High-efficiency, Zero-Liquid Discharge, Multiple-Effect Adsorption Distillation

GREENBLU
NO COMPROMISE DESALINATION

Ethan Schartman, CTO/ Co-founder
Challenge: Mitigate Global Water Crisis

• Constrained by existing technology:
  • Accessibility
  • GHG emissions
  • Grid dependence
  • Environmental damage
VADER™: Vapor Adsorption Distillation + Energy Recycling
Patented: Adsorbent and VADER™ cycle

• Composite adsorbent
  • Metal-like thermal conductivity
  • Enables energy recycling
  • Inexpensive: <$1/kg

• VADER™ cycle
  • Bypass top brine temp scaling limit
  • Increase efficiency
  • Adsorbent, not water, is hottest component
VADER™: Vapor Adsorption Distillation + Energy Recycling

- 3x thermal efficiency than current MSF/MED distillation tech
- Uses 35x less electricity than RO
- Thermal drive: solar, waste heat, etc
- Competitive with RO, 20x less expensive than MVR for ZLD
SETO Activities: Advancing Readiness Levels

Key Technical Activities

• Optimize and test adsorbent
• 10% scale prototype
• Design for crystallizer stage
• Design for manufacturing prototype

Key Commercialization Activities

• Cost target demonstration
• Manufacturability
• Stakeholder buy-in
Impacts

• Distiller:
  • first ever multiple-effect adsorption distillation engine
  • Feed-water agnostic
  • Grid independent – disaster relief, military

• Crystallizer - ZLD
  • Brine disposal – RO/inland
  • Industrial

• Mineral recovery
  • MgCl
  • NaCl_2
  • Other high value/critical elements
Team: GreenBlu’s management

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