

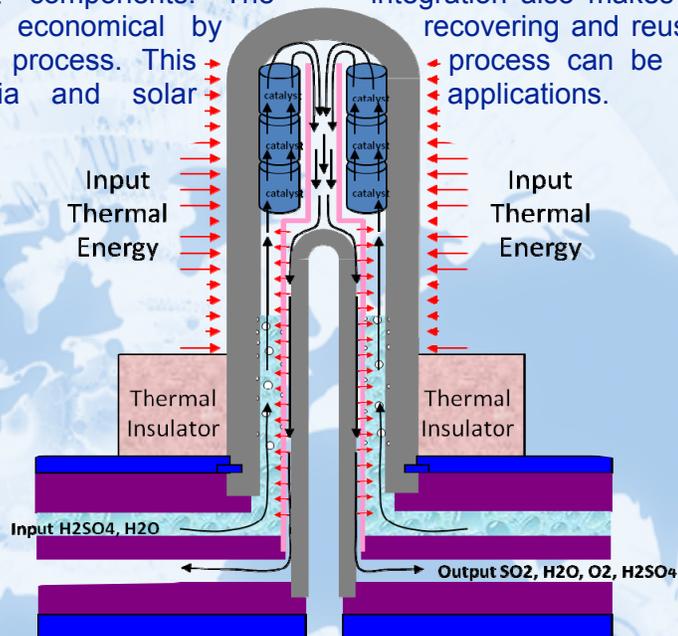


Integrated Boiler, Superheater & Decomposer Bayonet for SO₂ Production

Summary

With the growing pressure placed on energy efficiency and reliance on fossil fuels, alternative sources of energy are increasingly important. The primary function can be used for the production of hydrogen but a similar process can be applied to create ammonia, propane, or thermal energy storage.

Our technology integrates three main components in the production process by integrating the boiler, superheater, and decomposition functions of sulfuric acid (H₂SO₄) to create sulfur dioxide (SO₂) into a single unit. Additionally, our design solves the problem of corrosion due to the high temperatures and concentrated sulfuric acid with the combining the three processes into a single operation and using corrosion resistant components. The integration also makes the process highly efficient & economical by recovering and reusing the acid in the closed-loop process. This process can be further used for storage media and solar applications.



Technology Readiness Level:

Sandia estimates the TRL of this technology at approximately a 4-6 due to the options in scalability and applications. The key elements of this technology have been demonstrated with realistic supporting elements that can be tested in a simulated and operational environment. Further development with other applications and related processes will require additional research. Proof of concept has been demonstrated.

Licensing & Partnering Status:

Various license and partnering options are available. Please contact the Intellectual Property department to discuss.

BENEFITS

- Ideal for high temperature, corrosive environments
- Avoids corrosion issues found in other processes
- Integrates three functions of SO₂ production for greater decomposition efficiency
- Closed loop cycle
- Greater efficiency
- All seals & connections remain at low temperatures
- Scalable design

COMMERCIAL MARKETS & APPLICATIONS

- Hydrogen production
- Renewable energy
- Energy storage
- Agricultural
- Automotive/Transportation
- Alternative energy production

US PATENT ISSUED:

- 7,645,437

SD#s:

- 10208
- 10737

INTELLECTUAL PROPERTY & LICENSING CONTACT

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