Networking Break

Hydrogen & Fertilizers, Electric Power Generation & Fuels

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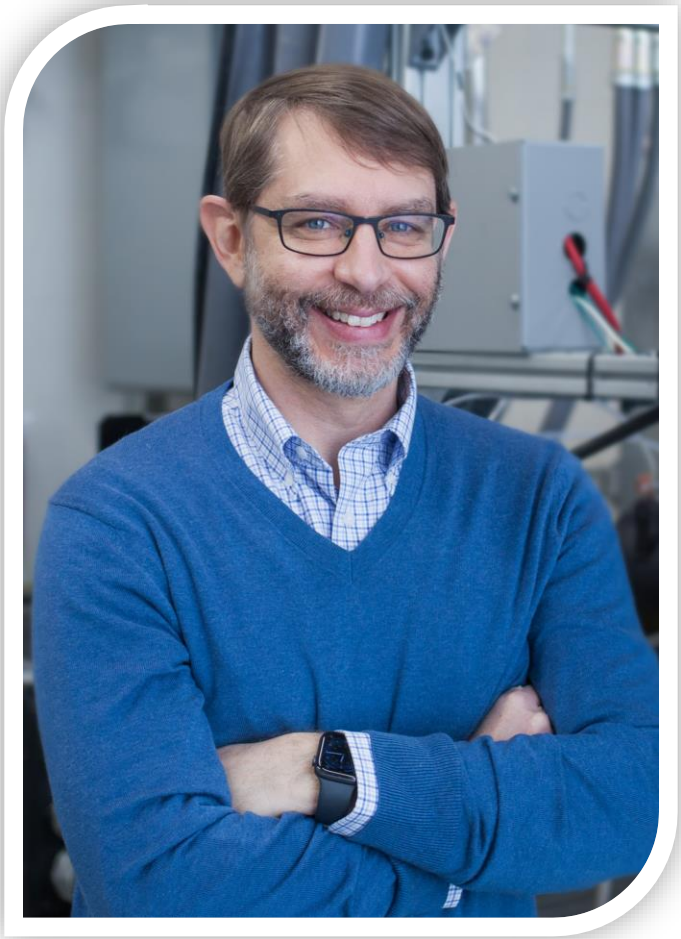

William Northrop, Ph.D.

Professor of Mechanical Engineering , University of MN

&

Director,

T.E. Murphy Engine Research Laboratory

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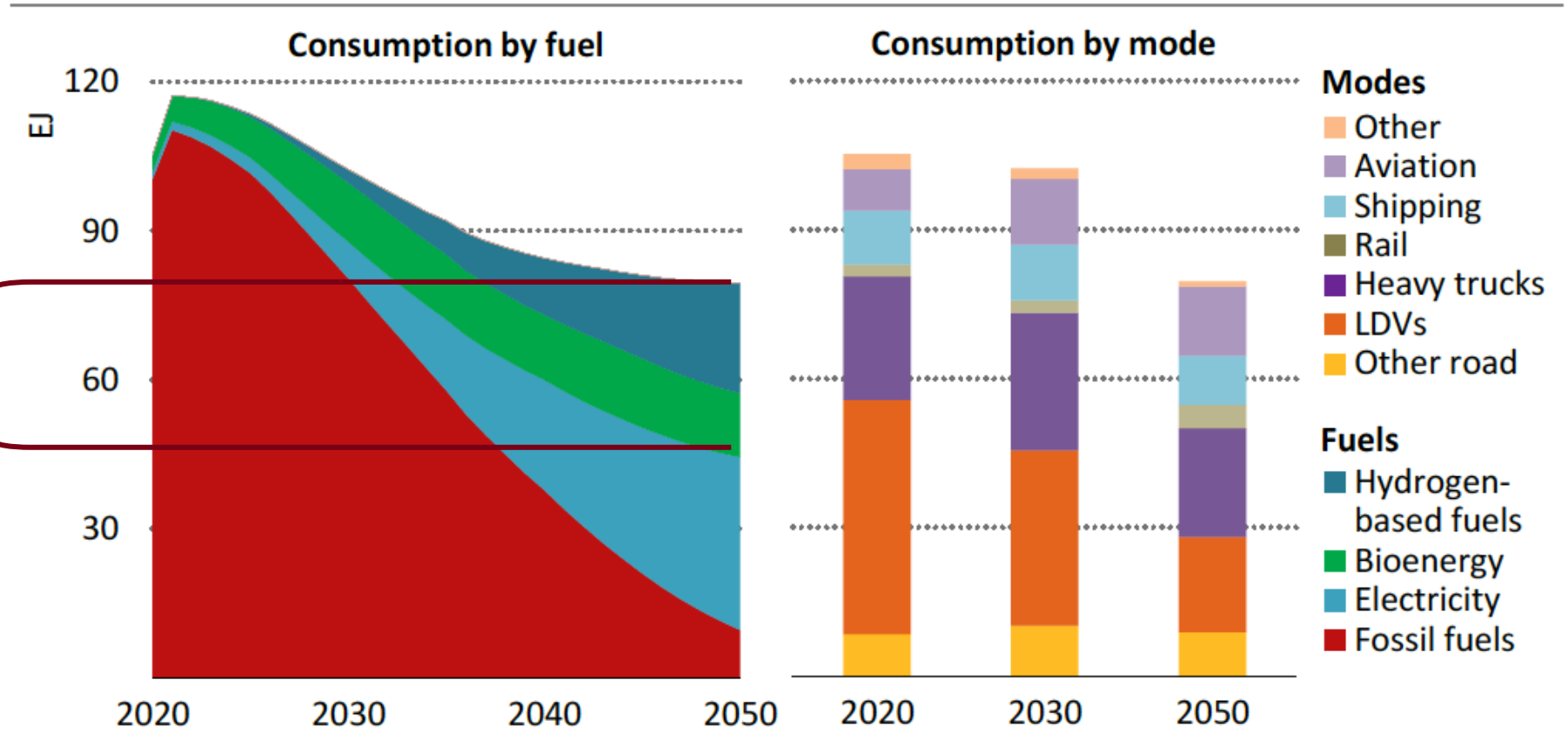
Renewable E-Fuels Including Green Ammonia: Focus on Minnesota

Will Northrop
1) Director, T.E. Murphy Engine Research Laboratory, University of Minnesota
2) Co-Founder, Aza Power Systems, Inc.

MN Renewable Energy Roundtable
December 6th, 2023

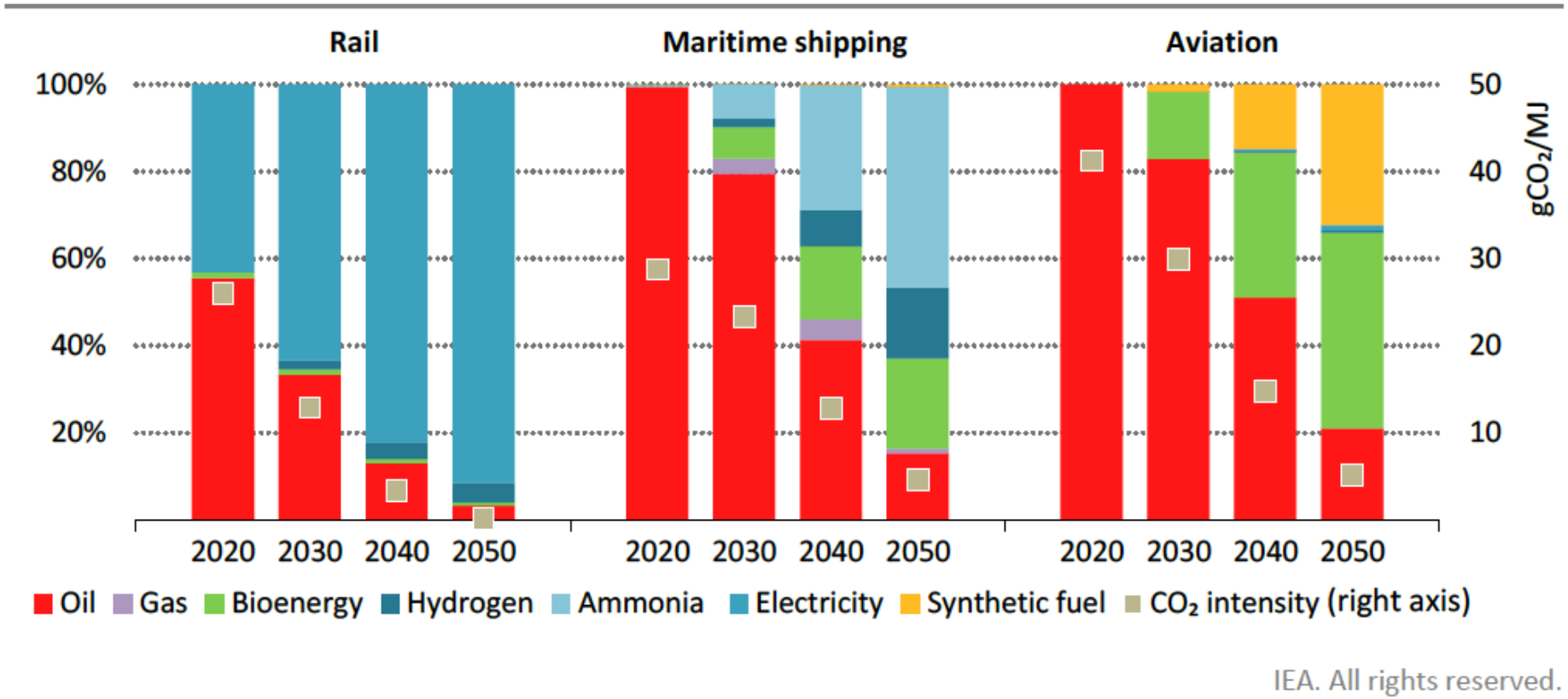
Renewable fuels to play a major role in achieving net-zero in transportation

H_2-based fuels and Biofuels over 40%



https://www.iea.org/reports/net-zero-by-2050

Shipping and aviation will rely on renewable fuels towards net-zero



In the U.S., rail unlikely to electrify – fuels will play a larger role

https://www.iea.org/reports/net-zero-by-2050

E-Fuels: drop-in replacements for existing fossil fuels like diesel and gasoline

36k gallons of fuel per year in 2023

145M gallons of fuel per year by 2030

https://newsroom.porsche.com/en/2022/company/porsche-highly-innovative-fuels-hif-opening-efuels-pilot-plant-haru-oni-chile-synthetic-fuels-30732.html

Biofuels in MN – e-fuel potential

MN Ethanol = 1.4B gallons/yr -> 4B kg **Pure** CO_2 -> 616M gallons e-gasoline/yr

https://www.mnbiofuels.org/resources/production-in-minnesota

SAF: A significant opportunity in MN due to confluence of renewable resources/interests

Ethanol to SAF and eventually H_2-based e-fuels from renewable resources in MN

https://news.delta.com/minnesota-saf-hub-launches-first-its-kind-coalition-scale-sustainable-aviation-fuel

Shipping in MN – Potential for renewable fuels like e-methanol and ammonia

~ 900 vessels and 35M short tons of cargo per year

Ammonia has three primary industrial uses

Fertilizer

- Well known industrial commodity
- Used for +100 years
- +180 million tons annual produced

Hydrogen Carrier

- 100x cheaper to store than H_2
- Can be cracked into hydrogen on demand
  - $2NH_3 \rightarrow N_2 + \mathbf{3H_2}$

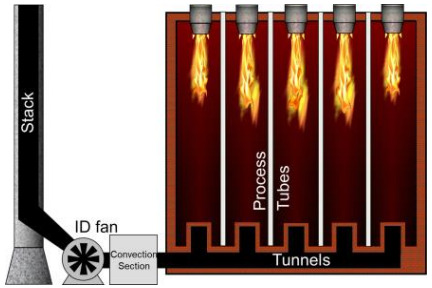
Combustion Fuel

- Burned directly or as a blend
- Multiple industry applications
- Engines, turbines, burners…

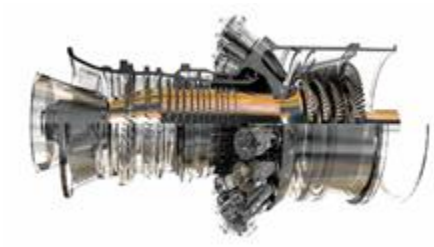
Green NH_3 – H_2-based fuel for off-highway applications

Steady State

Boilers/Dryers



Reforming/Cracking



Gas Turbine

Reciprocating

Locomotive

Genset

Mining & Construction

Short Haul Marine

Agriculture (Fuel + Fertilizer)

Maritime (long haul)

Ammonia combustion research and development is accelerating: **What are the key issues?**

Three ”T’s” of combustion: Time, Temperature, Turbulence

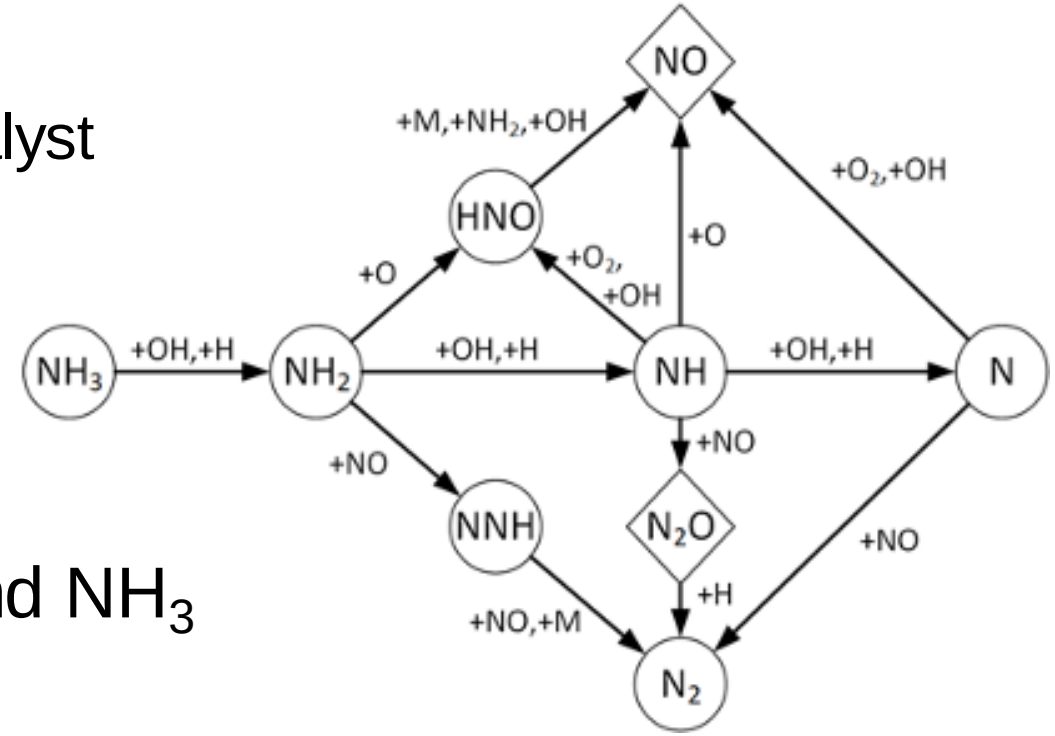
Time → Ammonia flame speed is lower than hydrocarbons

Temperature → Ammonia reactivity is low, high ignition energy

Turbulence → Ammonia is easy to extinguish under turbulence

Emissions from ammonia combustion are nitrogen-based and highly coupled

- **NO_x** forms more readily – fuel pathway
  - Treat with unburned ammonia in SCR catalyst
  - Thermal de-NOx
- Unburned **NH_3** is a challenge
  - Incomplete combustion, low flame speed
  - Wall quenching
- **N_2O** forms by a reactions involving NO_x and NH_3
  - 300x CO_2 greenhouse gas
  - Negligible in HC fuel combustion, except for during aftertreatment



Adapted from: Miller and Bowman, (1989) Mechanism and Modeling of Nitrogen Chemistry in Combustion, *PECS*, 15, 287-338.

Summary:

1. Renewable fuels are important to the MN economy, E-fuels including SAF and green ammonia are promising.

2. SAF from corn ethanol is viable for utilization of MN biofuel infrastructure. There are opportunities to improve carbon footprint.

3. Ammonia is viable as a combustion fuel, but modifications will be required to allow clean, efficient operation.

4. Although it has poor reactivity, ammonia can be effectively used in combustion-powered devices.

5. Emissions from ammonia combustion include high NO, unburned NH_3 and N_2O, a potent greenhouse gas.

2013

UMN WCROC renewable ammonia production

2019

50/50 by energy ammonia/diesel dual fuel tractor

2022

240 kW Ammonia Grain Dryer

2024

200 kW 100% ammonia genset

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Audience Q & A

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Tomoyuki Koide

Deputy General Manager – Marketing Department, Tsubame BHB Co. Ltd.

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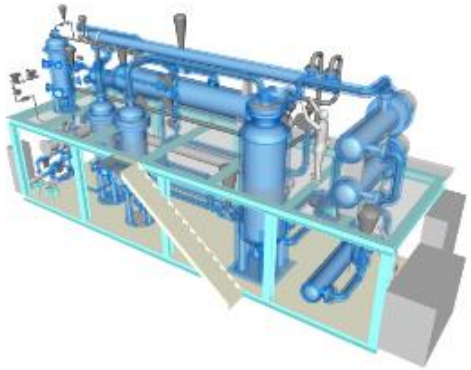
Distributed Green Ammonia Production

with locally available renewable energy for circular economy

Tsubame BHB Co., Ltd.

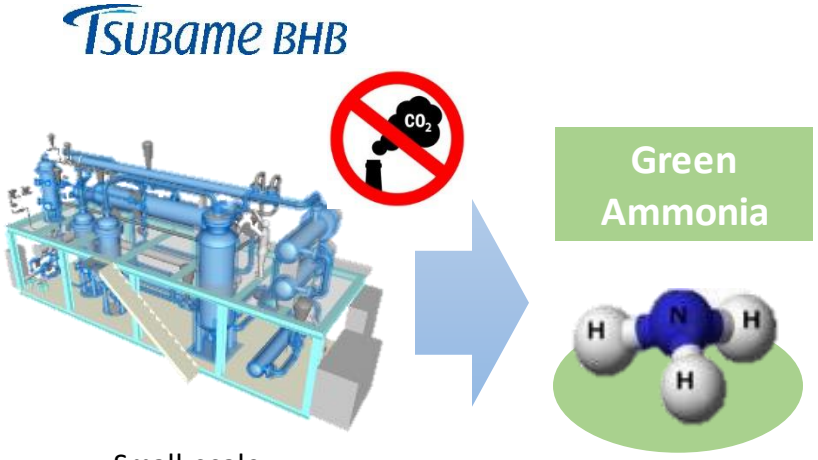
Dec 2023



Tsubame BHB provides a solution to de-carbonize the agricultural industry through modular system

1. **Replace conventional ammonia production with CO_2 emission to CO_2-free production**

2. **Reduce cost and stabilize ammonia supply-chain through distributed ammonia production**

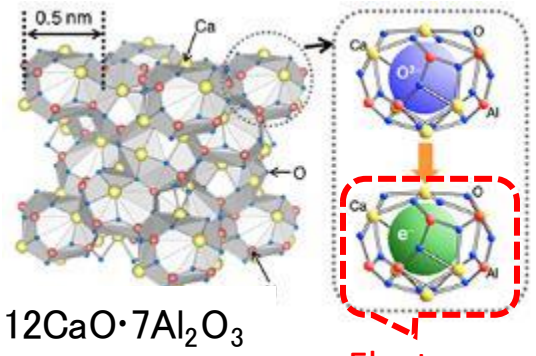


Small-scale Ammonia system without CO_2 emission

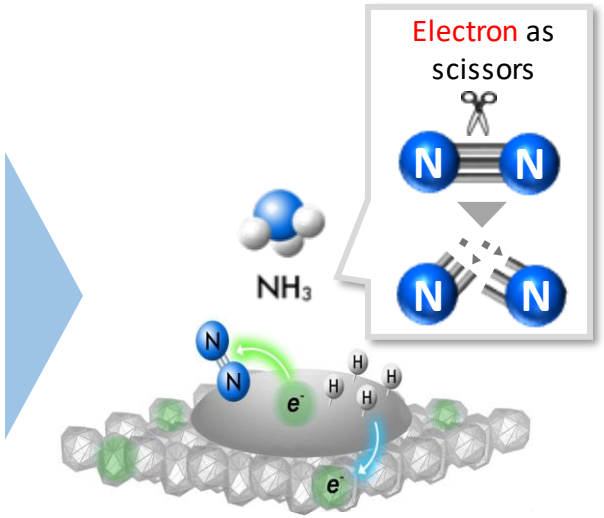
Tsubame's Electride Catalyst enables Low Temp. and Pressure Ammonia Synthesis

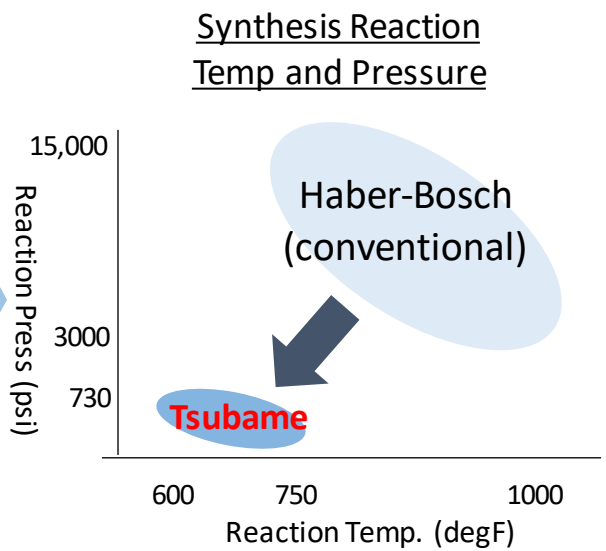
Our electride catalyst, developed by Tokyo Institute of Technology, creates an advantage on small-scale ammonia production compared to conventional Haber-Bosch process

Unique Electride catalysts

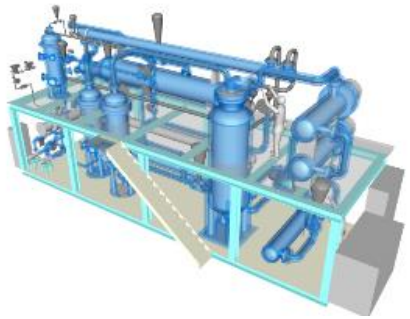


$12CaO \cdot 7Al_2O_3$





Advantage on Small Scale production



slido

What word or image comes to mind when you hear the word "Green Ammonia"?

ⓘ Start presenting to display the poll results on this slide.

slido

How much is your interest level in green fertilizer, e.g. CO2-free vs. grey?

ⓘ Start presenting to display the poll results on this slide.

slido

What is the most expected and earliest application of green ammonia?

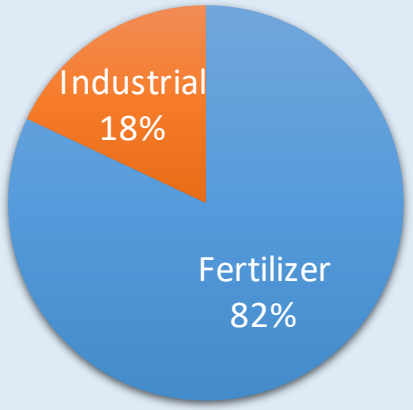
ⓘ Start presenting to display the poll results on this slide.

Ammonia Market: New Application brings +100 M ton market demand

Ammonia

Existing Market: Total 180 M ton

Ammonia Application:



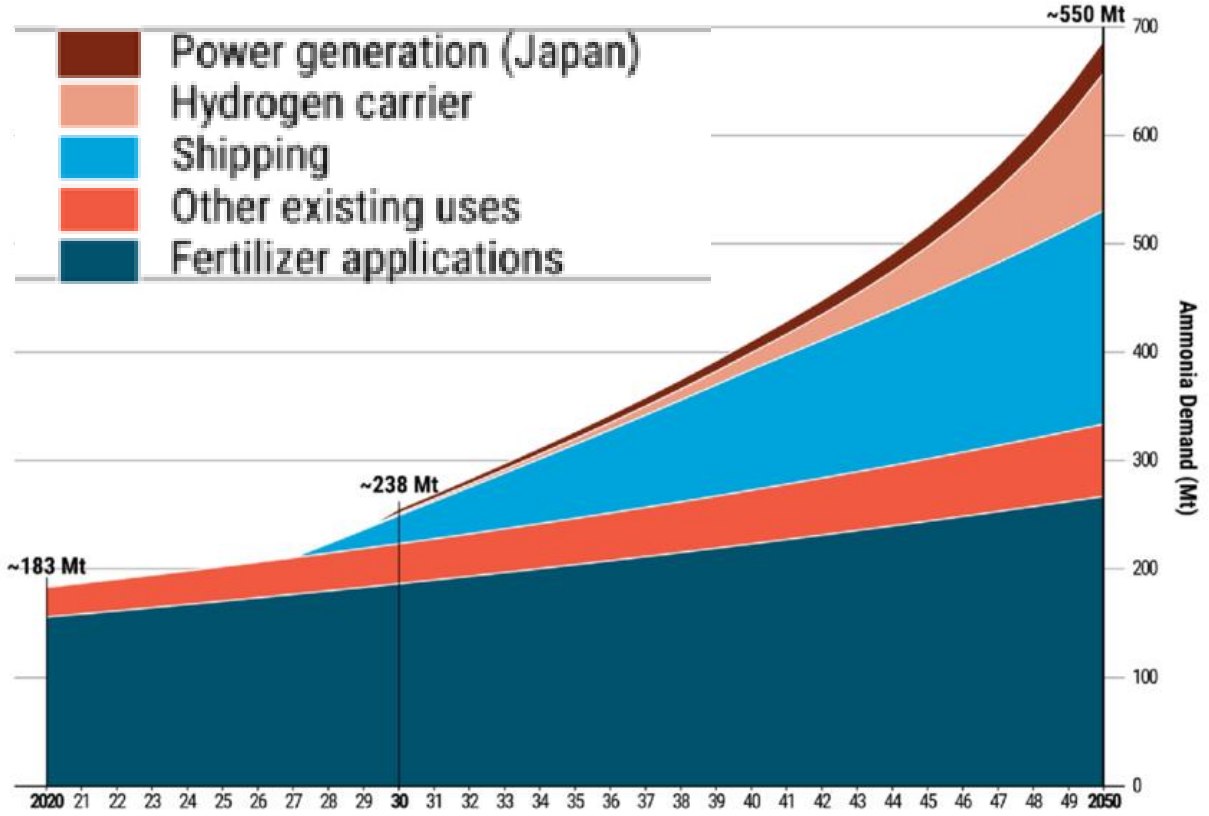
Emerging Market: **potentially new 100 M ton market in 2035**

Clean Fuel

- Maritime Fuel
- fuel of coal power plant

Hydrogen Carrier

New Application brings big growth of ammonia demand, but timing is uncertain



Ammonia Production from Clean Hydrogen and the Implications for Global Natural Gas Demand Sustainability 2023, 15(2), 1623, Jan 2023

Clean Fuel

- Maritime Fuel
- fuel of coal power plant

Technology is under development

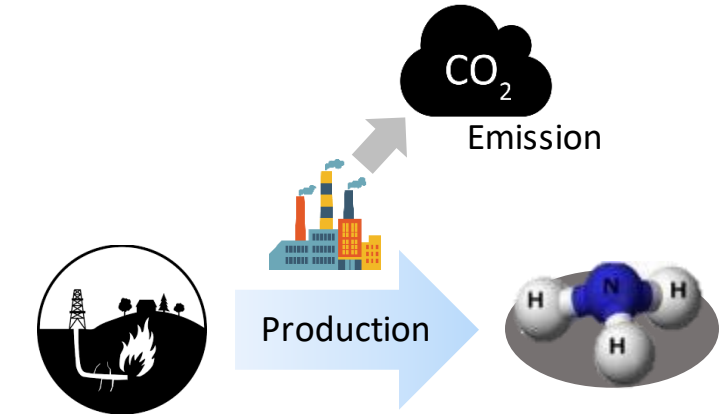
Hydrogen Carrier

Awaiting Hydrogen demand to be raised

Existing Ammonia production is emitting 500 Mton-CO2

Current
Ammonia Production

>1% of CO_2 in global emission

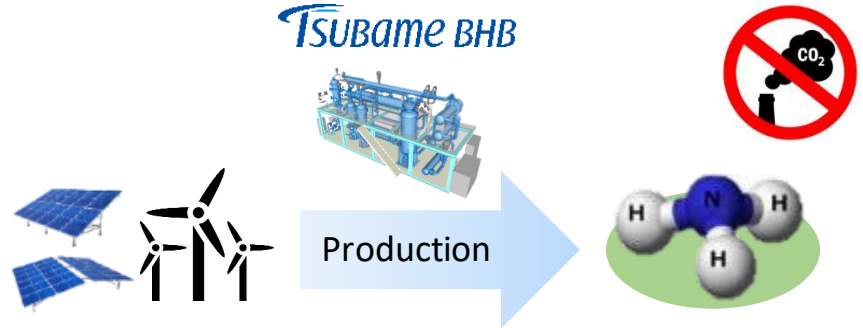


Raw material
Gas / Oil / Coal

Grey Ammonia

Green Ammonia Production
By Tsubame technology

No CO_2 Emission

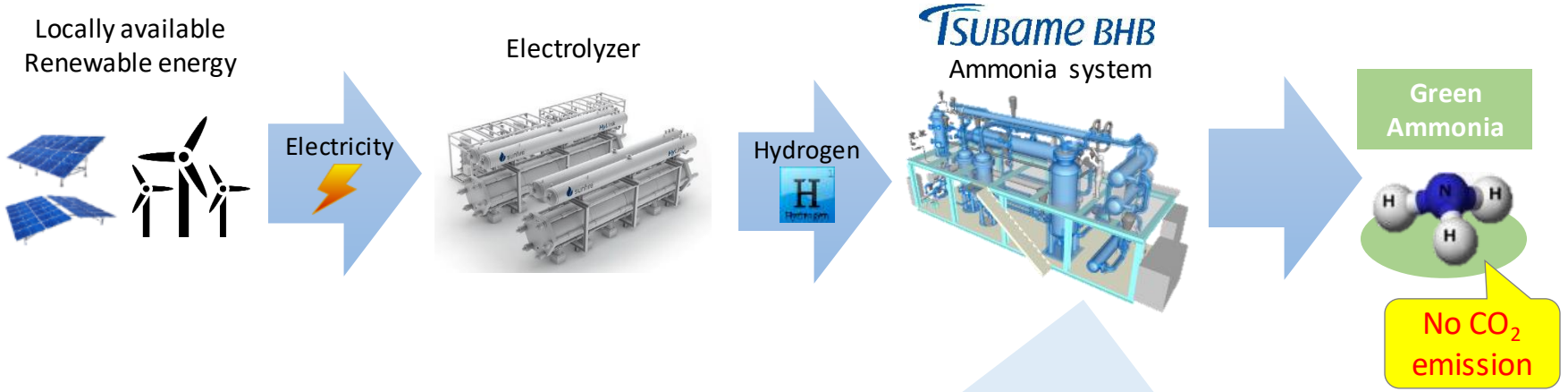


Renewable Energy

Green Ammonia
(Distributed production)

Green Ammonia Production by Small-scale production system

Semi-automated ammonia production system requires less operating labor, which enables user-friendly ammonia production.



Line-up of ammonia production system

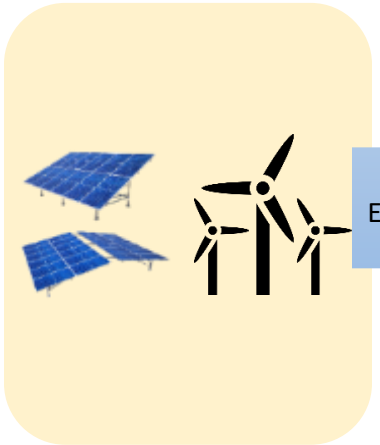
Type	Module			Plant
Name	TM-500	TM-3000	TM-5000	
Capacity (ton/yr)	500	3,000	5,000	10,000 – 50,000 (Future: 10,000 – 100,000)
Size (yd x yd)	17 x 23	22 x 33	27 x 37	TBC
CAPEX (*1) (M USD)	5-10	10-15	15-20	TBC
CO2 avoidance (*2) (ton-CO2/yr)	800	5,000	8,000	16k – 80k

(*1: CAPEX is for reference purpose only)
(*2: comparison with natural gas based ammonia production)

Hydrogen production consumes majority of power consumption

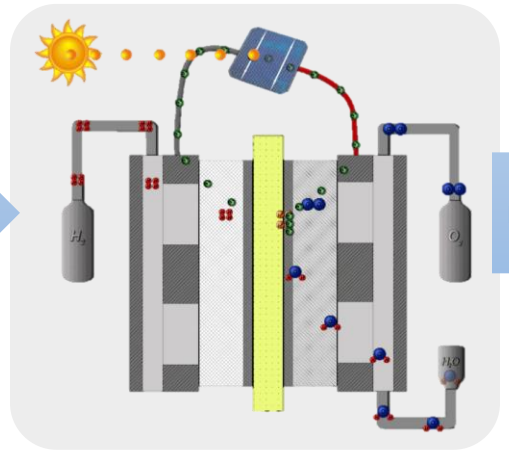
Required Power for Green Ammonia Production (Case: 3,000 TA)

Renewable Energy



Electricity

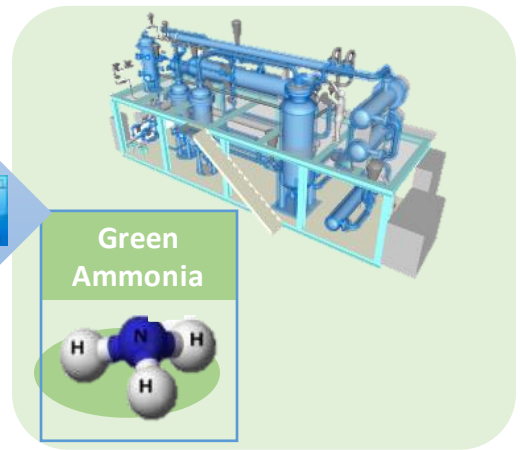
Water Electrolyzer



Power required:
30,000 MWh/year

Hydrogen

Green Ammonia Production

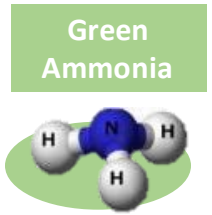


Power for NH_3 unit: **4,500 MWh/year**
Total power required: 34,500 MWh/year

22 MW
(CU%: 20%)

12 MW
(CU%: 35%)

Renewable
Energy
34,500 MWh/year

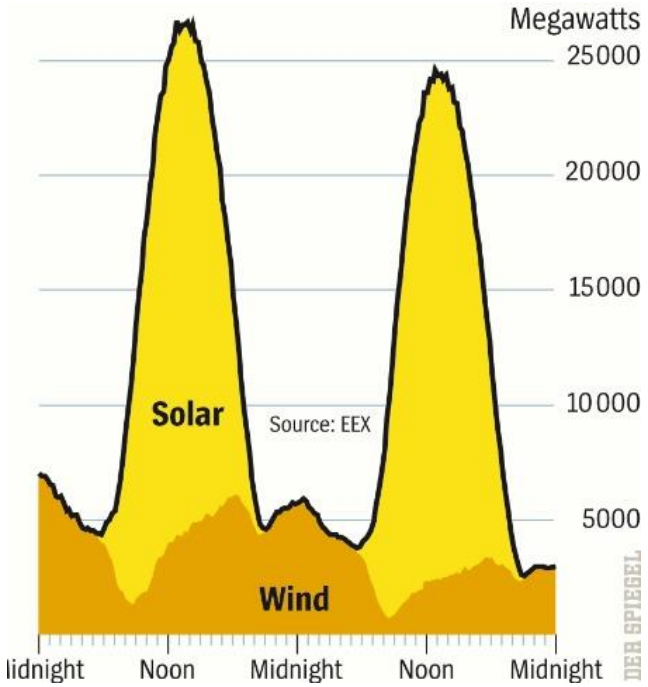


3,000 TPA

Measures against fluctuation of Renewable Energy

Issue

Renewables have fluctuation of power generation



Option

a. Install Hydrogen Storage in minimum

- Run 100% + store hydrogen
- Minimum CU% operation

b. Stop at night &
Keep hot stand-by mode

c. Buy grid power to maintain operation at night

Depends on:

- Power supply curve
- Offtake frequency and variation
- Requirement of green%

Appendix

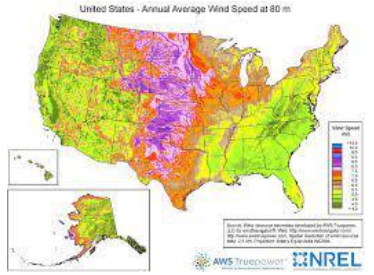
Market Environment in USA

Based on below environment, Tsubame is focusing market development of USA.
We are accelerating market development, and plan to assign representative in US from March.

1. Subsidy
   - IRA approved: subsidy on green-H_2 as 530 USD/ton-NH_3

2. Ammonia
   - Existing large market demand by Fertilizer
     Using anhydrous ammonia as direct fertilizer
   - Supply chain:
     - Inland transportation costs high
     - Safety concern on transportation

3. Renewable Energy
   - Competitive renewable energy cost for both solar and wind



Partner Candidate

We'll contact and talk potential collaboration with these companies.

NEXTera ENERGY
Renewable Energy Group
Green Mountain Energy
Clearway
tpi COMPOSITES
First Solar
TESLA ENERGY

- W.D. Service Co., Inc.
- SAE Manufacturing Specialties Corp
- Paul Akers, Inc.
- Ravago Chemicals North America
- DeLille
- Hydrite Chemical Co.
- Chemicals Direct USA
- Koch Fertilizer, LLC.
- C&E Services
- Southern Lonics, Inc.
- Terra Industries, Inc.
- U.S. Chemicals, LLC.
- Combustion Associates
- OxyChem
- Dakota Gasification Co.
- Simplot, J.R.,Co.
- Mil-Spec Industries
- Tessenderlo Kerley, Inc.
- Calamco
- Energys, USA Inc.

- Wilgrow Fertilizer
- Triad Nitrogen Inc
- Triad Chemical
- Agricultural cooperative

1 Renewable Energy Green H_2 Hub

2 Ammonia Production

3 Ammonia Distributor

4 Anhydrous Ammonia Agri Machinery

5 Farmer

CF
Mosaic
LSB INDUSTRIES
KOCH INDUSTRIES INC
Nutrien
Green Valley Chemical
YARA
COFFEYVILLE RESOURCES
DYNO Dyno Nobel
OCI IOWA FERTILIZER
BASF We create chemistry

Agriculture Cooperative

- CALAMCO
- CHS Inc, Minn
- Dairy Farmers of America, Mo
- Land 'Lakes Inc, Minn.
- GROWMARK Inc, Ill
- Ag Processing Inc. Neb
- California Dairies Inc. CA
- United Suppliers Inc. Iowa
- Northwest Dairy Association Wash
- Southern States Cooperative Inc. VA
- Foremost Farms Wis
- Prairie Farms Dairy Inc. Ill

Crops Company

Cargill Helping the world thrive
ADM
syngenta

Ready for deployment of commercial plant

Engineering and Procurement of 1st commercial plant is on-going.
We are ready to deploy our system for customers.

Achievement / Milestone

2017 2018 2019 2020 2021 2022 2023 2024 2025

Catalyst

Catalyst Industrialization

- Scale-up of catalyst manufacturing
- Establishment of catalyst raw material supplier
- Improvement of catalyst performance

Pilot Plant

Construction

- Scale-up design

Pilot Plant launched

Pilot plant in operation

- Confirmed better catalyst activity than expected
- Built operation experience
- Demonstrated ammonia synthesis process

Commercial

Ready to commercialize

sales

1st Plant Order Received

EPC

- On-going Engineering / Procurement / Construction
- Equipment is being manufactured by suppliers

Planned Start of Operation

Tsubame BHB: Startup Company from the Tokyo Institute of Technology (Tokyo Tech)

- Established in April 2017 with investments from UMI, Ajinomoto, and Tokyo Tech professors
- Company was established for the social implementation of an on-site ammonia system

Establishment Background

Hosono Laboratory
(Tokyo Institute of Tech)

Innovative ammonia synthesis catalyst technology

Nature Chem. **2012**, *4*, 934-940

TSUBAME BHB

Company Establishment

Ajinomoto Co., Inc.
(food and biotechnology)

Universal Materials Incubator Co., LTD.
(Venture Capital)

Company Overview

Name	Tsubame BHB Co., Ltd.
Main Address	4th Floor, Konwa Building, Tsukiji 1-12-22, Chuo-ku, Tokyo
R&D Center	4259 Nagatsuta-cho, Midori-ku, Yokohama City, Kanagawa Suzukakedai Campus, Tokyo Institute of Technology, J-3 Building, Room 1417
Kawasaki Branch	1-1 Suzuki-cho, Kawasaki-ku, Kawasaki City, Kanagawa Ajinomoto Co., Inc., Kawasaki Pilot Plant
Established	April 2017
Business Activities	R&D, production, sales and maintenance of Ammonia synthesis catalyst and On-site ammonia supply systems
Employees	70 (Incl. temporary employees)

Main Stockholders

AJINOMOTO, idemitsu, MUFG 三菱UFJキャピタル, DJK, 三井住友信託銀行, SANKYU, Universal Materials Incubator Co.,Ltd., i-nest capital, みらい創造機構 MIRAI SOUZOU, DBJ, INPEX, FUYO LEASE GROUP, NYK LINE, MITSUBISHI CHEMICAL

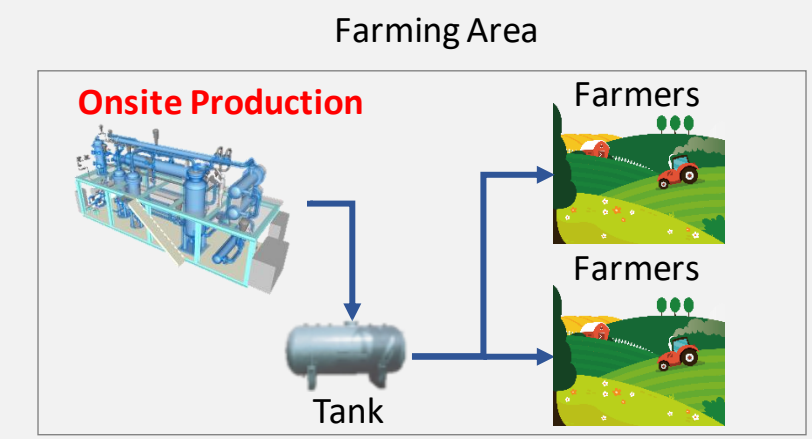
Our Solution : Small scale Onsite Ammonia Production

- Tsubame BHB offers Small sale Onsite ammonia production
- Our method enables customer's ammonia cost reduction by low pressure and temperature technology

Onsite Production

- Produce required volume at the next to consuming location
- Our Technology enables small scale ammonia plant

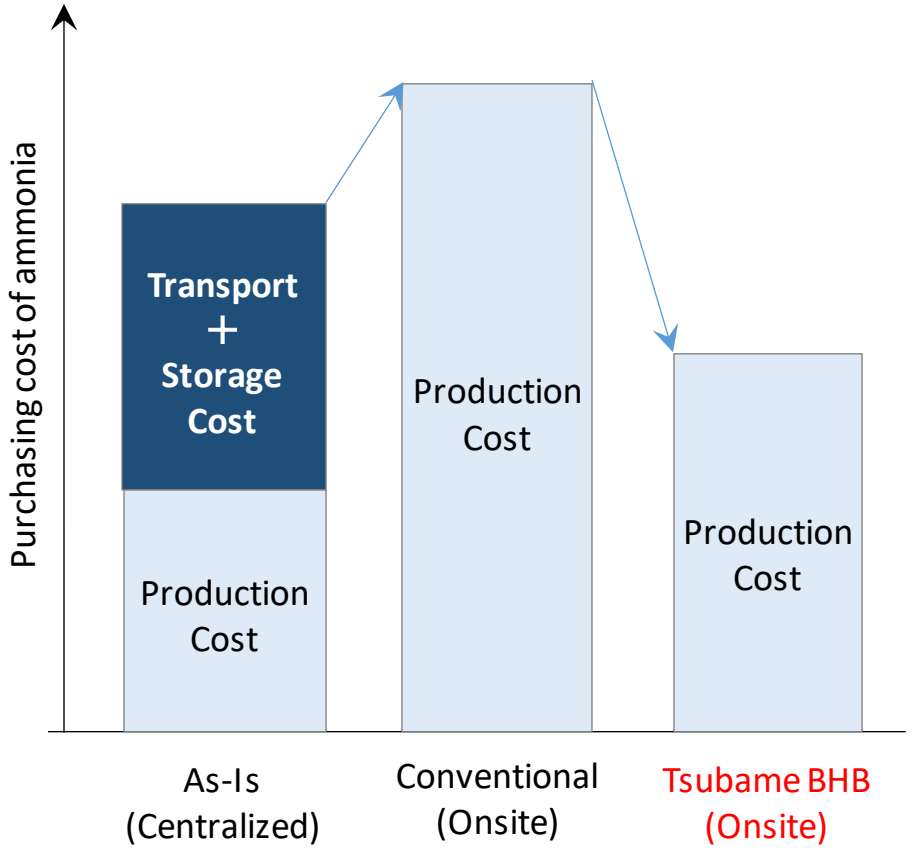
Example: Fertilizer application



Advantage

- No Transpiration and Storage cost
- Stable Supply

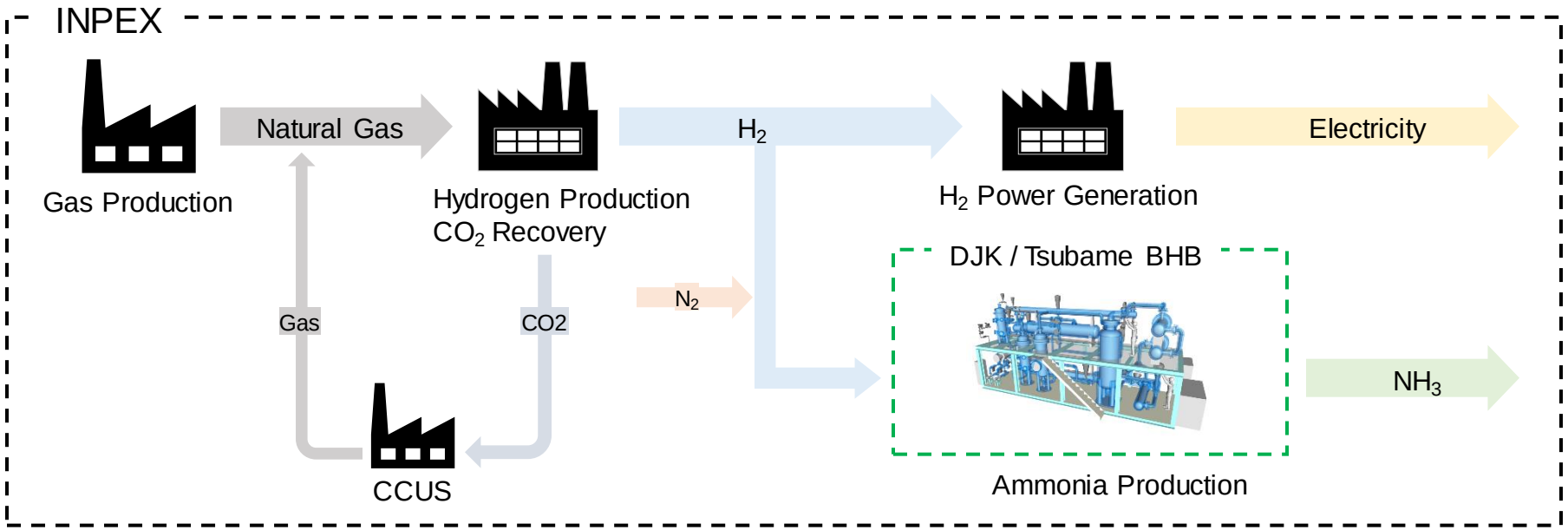
Cost Reduction from customer viewpoint



1st Commercial Plant Order

- We announced 1st commercial plant order of TM-500 from INPEX Co.
- Ammonia is produced by blue hydrogen with Tsubame's technology.

PJ Owner:	INPEX Co.
PJ:	Hirai Blue hydrogen / Blue Ammonia Demonstration project
Plant Location:	Niigata, Japan
Contractor:	Daiichi Jitsugyo (DJK)
EPC Period:	Dec. 2022 ～ Aug. 2025, plan to start operation from Aug 2025
Capacity:	500 TPA (TM-500)



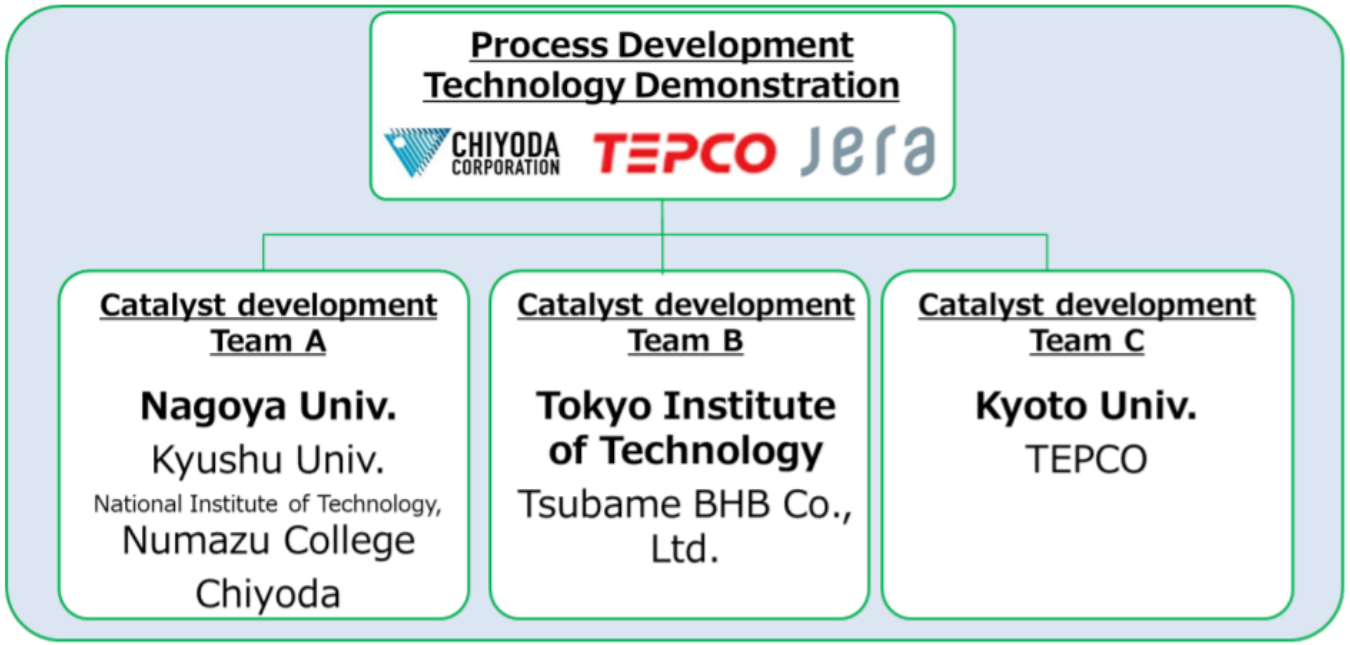
Development of New Generation catalyst for Large-scale Ammonia Plants

NEDO project for fuel ammonia was announced on Jan 2023.
Tsubame BHB and Tokyo Institute of Technology was selected as subcontractors of catalyst.

GI Fund Project by NEDO

- Project Period: 2021 to 2030
- Main Company: Chiyoda Corporation / TEPCO / JERA
- Objective: Develop Ammonia production technology for large scale plant
- Role of Tsubame BHB: Develop **non-precious metal catalyst** for large scale plant by 2024 with Tokyo Institute of Technology

R&D Organization



(Reference: Chiyoda Corporation Press Release)

(Reference) Details on ammonia characteristics that indicate promise as a hydrogen carrier

(1) High hydrogen density

- A nitrogen (N) atom bonds with three hydrogen (H) atoms, and the hydrogen density is 17.6%
- The energy density to volume is 1,200 times larger than hydrogen gas

(2) Good liquefiability

- It liquefies at about 8 atmospheres at normal temperature and at -34°C under normal pressure
- Hydrogen liquefies at about 700 atmospheres at normal temperature and at -253°C under normal pressure
- Natural gas (methane) does not liquify at normal temperature, it liquifies under normal pressure at -162°C

(3) Easy to handle

- A large amount of ammonia (18 million t/y) is distributed internationally, so existing facilities can be used
- The ignition point is high at 651°C, and ammonia itself is noncombustible so it is easier to handle than hydrogen

(4) Large quantities of the raw materials are found on earth

- Made of nitrogen and hydrogen, which are inexhaustible on earth, so it can be produced using air, water, and renewable energy

(5) CO_2-free fuel

- Potentially a CO_2-free fuel (ignition is needed initially using another fuel) → When burned without carbon (C) in the molecule, it becomes nitrogen (N_2) and no CO_2 is emitted
- Can be used as a raw material for fuel cell batteries, and electricity can be removed

(6) Versatility

- Can be used as a raw material for fertilizers and chemicals, and can be diverted for various other purposes even when not used for energy

Comparison of Storage Costs between Ammonia and Hydrogen

Compound to be stored	Unit	Production costs	Storage costs		
			1 day	15 days	182 days
Ammonia (NH_3)	€ kg^{-1} H_2	3.40	0.03	0.05	0.49
Hydrogen (H_2)	€ kg^{-1} H_2	2.70	0.71	1.78	13.48

(Source) Vrijenhoef JP. Decenralised ammonia production in The Netherlands. HH3 fuel conference. 2016. Los Angeles (CA).

Audience Q & A

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Utilization
Research
Institute

Karen Baert

Co-founder & CEO,

Ammobia

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Feeding and fueling our world with clean ammonia

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What pressure does the conventional ammonia synthesis process (Haber-Bosch) run at?

ⓘ Start presenting to display the poll results on this slide.

Traditional ammonia synthesis (Haber-Bosch) is **HIGH CAPEX** and **INFLEXIBLE**

Haber Bosch *Since 1913*

Runs on natural gas or coal

At extreme temperatures and pressures

This requires continuous operation

And centralized, large-scale production

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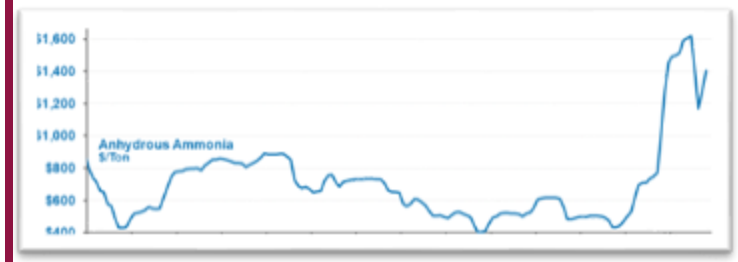
In today's ~200B$ market, this makes **end consumers SUFFER**

Natural gas dependency

↓

Volatile, high prices



Long supply chains

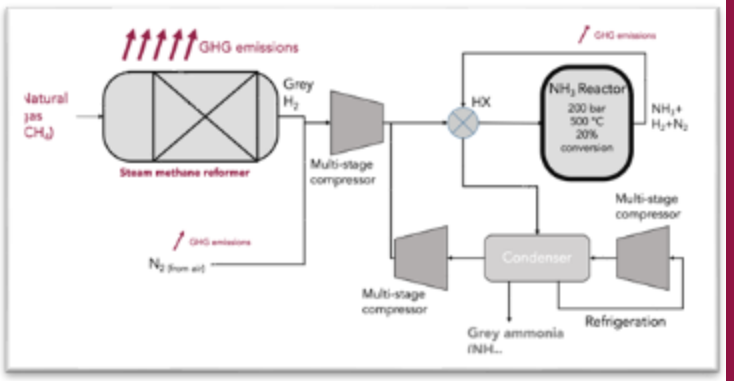
↓

Safety concerns &
high transportation costs

Polluting process
2% of global GHGs

↓

Strong push to green without cost-effective alternative



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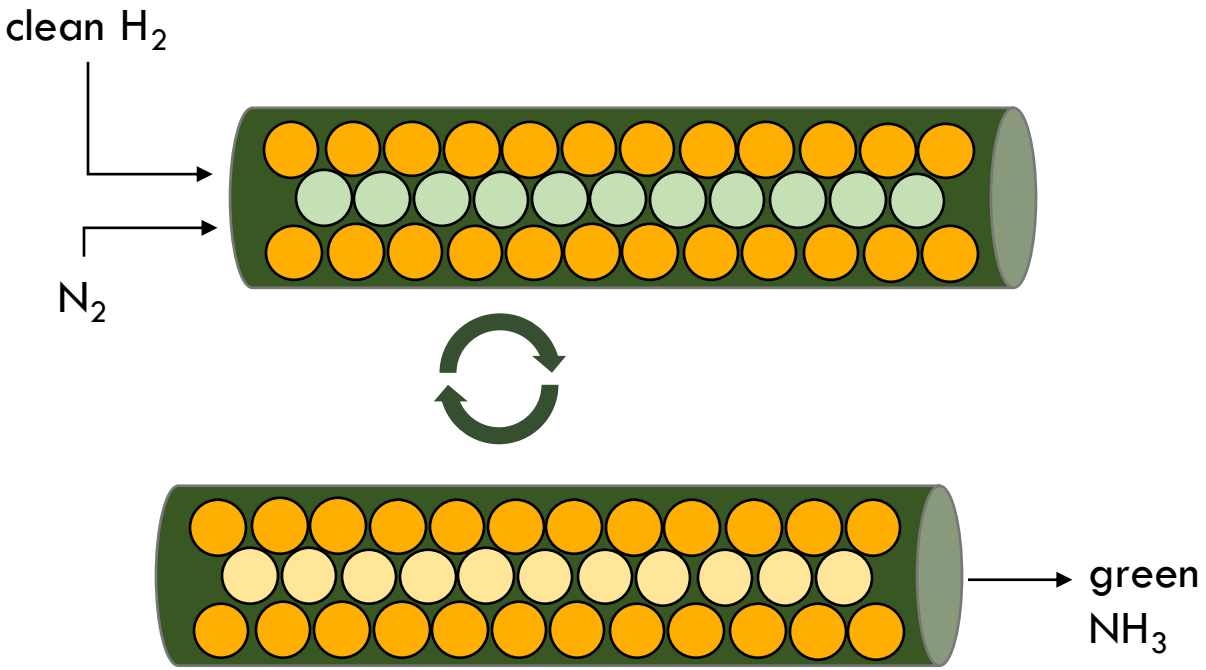
Haber-Bosch 2.0: A LOW CAPEX, FLEXIBLE process



	Traditional Haber-Bosch	ammobia Haber-Bosch 2.0
Temperature	~500°C	~300°C
Pressure	~200 bar	**~20 bar**
Single pass H_2 conversion	<20%	**Up to 95%**
H_2 source	Grey	Green

Capex ↓ 3X

Safety ↑

Flexibility ↑

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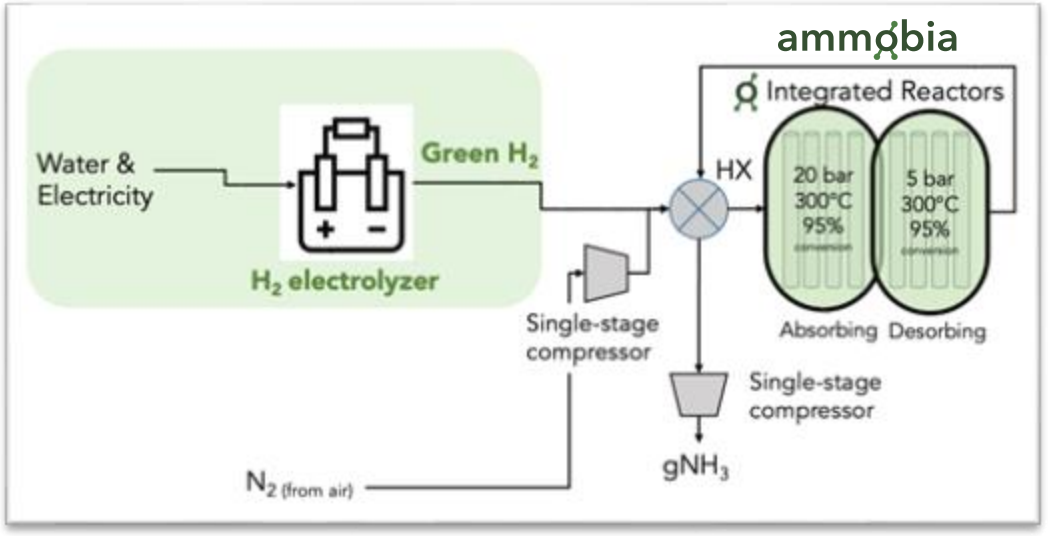
Haber-Bosch 2.0 clean distributed, green NH_3 production

Haber Bosch 2.0 *Since 2022*



Runs on r renewables

At low emperatures and pressures

This enables flexible eration

And modular, distributed duction

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This **meets the customers' needs**

~~Natural gas dependency~~

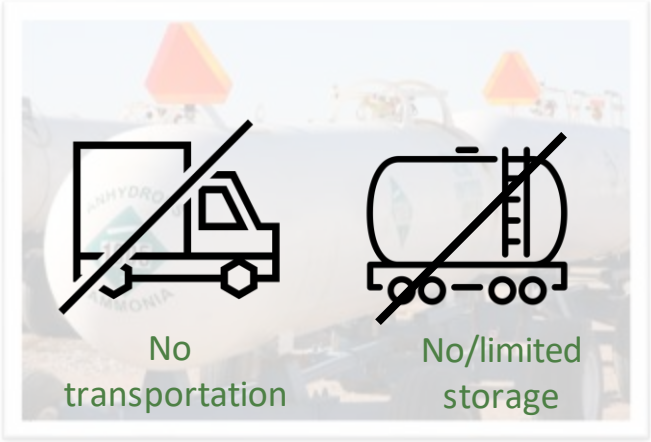
~~Volatile, high prices~~

Reliable NH_3 at stable price

~~Long supply chains~~

~~Safety concerns & high transportation costs~~

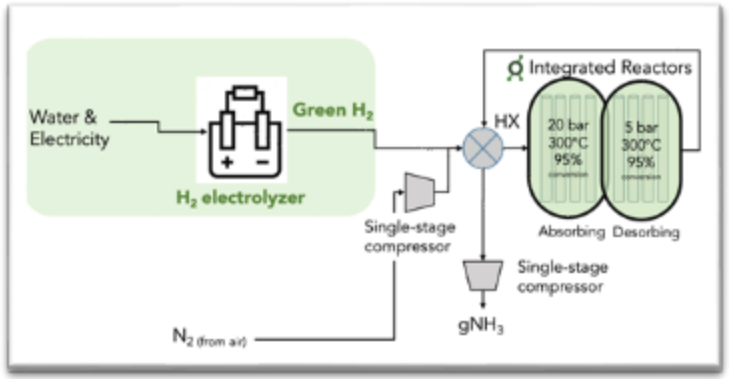
Safe operations



~~Polluting process~~
~~2% of global GHGs~~

~~Strong push to green without cost-effective alternative~~

80-95% emission reduction



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Source: % green adapted from IRENA and AEA 2022

This enables the ~200B$ current market to switch to clean

2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037

Feedstock for chemicals

Fertilizer

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And the current market is just the start…

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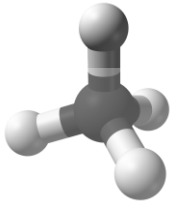
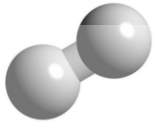
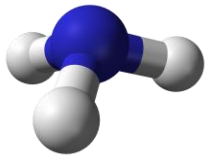
What is the liquefaction temperature for ammonia at ambient pressure?

ⓘ Start presenting to display the poll results on this slide.

Ammonia (NH_3) will fuel our decarbonized world







	CH_4 Natural gas	H_2 Hydrogen	NH_3 Ammonia
Carbon intensity* when burned (direct emissions)	**70-75 gCO_2eq/MJ**	**~1 gCO_2eq/MJ**	**~1 gCO_2eq/MJ**
Temperature to liquify at ambient pressure	**-162°C**	**-253°C**	**-33°C**

Low-carbon fuel and energy carrier

Cost-effective storage and transportation

Note (*): Direct emissions well-to-wake assuming hydrogen and ammonia from renewables [ABS]

New use-cases come with ~600B$ NH_3 market growth

2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037

Fuel for shipping

LR, SDARI and MAN ES join forces on ammonia dual-fuel containership

OFFSHORE ENERGY

MAN expects to put ammonia engine up for sale in late 2025

MAN Energy Solutions is about to launch the final tests of the ammonia engine that many hope will revolutionize the shipping industry.

ENERGYWATCH

Combustion fuel

Amogy Demonstrates First Ammonia-Powered, Zero-Emissions Tractor

Amogy Presents World's First Ammonia-Powered, Zero-Emission Semi Truck

Ammonia as a Hydrogen carrier (import/export)

COAL | ELECTRIC POWER | NATURAL GAS | METALS | PETROCHEMICALS

Blue ammonia to comprise bulk of hydrogen transportation due to lower costs: HSBC

S&P Global Commodity Insights

HIGHLIGHTS

Ammonia more energy-dense, easier to liquefy

Power redistribution

New 6GW green hydrogen project in Australia eyes ammonia export to Japan and Korea

RECHARGE

Global news and intelligence for the Energy Transition

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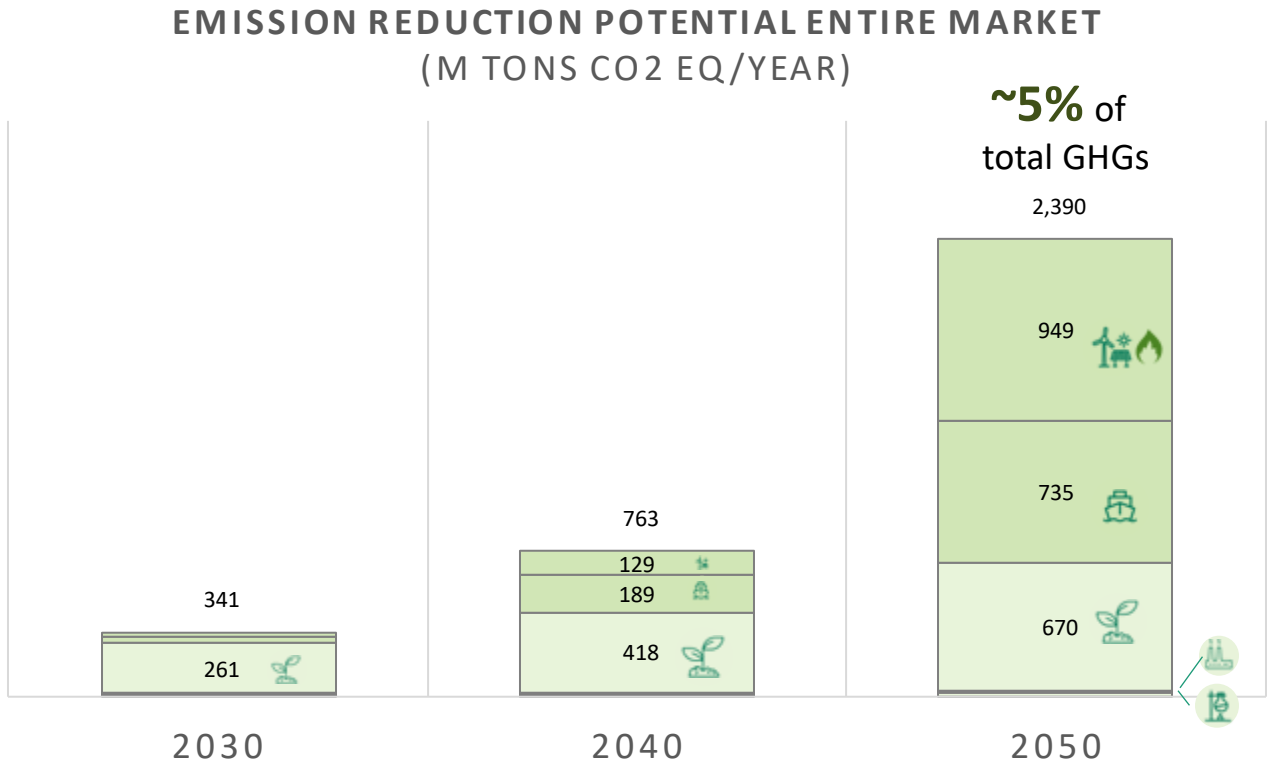
Potential to tackle up to 5% of global GHGs

Process	**Traditional Haber-Bosch**	ammobia
Energy source	Coal or natural gas	(Renewable + grid) electricity*
Emissions	Up to **2.6** kg CO2 eq/ kg NH3	~**0.2-0.5** kg CO2 eq/kg NH3

80-90%
GHG emission reduction



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(*) Assuming 60% direct connection to renewables, 40% grid electricity with 100 g CO2/kWh cfr IEA net zero target 2030 and 45kWh/kg for electrolysis

What could this mean for Minnesota?

Source: % green adapted from IRENA and AEA 2022

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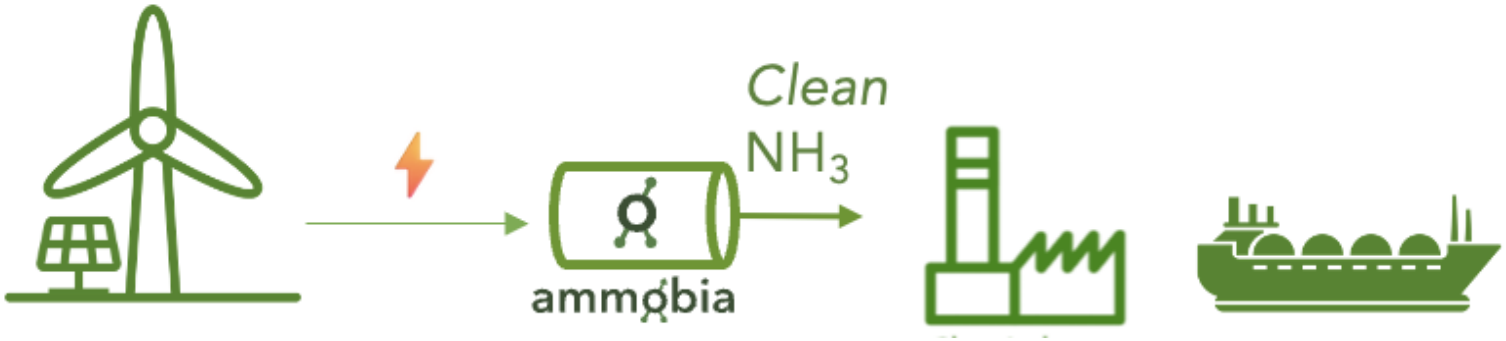
Cost-effective clean ammonia production from renewables



- ✓ Flexible production from renewables
- ✓ Reliable ammonia at stable prices (No natural gas dependency)
- ✓ ~90% reduction of carbon footprint

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How much do farmers in the Midwest pay for their ammonia in $/ton today?

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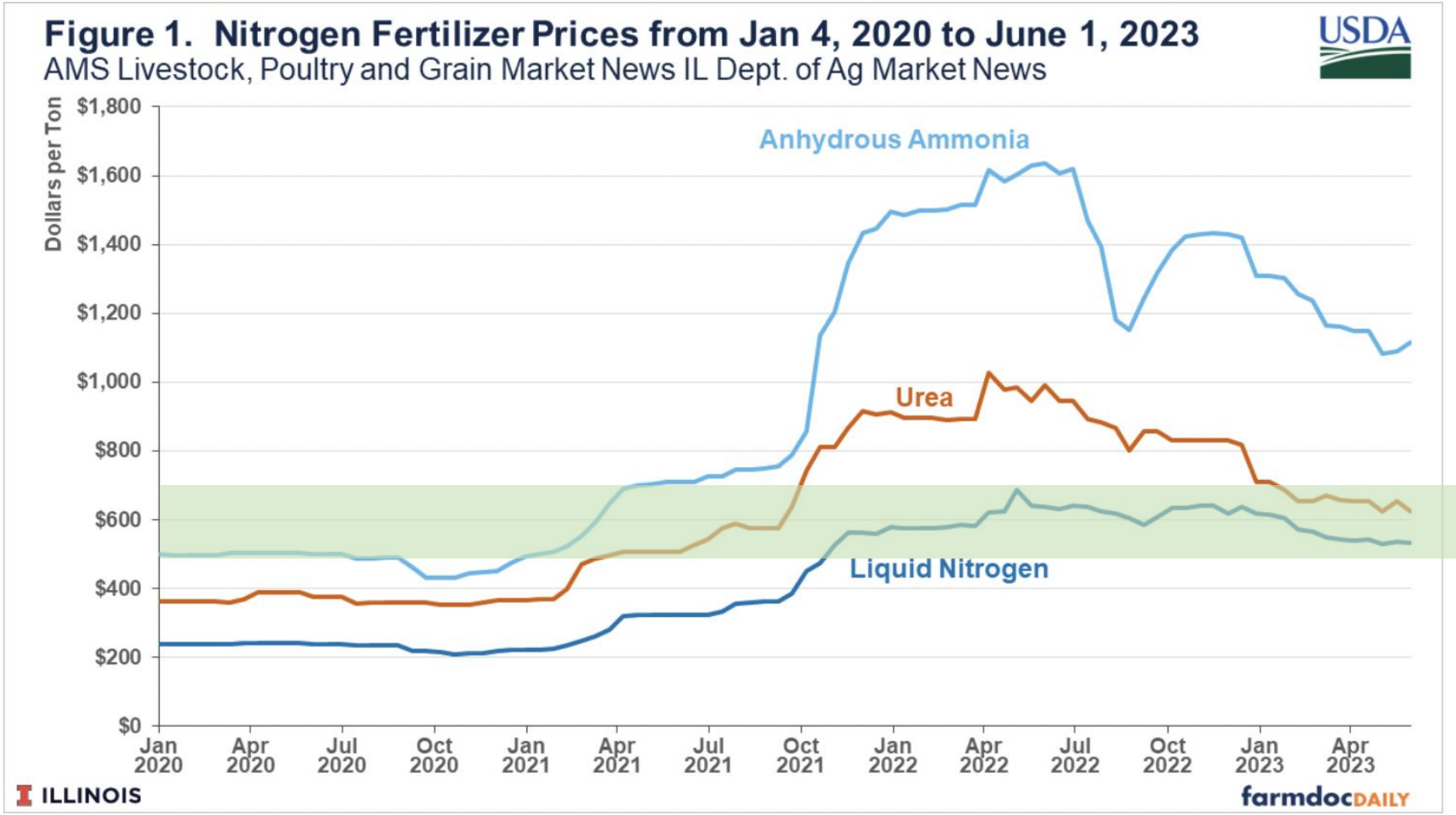
Stable, low cost



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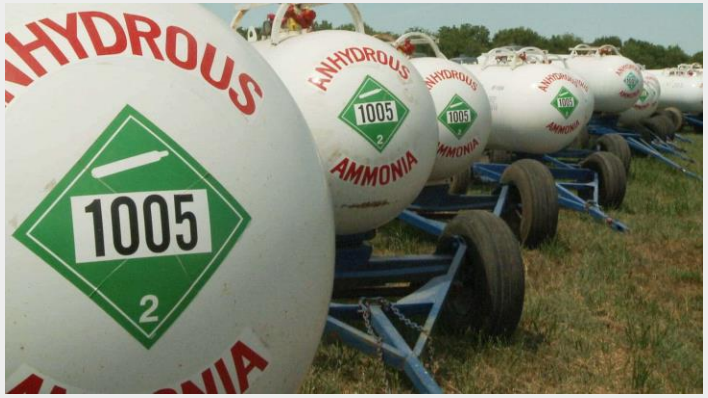
Source: Farmdoc daily

Decentralized ammonia production in US Midwest

Ammonia as **fertilizer**



Anhydrous NH_3 fertilizers at farm community level

ammgbia ~4 tons/day unit to supply ~8 medium-sized (~700 acres) corn farms

Ammonia in the **power sector**

Ammonia production for

- Power-to-X
- Demand Response
- Grid balancing
- Back-up power

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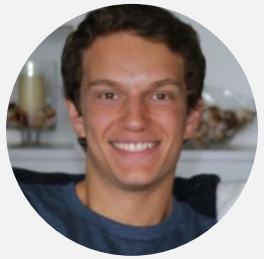
Ammobia's team on a mission to decarbonize ammonia

Founders

Karen Baert
Co-founder/CEO

MBA/ChemE bridging tech and market in climate tech across start-ups, Venture Capital & Strategy Consulting



Tristan Gilbert
Co-founder/CTO

MechE/ChemE with experience in science, systems and everything in between across academia & start-ups

KU LEUVEN · Technische Universität Berlin · GW Africa · Breakthrough Energy Ventures · Redwood Materials · Bain & Company · Stanford University · Sila · Vanderbilt University · Form energy · Tesla · Berkeley Lab

Team

Dr. Lee Tonkovich
Engineering consultant

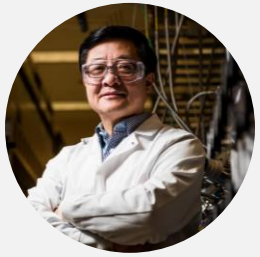
~30y experience in process intensification and scale-up

Tim Krebs
Part-time CFO

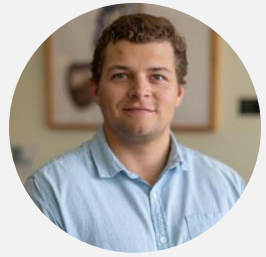
CFO experience at 10+ industrial climate start-ups incl. NH3

Bharti Singhla
BusDev Lead

Stanford MBA and ex co-founder/COO in cleantech



Prof. Yong Wang
Scientist



Dr. Anthony Savoy
Scientist

Washington State University

Advisors

Sila Kiliccote
Breakthrough Energy Ventures
Entrepreneurship & VC

Prof. Matt Kanan
Stanford University
Science & Engineering

Naomi Boness
Stanford ENERGY Hydrogen Initiative · Chevron
Industry expertise

Funding & Support

Chevron · VentureFor ClimateTech · chevron studio · NREL · Rocket Fund · Forbes 30 Under 30

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Great traction with investors and industry partners

~4M$ VC money raised* | ~500k$ grants won

STARLIGHT VENTURES

Other investors to be announced soon

Chevron

NREL ROCKET FUND

VentureFor ClimateTech

LoIs/LoSs secured with major industry players

Major player in shipping industry

Major player in shipping industry

Major player in chemical industry

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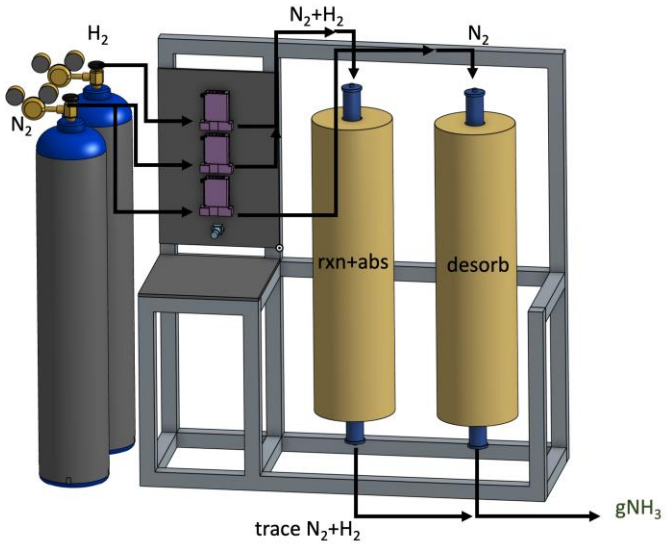
Note: (*) official close later this month

Revenue-generating commercial pilot in 2025

2023: Proof of concept

- Partnered with catalyst manufacturer
- Provisional patents filed

2024: Tech demonstrator



Operational by Q3 2024

- With demonstration partner

2025: Commercial pilot

Built by EOY 2025

- With demonstration partner & beachhead customer
- Revenue generating

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Keen to hear from you/learn from you!

Looking to **partner with industry stakeholders for pilot projects**

Onsite dynamic ammonia synthesis demonstration in 2025

Technology partners

Farmer communities

Electric Coops

Other ammonia use-cases

Farmer Coops

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Note: (*) official close later this month

Thank you

Reach out karen@ammobia.co

Audience Q & A

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Networking Lunch
12:00 – 1:00 p.m. CT

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