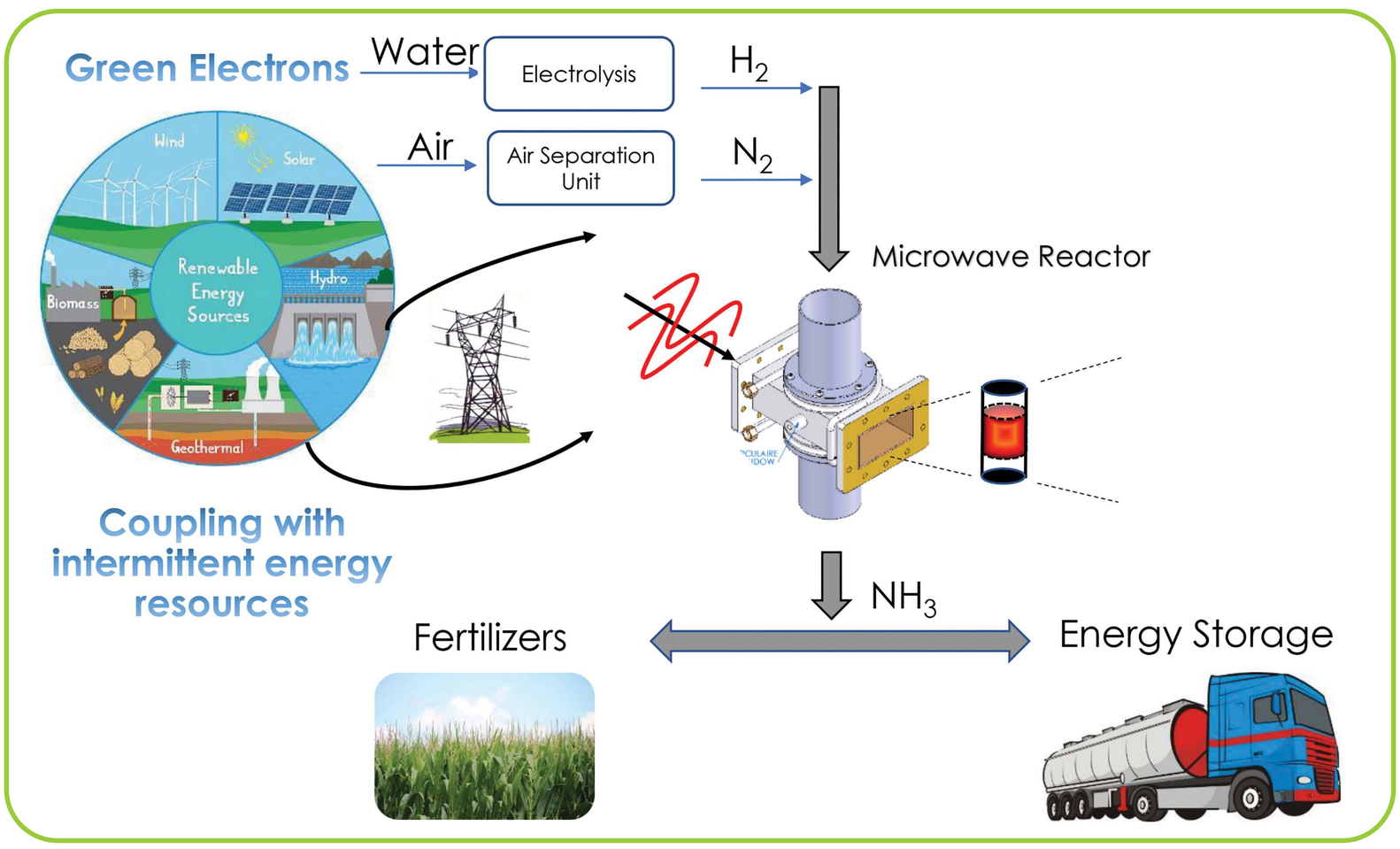
NETL Partnership Achieves Ammonia Production at Near-Ambient Pressures

NETL partnership produces ammonia at temperatures as low as 260 °C and near-ambient pressures to enable distributed point-of-use green ammonia for fertilizer or energy storage.



NETL ammonia microwave process enabling point-of-use manufacturing.

Combining cutting-edge microwave reaction science research at NETL with specialized catalyst development from West Virginia University and reactor manufacturing experience from Malachite Technologies created the award-winning Microwave Ammonia Synthesis (MAS) process.

- Conventional reaction processes often rely on conduction, convection and radiation to heat catalyst vessels at high pressures to synthesize ammonia.
- The MAS process, however, uses microwaves to selectively heat the catalyst directly.
- The new technology is 11 times more energy efficient and capable of using intermittent renewable power.
- The process is also modular, with smaller-scale ammonia plants that allow for greater flexibility, resulting in a 50% cut in costs for farmers by bringing production closer to sites.
- Ammonia can be used as a hydrogen carrier, which will increase in importance as the nation transitions to a clean hydrogen economy.

DOE PROGRAM

Renewable Energy to Fuels Through Utilization of Energy-Dense Liquids

NETL PARTNERS

Malachite Technologies

West Virginia University

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