link

https://petroh2o.com/news
# Tech Comparison

<table>
<thead>
<tr>
<th>HIGH CONCENTRATION PLATFORMS</th>
<th>Evaporator</th>
<th>Crystallizer</th>
<th>Competing FO</th>
<th>Aquafortus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy-use (kwhr/m³)</td>
<td>45</td>
<td>90</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>Concentration (mg/l TDS)</td>
<td>250k</td>
<td>∞ (Salt crystals)</td>
<td>300k</td>
<td>∞ (Salt crystals)</td>
</tr>
<tr>
<td>Process Complexity</td>
<td>Simple</td>
<td>Simple</td>
<td>Complex</td>
<td>Simple</td>
</tr>
<tr>
<td>OPEX p.a. (per MGD capacity)</td>
<td>$3.08M</td>
<td>$4.45M</td>
<td>No data - nascent company</td>
<td>$2.0M</td>
</tr>
<tr>
<td>CAPEX (per MGD capacity)</td>
<td>$9.2M</td>
<td>$19.6M</td>
<td>No data - nascent company</td>
<td>$7.5M</td>
</tr>
</tbody>
</table>

# Current Status

## TRL (Technology Readiness Level)

<table>
<thead>
<tr>
<th>TRL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>The idea. Basic principles have been observed. Research begins into potential applications.</td>
</tr>
<tr>
<td>Two</td>
<td>Invention begins. Technology concept is formulated. Speculative, practical applications suggested.</td>
</tr>
<tr>
<td>Three</td>
<td>Active R&amp;D is initiated. Analytical studies and experiments validate critical functions and/or components.</td>
</tr>
<tr>
<td>Four</td>
<td>Components validated in laboratory. Basic technological components are integrated to establish that they work together.</td>
</tr>
<tr>
<td>Five</td>
<td>Components validated in relevant environment. Basic technological components are integrated and tested in a simulated environment.</td>
</tr>
<tr>
<td>Six</td>
<td>Advanced prototype tested in relevant environment. More advanced system model or prototype demonstrated in a simulated environment.</td>
</tr>
<tr>
<td>Seven</td>
<td>Advanced prototype tested in operational environment. Advanced field-testing of the actual system prototype in an operational environment.</td>
</tr>
<tr>
<td>Eight</td>
<td>Completed technology proven through test and demonstration. Technology completed and qualified in its final form and under expected conditions.</td>
</tr>
<tr>
<td>Nine</td>
<td>Completed technology proven through successful commercial operations. Actual application of the technology in its final form and under normal conditions.</td>
</tr>
</tbody>
</table>