TECHNIQUE FOR REMOVAL OF ORGANICS & DISSOLVED SOLIDS FROM AQUEOUS MEDIAS VIA SUPERCRITICAL TREATMENT

OU ID: #12008

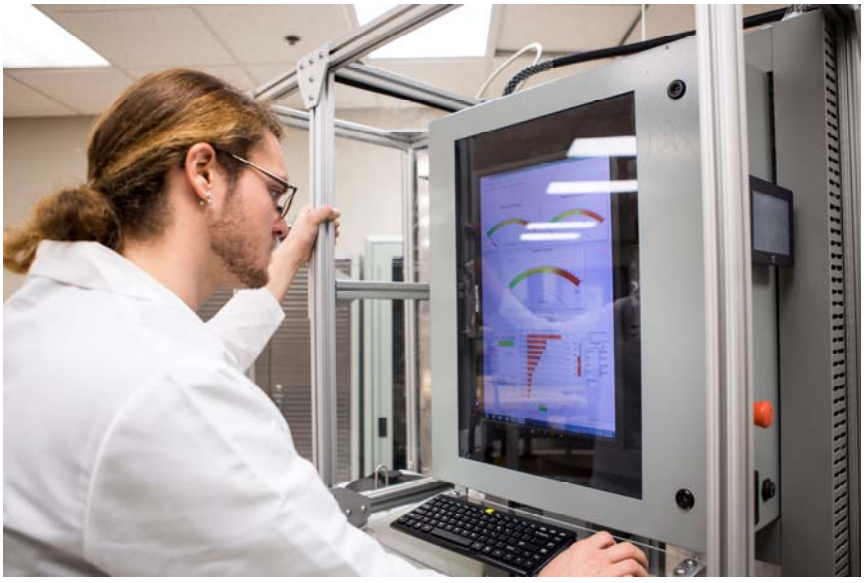
Overview

The oil & gas (O&G) industry annually generates approximately 22 billion barrels of produced water from its wells. Management of this waste stream costs the O&G industry **approximately $37 billion annually** as produced water chemistry limits direct reuse, making injection wells the primary management method. Increased O&G production growth from unconventional resources, along with limited injection well capacity and seismicity issues (in certain regions) will increase produced water management costs in the upcoming decade.

OHIO's produced water treatment technology utilizes a novel reactor design along with supercritical water properties providing a small process footprint with high throughput, allowing trailer mounting for on-site treatment. The process provides flexible treatment options ranging from brine concentration up to zero liquid discharge to meet end-user needs. In addition, upfront selective removal of naturally occurring radioactive material (NORM), barium, etc. are available to generate a high purity salt product with industrial reuse applications. OHIO has completed over 5,000 hrs of operation with prototype system demonstrating ability to treat field generated produced water streams.

Commercial Application

- Oil & gas industry
- Onshore and offshore operations
- Mine run-off water heavy metal extraction



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Benefits

- Converts produced water into reuse ready fluid for hydraulic fracturing or other industrial applications
- Eliminates need for costly waste transportation disposal services requiring deep injection wells
- Compact design allows for on-site treatment, keeping water within shale plays

Inventor

Jason Trembly joined Ohio University in 2011 after serving as team leader for syngas and CO2 conversion at RTI International's Energy Technology Unit. A graduate faculty member in the Departments of Chemical and Biomolecular Engineering and Mechanical Engineering, he currently directs the Russ College's Institute for Sustainable Energy and the Environment. Trembly's research focuses on process intensification to increase sustainability in the energy and environmental spaces. His research group utilizes the combination of process modeling with material/process development to effectively address key regional, state, and national needs. Specific areas of interest include syngas conversion, natural gas/NGLs conversion, wastewater treatment, nutrient recovery, high temperature electrochemical systems, and techno-economic studies. He has been PI for more than $12 million in sponsored research, primarily for the U.S. Department of Energy (DOE) and has a citation index of more than 900. He completed his graduate studies as an ORISE Fellow at the U.S. DOE's National Energy Technology Lab in Morgantown, WV.

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