AMOGY

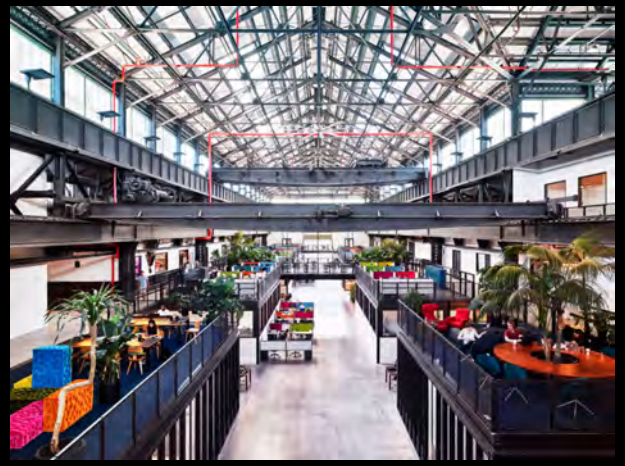
Ammonia – a renewable fuel for zero emission mobility

Seonghoon Woo CEO and Co-Founder

Ammonia Energy Conference, November 9th 2021

Company Intro.

_NEWLAB



BROOKLYN NAVY YARD

AMOGY

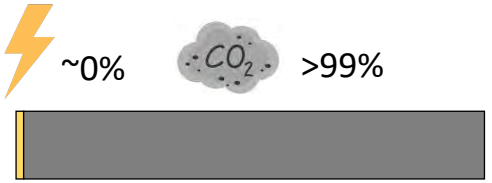
Founded. 2020
Employees. 22 (Nov. 2021)
Infra. 10k+ sqft. Lab
Headquarter. Brooklyn, NY
More info. https://www.amogy.co/

No Clean Solution For Commercial Mobility

AMOGY

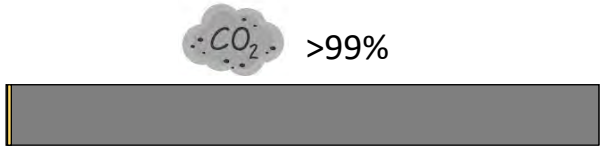
Unmanned Aerial Vehicle Market Global Forcast to 2025, Oct 2019, MarketsandMarkets
Heavy-Duty Trucks Market Forecast 2026, Jul 2020, Global Market Insights
Marine Vessel Market Size Forecast 2019-2026, May 2020, Fortune Business Insights
Global Commerical Aircraft Market Report 2020-2030, June 2020, Reseasrch And Markets

Marine Vessel

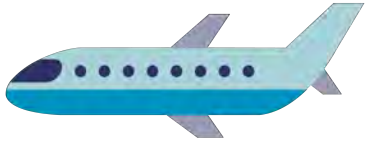


$205B (2020), Market Size

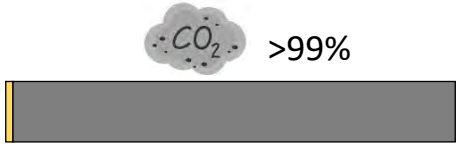
Heavy-Duty Truck



$360B (2020)



Airplane



$240B (2020)

Mission. By 2040,

AMOGY to eliminate ~5 Gt CO_2 globally, reducing > 10% of total GHG emission

Our Solution.
Liquid Ammonia Fuel Technology

NH_3

Green – No Carbon

- Clean byproducts: H_2O & N_2
- Abundant and cheap
- 100+ yrs. scaled industrial use

Liquid – High Energy Density

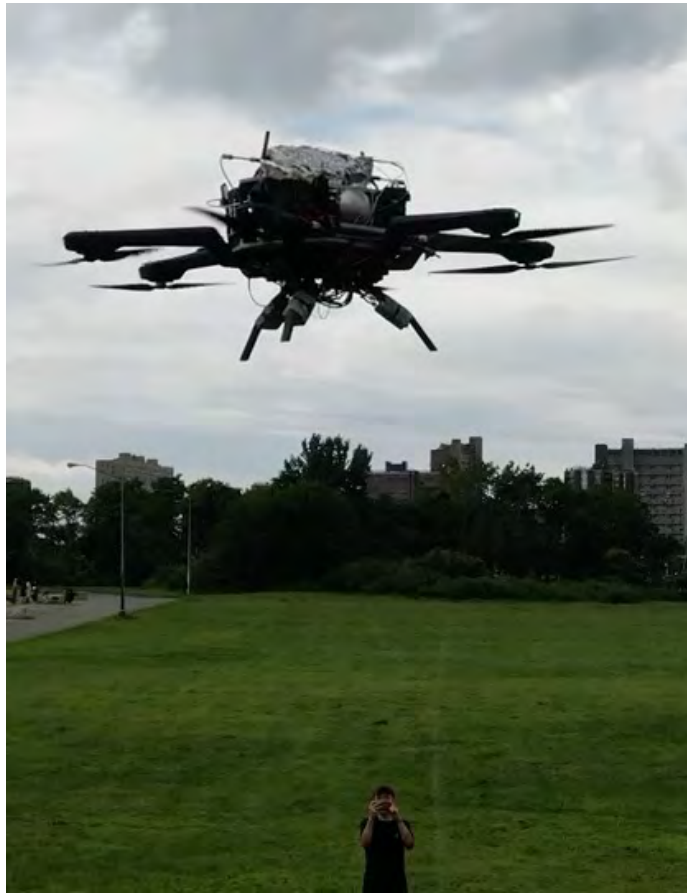
- Material – x20 battery & x10 H_2 gas
- Easy to store, deliver and use

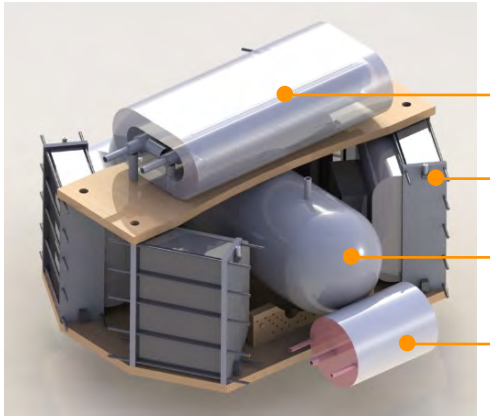
High Power – Scalable Solution

- **Miniaturized** NH_3 cracking system
- Efficient conversion to electricity

Ammonia UAV Demo. (Jul. 2021)

5kW UAV. Link





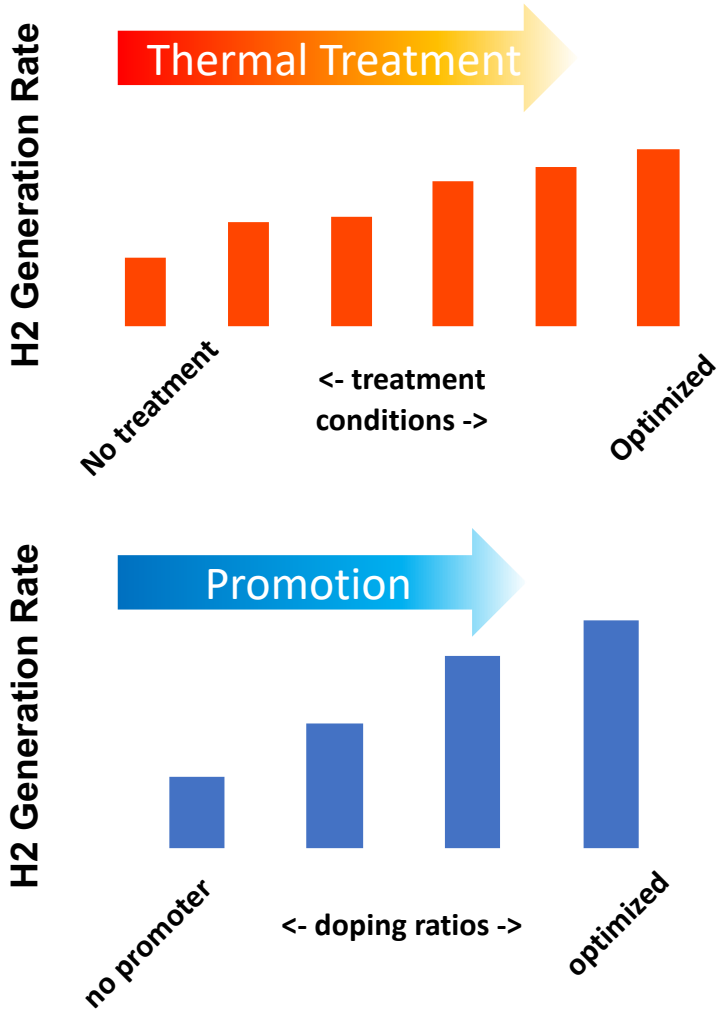
AMOGY Powerpack Spec.

- Power: 5 kW (at FC 100% rated power)
- System E-Density: > 650 Wh/kg & > 440 Wh/L
- Fuel-to-Power System Efficiency (NH_3 to Elec.): 36 – 38 %
- @Reactor | NH_3 reforming rate: 0.76 g/s (60 slpm, **65.6 kg/day**)
- @Reactor | H_2 production rate: 0.13 g/s (90 slpm, **11.6 kg/day**)

❑ Highly optimized and integrated powerpack for mobility

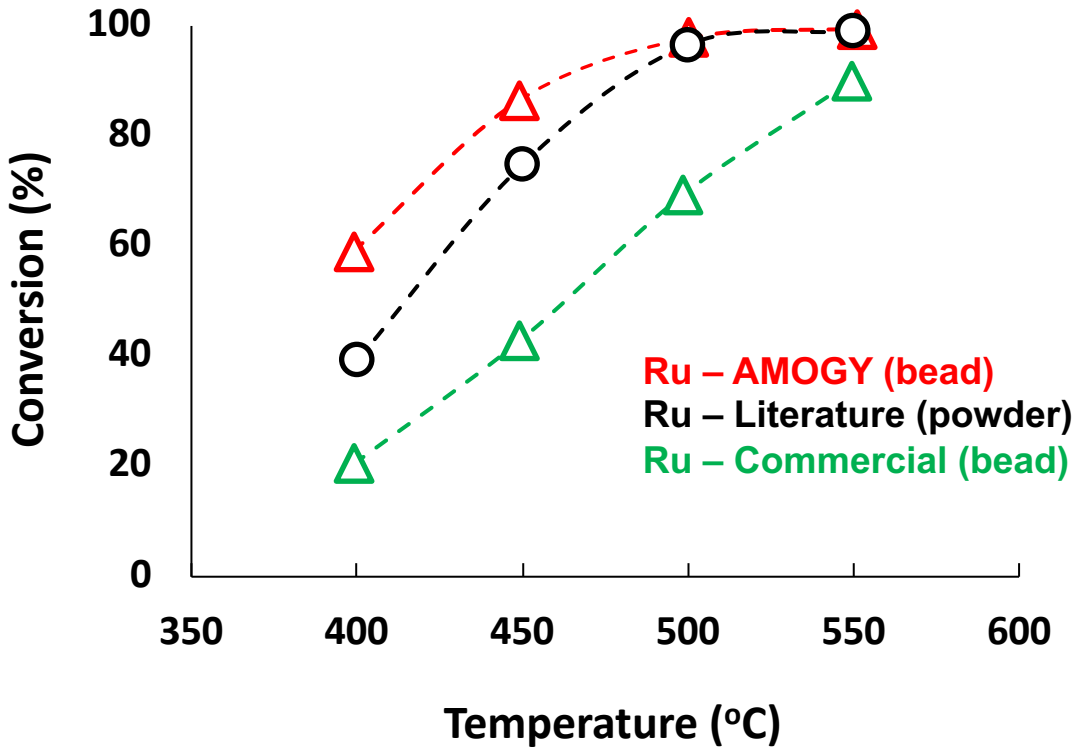
Catalyst Technology

20 patents filed/licensed (Nov. 2021)



Catalyst Design.

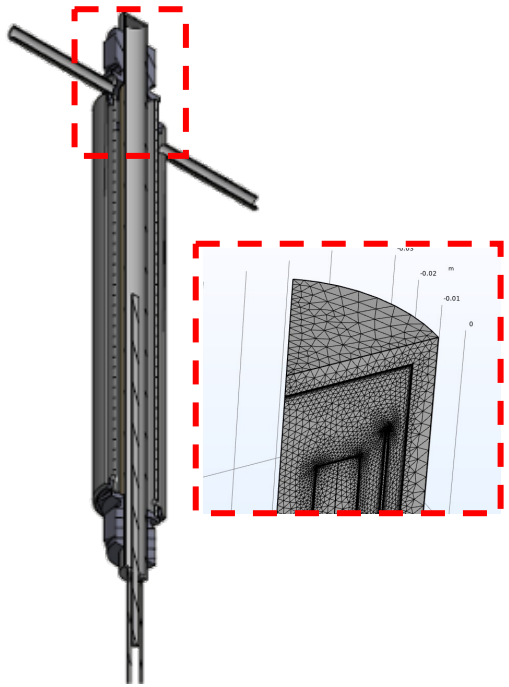
> 99 % NH_3 to H_2
at lowered temperature



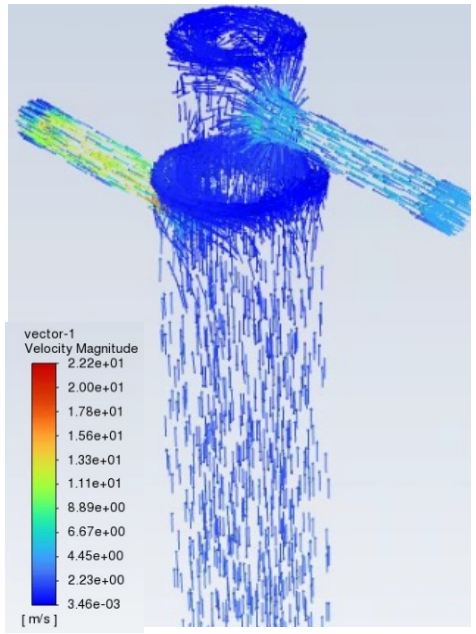
Reactor Development

20 patents filed/licensed (Nov. 2021)

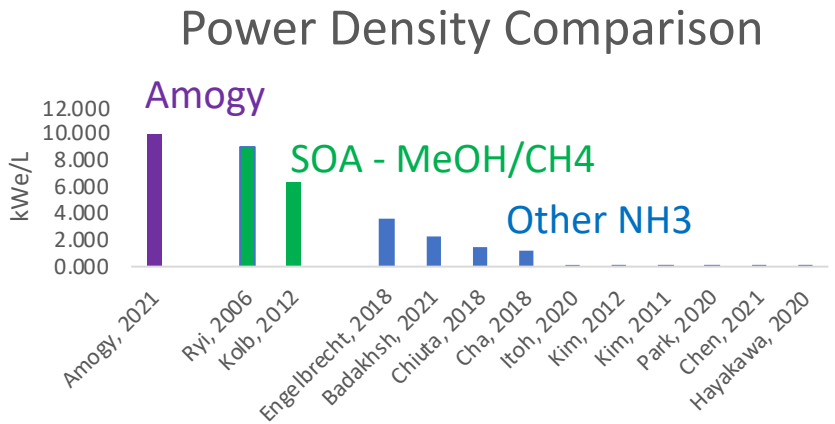
Simulation – Design – Prototyping
for engineering-driven reactor development



Reactor Design



Heat Transfer
Fluid Dynamics
Chemical Kinetics

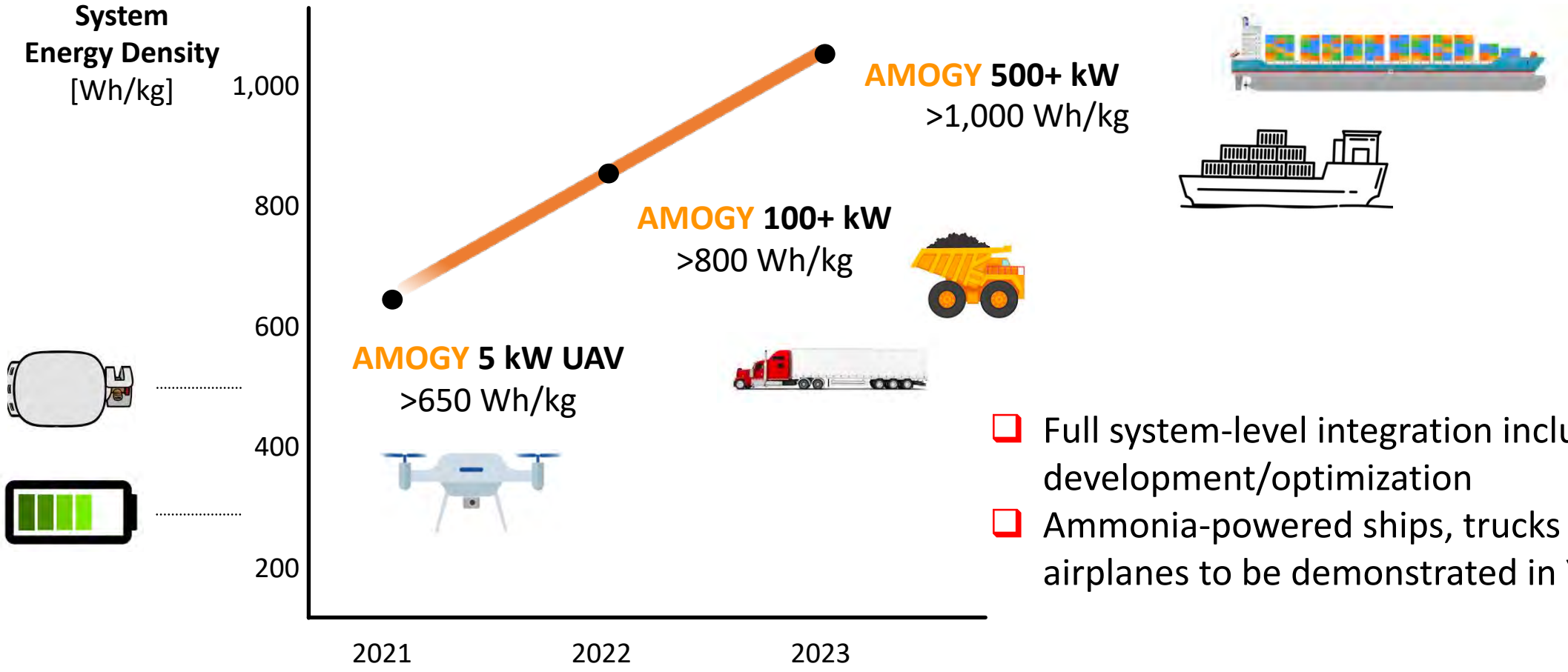


	AMOGY Reactor		
	03/2021	07/2021	**Today**
P-Density [W/cm^3]	3	10	**12**
H2 production rate [kg/day]	2.3	11.6	**44.1**
Power scale	1kW	5kW	**~20kW**

- 1kW to 20 kW scaling in the last 8 months
- Highest reactor P-density reported to date (>12 Wcm^{-3})

System Integration

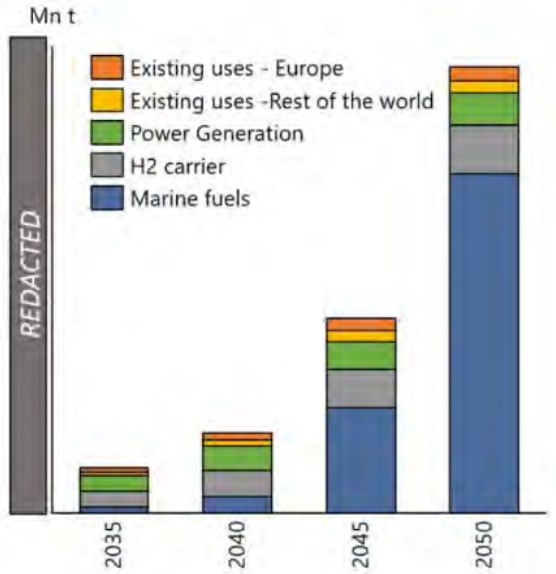
20 patents filed/licensed (Nov. 2021)

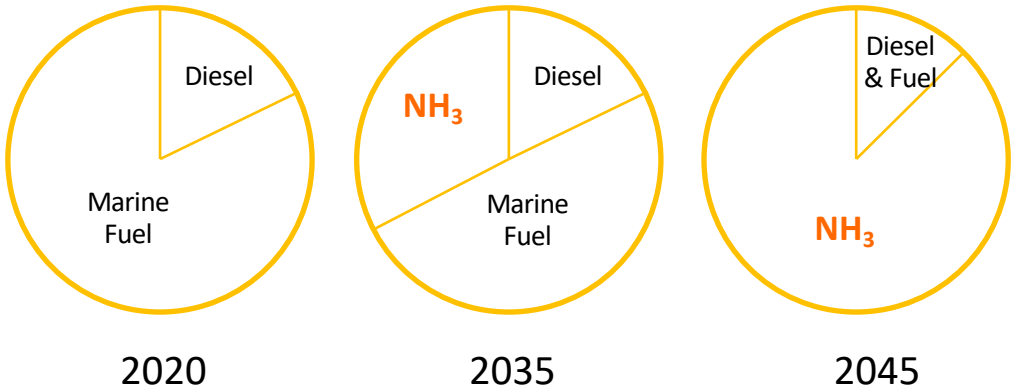


- Full system-level integration including BOP development/optimization
- Ammonia-powered ships, trucks and potentially airplanes to be demonstrated in Y2022 –2023

What's Next? – AMOGY for shipping

Ammonia demand scenario →





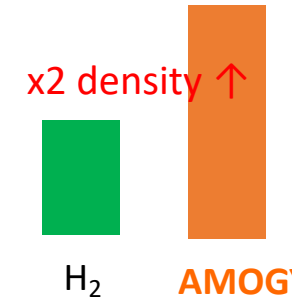
(source: Argus Green Ammonia Strategy Report, UMAS GloTraM (2019), TECHNAVIO Report (2017))

AMOGY-powered 500 kW ship

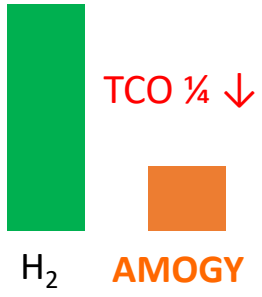
Partnership in SEARCH ☺

Contact – shwoo@amogy.co

E-density (Wh/L)



TCO



What's Next? – AMOGY for trucking

Partnership in SEARCH ☺

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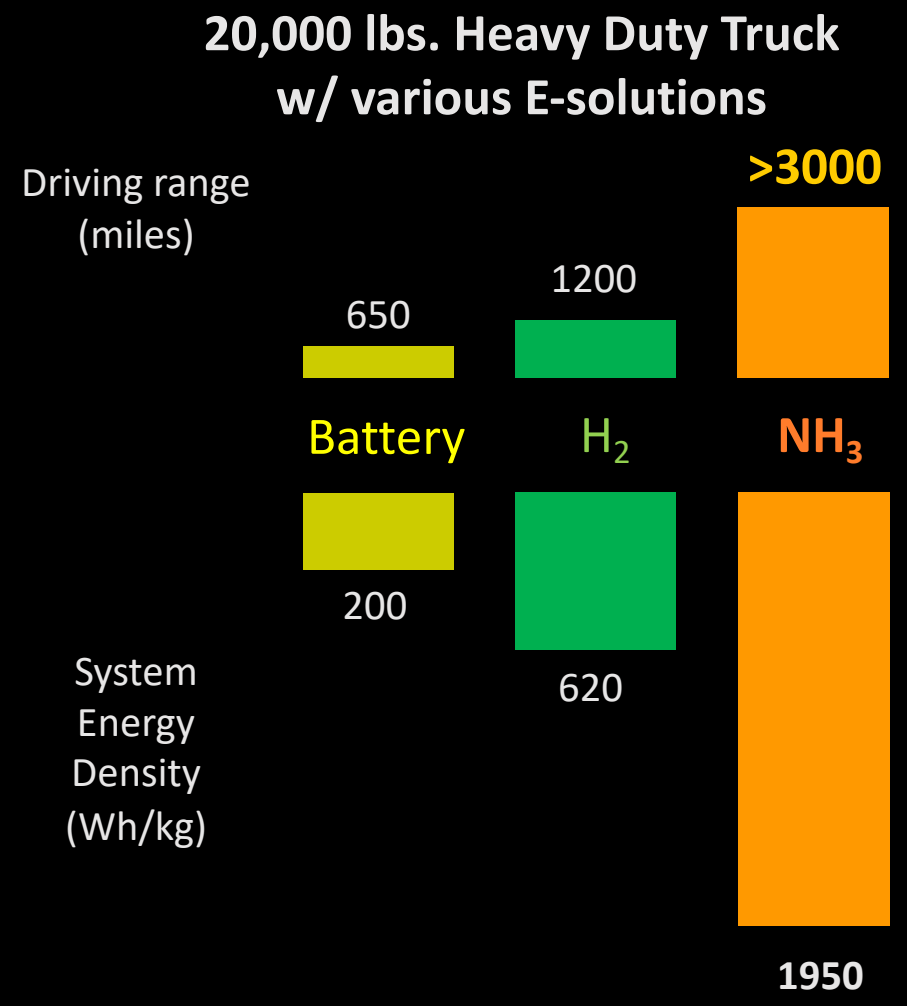
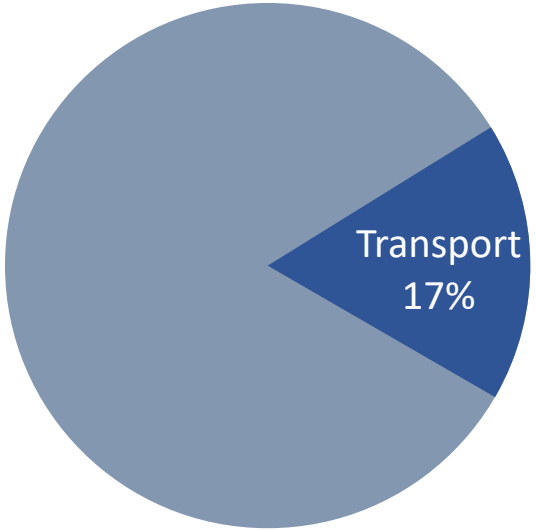
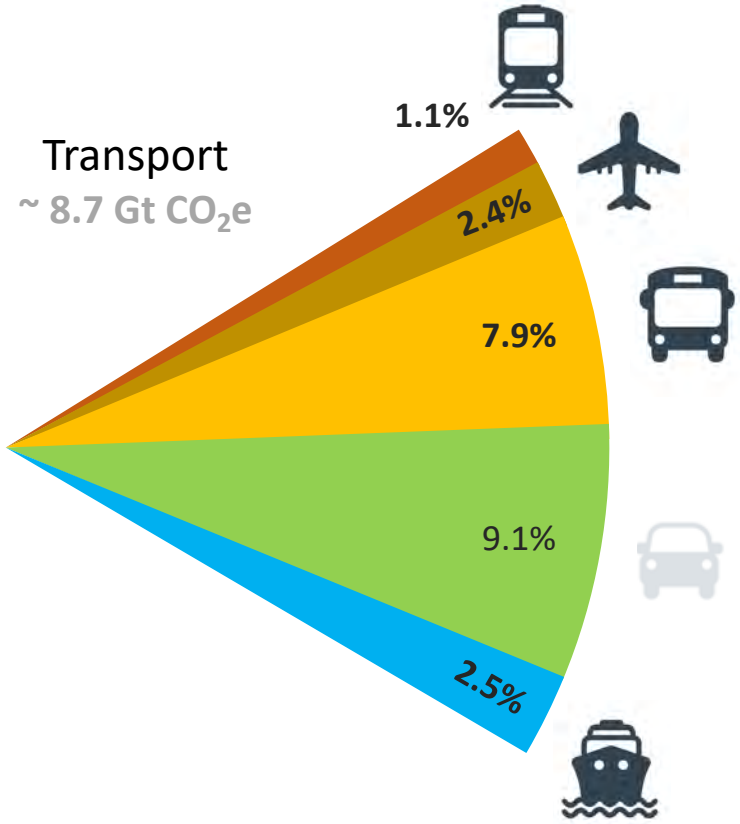


AMOGY Impact

Global GHG Emission (2020)

~ 50 Gt CO_2e





Mission.

By 2040,
AMOGY eliminates ~5 Gt CO_2 globally, reducing 14% of total GHG emission

Source: ourworldindata.org, climatewatchdata.org, CAIT database

Contact Us

AMOGY

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