EFFICIENT HYDROGEN SULFUR CYCLE PRECURSOR FOR H_2 PRODUCTION

TECHNOLOGY READINESS LEVEL: 5

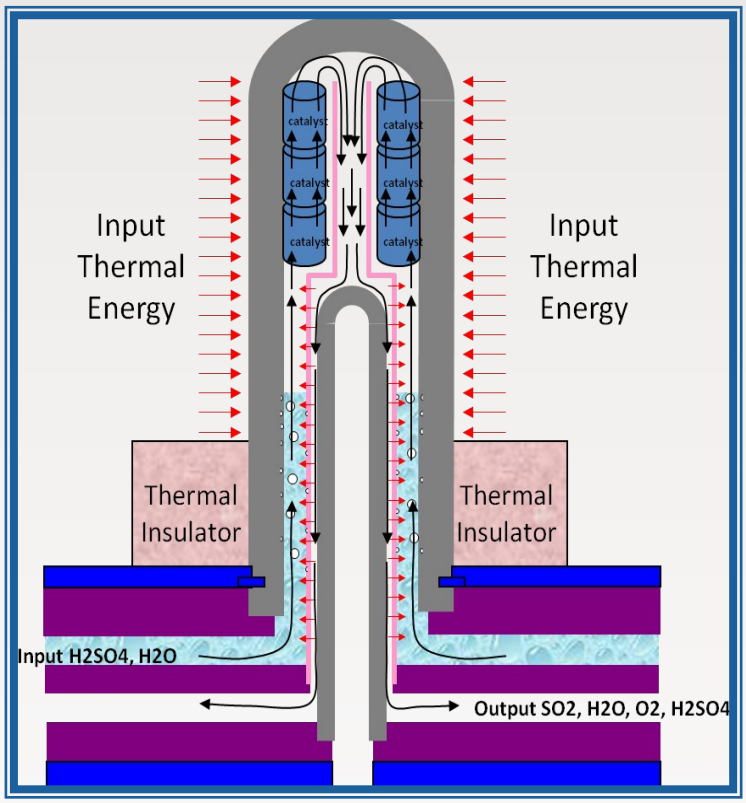
US PATENT # 7,645,437

KEY ELEMENTS HAVE BEEN DEMONSTRATED IN RELEVANT ENVIRONMENTS.

TECHNOLOGY 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 (H_2SO4) to create sulfur dioxide (SO_2) 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.



POTENTIAL APPLICATIONS

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

TECHNOLOGICAL BENEFITS

- Ideal for high temperature, corrosive environments
- Avoids corrosion issues found in other processes
- Integrates three functions of SO_2 production for greater decomposition efficiency
- Scalable design

TECHNOLOGY INQUIRY?

For more information or licensing opportunities contact us at

ip@sandia.gov

Refer to SD # 10208, # 10737

or visit

https://ip.sandia.gov

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration.
SAND # 2010-4663P