

Ammonia-to-Power to decarbonize heavy industries

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CEO and Co-Founder at **Amogy**
(MIT PhD '15)

ABOUT US

Company Profile

Founded: Nov 2020

Employees: 180+

Funding to date: \$220M

US Locations: Brooklyn, NY (HQ) & Houston, TX

Global Locations: Singapore & Norway

Want more information? [Click here.](#)

INVESTORS



TEMASEK



ZEON



PROBLEM

\$Trillions Market, No Clean Solution



Marine Vessel



\$205B (2020)



Stationary Power



\$830B (2019)



Heavy-Duty Truck



\$360B (2020)



Airplane



\$240B (2020)

Unmanned Aerial Vehicle Market Global Forecast to 2025, Oct 2019, MarketsandMarkets
Heavy-Duty Trucks Market Forecast 2026, Jul 2020, Global Market Insights
Marine Vessel Market Size Forecast 2019-2026, May 2020, Fortune Business Insights
Global Commercial Aircraft Market Report 2020-2030, June 2020, Research And Markets
Fossil Fuel Electric Power Generation: Global Market Report 2020, February 2020, The Business Research Company

MARITIME ENERGY TRANSITION

Everyone is looking for a way to decarbonize...

HUMAN
POWERED



WIND

~1500

STEAM

~1920



DIESEL

Today



LNG



HYDROGEN



METHANOL



HYBRID



ELECTRICITY

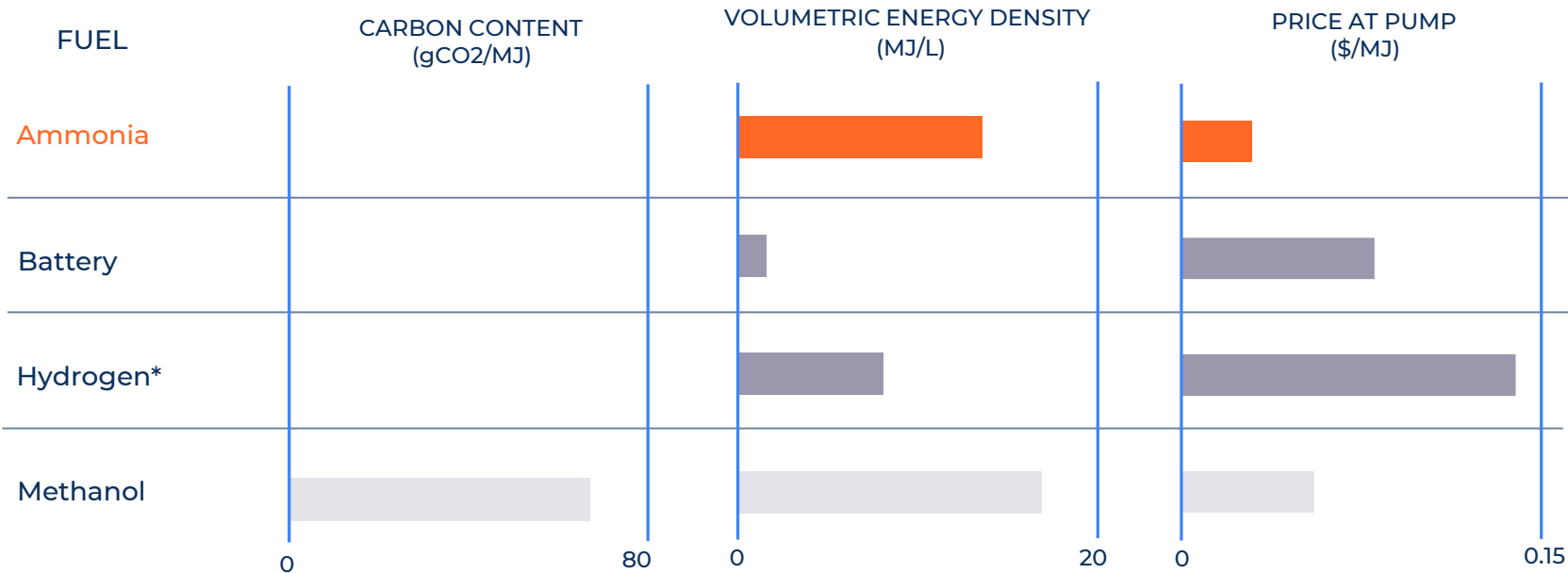
AMMONIA

The future



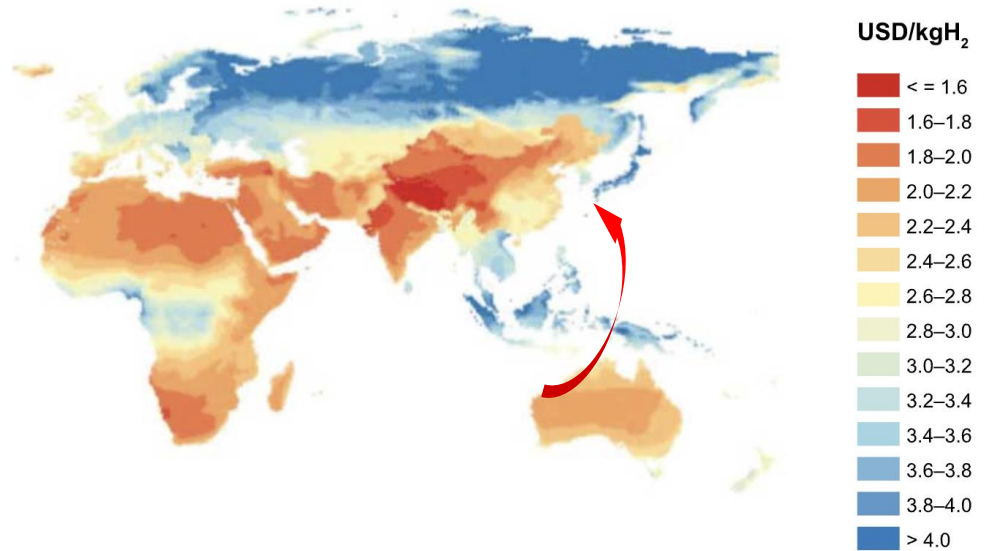
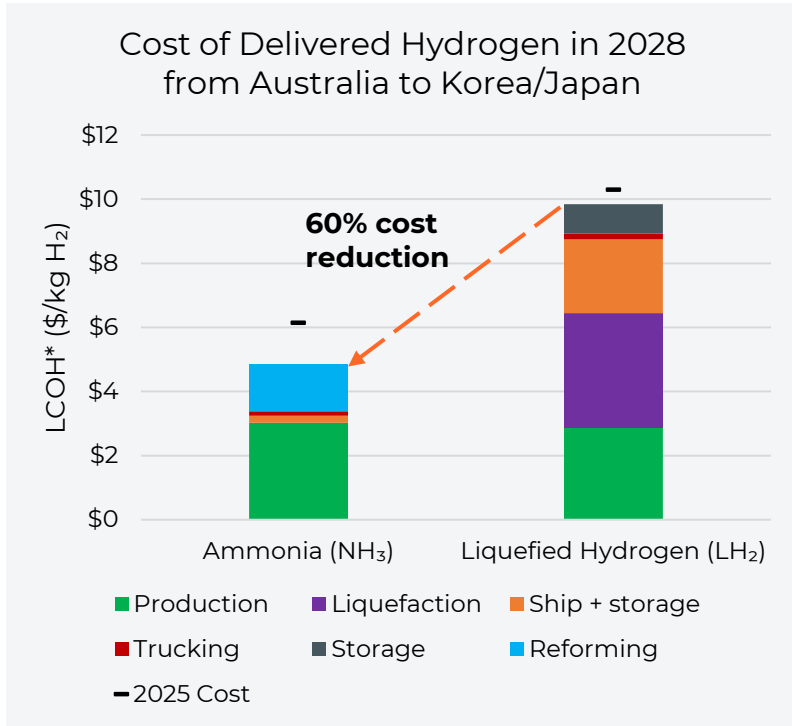
BUT ONE STANDS OUT...

Ammonia



ECONOMICS

Ammonia Enables a Global Hydrogen Economy



Ammonia enables ~60% cost reduction compared to LH₂

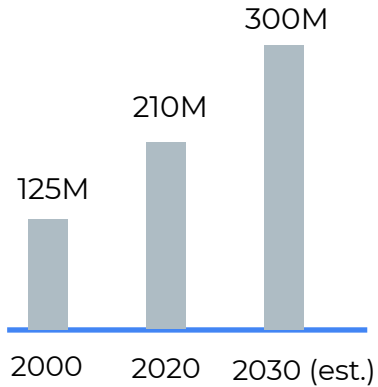
- High energy density- x7-8 battery & x3-4 H₂ gas
- Easy to store, deliver and use

AMMONIA

Ammonia Infrastructure

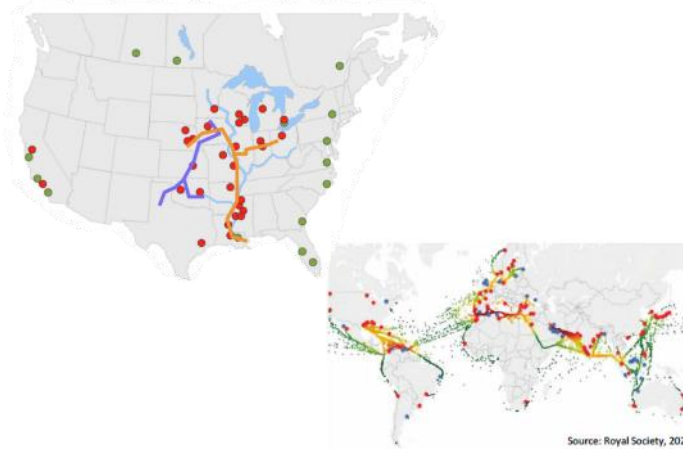
Scaled Production

Ammonia production, tons



Available Infrastructure

Ammonia pipeline in U.S. corn belt



~200 Ammonia ports worldwide

100+ yrs. scaled industrial use, however,
no **ammonia-to-power** technology available yet

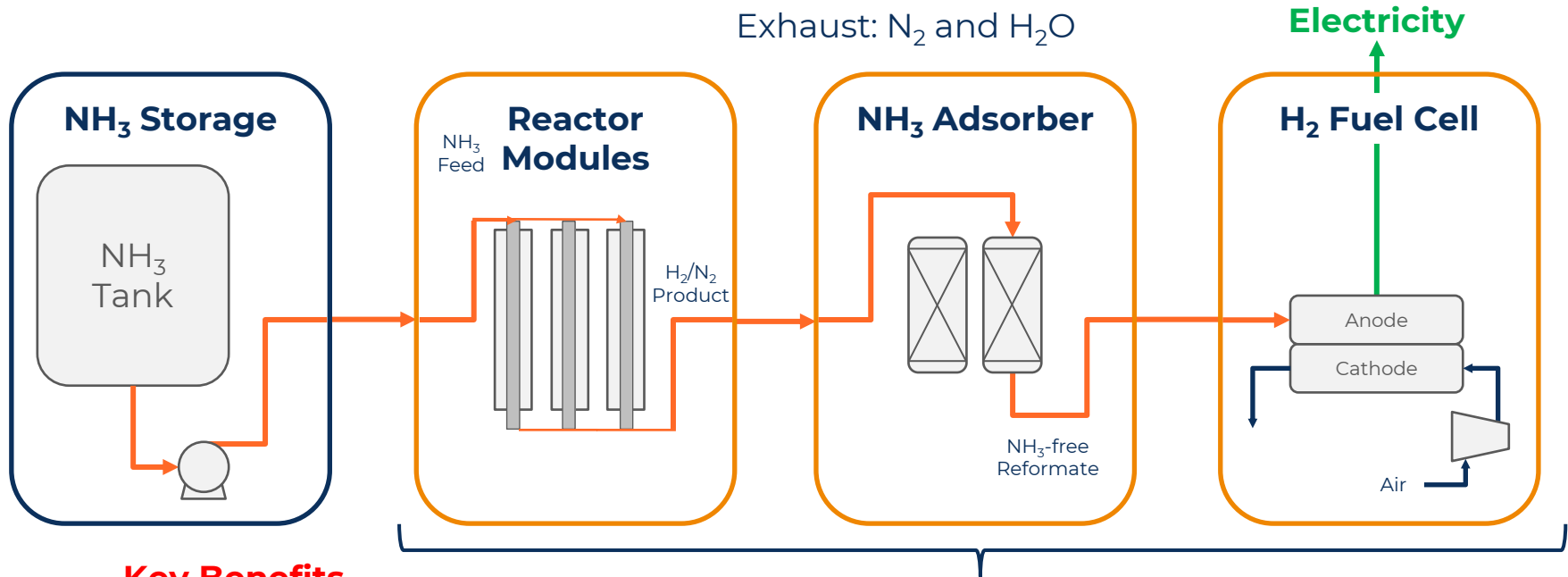


AMOGY Technology



TECHNOLOGY

Ammonia (NH₃) to Electrical Power



Key Benefits.

- **High technology maturity** relying on the mature H₂ FC technology
- **Designed for full decarbonization** – Significant benefit on emission reduction

Amogy Powerpack



DEMONSTRATIONS

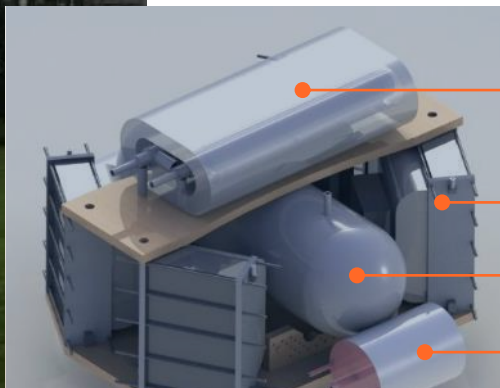
5 kW UAV - July 2021

First integrated zero-emission ammonia powerpack for mobility

AMOGY Powerpack Spec.

Power: 5 kW

Fuel-to-Power System Efficiency (NH₃ to Elec.): 38 %



Reactor

Fuel Cell

NH₃ Tank

BOP

5 kW Drone ([Link Here](#))

Gencell 5 kW
Conventional cracker





DEMONSTRATIONS

100 kW Tractor - May 2022

The first-ever zero-emission & ammonia-powered tractor

AMOGY Powerpack Spec.

Power: 100 kW

Fuel-to-Power System Efficiency (NH₃ to Elec.): 40 %



FC hybrid

NH₃ Tank

BOP

Reactor

100 kW Tractor ([Link Here](#))

DEMONSTRATIONS

300 kW Semi Truck - Jan 2023

The first-ever zero-emission & ammonia-powered class 8 truck

Amogy Powerpack Spec.

Power: 300 kW

Fuel-to-Power System Efficiency (NH₃ to Elec.): 40 %



Reactor

FC hybrid

NH₃ Tank

300 kW Semi Truck [\(Watch demo\)](#)

THE WORLD'S FIRST AMMONIA-POWERED VESSEL (UPCOMING 2023)



Power: 1 MW
Vessel dimension: 100 ft.
Stored energy: >5 MWh_e
Operating time: >12 hours

Vessel procurement & partnerships

Safety and regulatory assessment & procurement

Vessel construction & System installation

First NH₃-powered tugboat!

2022

Today

Q3 2023

Q4 2023

TECHNOLOGY DEMONSTRATIONS

AMOGY Scale Up



DRONE

Jul 2021

5kW

4

Powerpack System

Manual control

Reaction System

Lab scale catalyst
Autothermal

Test Environment

Hovering in test field



TRACTOR

May 2022

100 kW

5

Automated at steady state

Bench scale catalyst
Modular design

Test drive & implements
Corn field



CLASS 8 TRUCK

Jan 2023

300 kW

6

Full system automation

50kW module
Fast startup

Highway-speed test drive
Closed course track



TUGBOAT

2H 2023

1000 kW

8-9

Full system automation standards / code compliance

Durability certified catalyst/reactor
Continuous unreacted NH_3 removal

Public waterway sailing
(Hudson River & Port of NY)

Our Product



Product

Amogy System Module

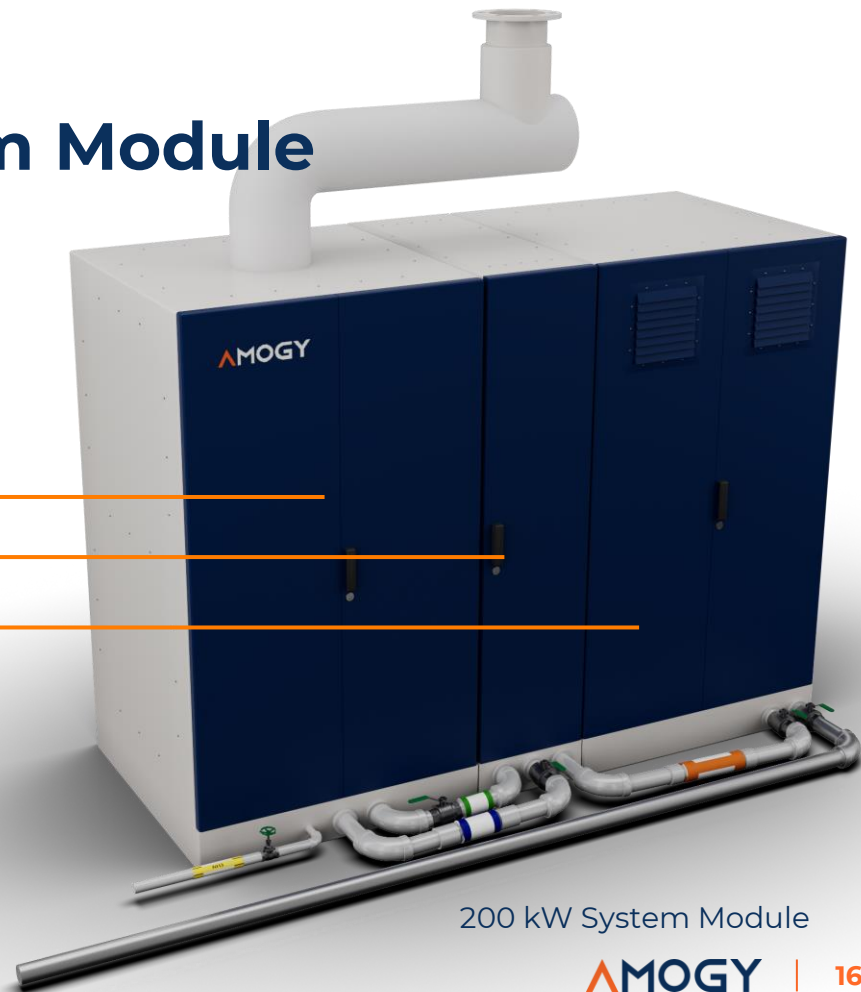
Our Powerpack converts ammonia into a clean energy source with zero emissions at the point of use.

REACTOR MODULE

ADSORBER MODULE

FUEL CELL MODULE

Download our [Technical Datasheet](#).



200 kW System Module

OUR PRODUCT

Amogy Powerpack: Containerized Solution



APPLICATIONS

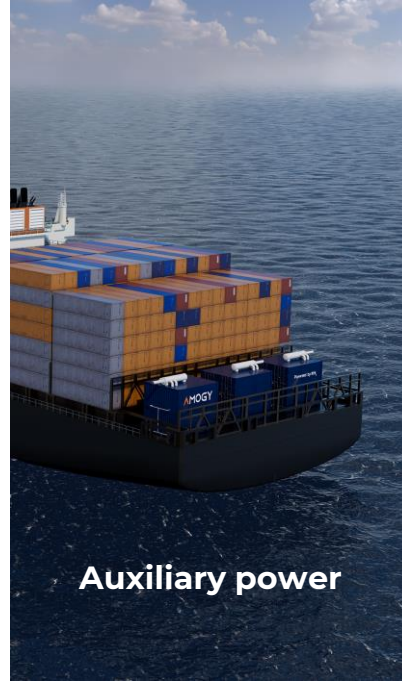
Use-cases. Shipping & Power Generation



Stationary power generation



Engine rooms



Auxiliary power



Shore power

MANUFACTURING

Manufacturing: Houston, TX



First Manufacturing Site to open in Jan. 2024

Pilot Production (~10 MW/yr.) in '24 & Full Production (~100 MW/yr.) in '25-'26

Amogy Mission

By 2040, adoption of AMOGY technology will eliminate ~5 Gt CO₂ globally, reducing 10% of total GHG emission



Contact Us

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