

Tokyo “Beyond-Zero” Week 2021
First International Conference on Fuel Ammonia



Fuel Ammonia: The Key to Achieving Carbon Neutrality



IHI Corporation

Developing Technologies for use of Ammonia as a Fuel **IHI**

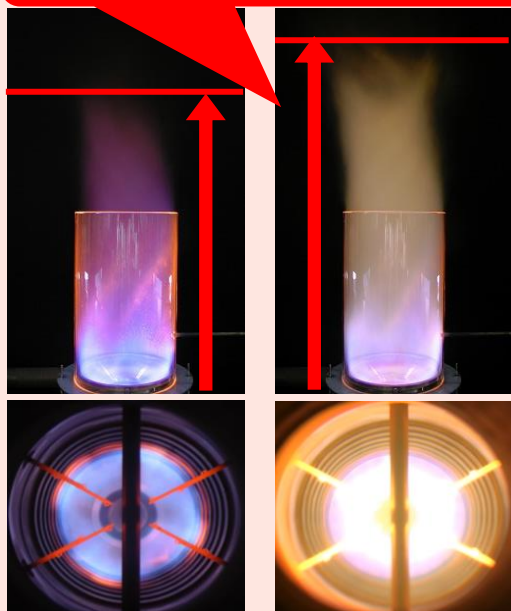
IHI is the world's first company to develop **ammonia combustion technology** for actual thermal power plant.

We are ready for full-scale demonstration!

Technical Challenges:

- Ammonia is hard to burn..
- Difficult to stabilize the flame
- Formation of unburned ammonia
- Formation of fuel-NOx

Flame height shows time required for combustion



Pure natural gas **Ammonia co-firing**
Comparison of swirl flame

IHI

- Cutting edge combustion technology
- Long track record in EPC and O&M work for thermal power plants

Technology development program

SIP

戦略的イノベーション創造プログラム
Cross-ministerial Strategic Innovation Promotion Program

NEDO



TOHOKU UNIVERSITY

AIST

KYOTO UNIVERSITY



大阪大学
OSAKA UNIVERSITY

IR CRIEPI

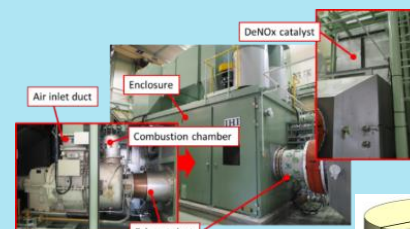
Support from government & major academic institutions

Our key technologies:

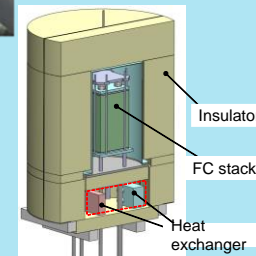
- To use fuel ammonia at actual power plants!



Coal fired power plants



Gas turbine



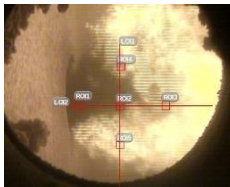
Solid oxide fuel cell

~FY2030
Goal: Development of 100% pure ammonia combustion technology
Purpose: Power plants without CO₂ emissions

FY2021 ~
20% ammonia co-firing demonstration by JERA's 1,000MW commercial unit

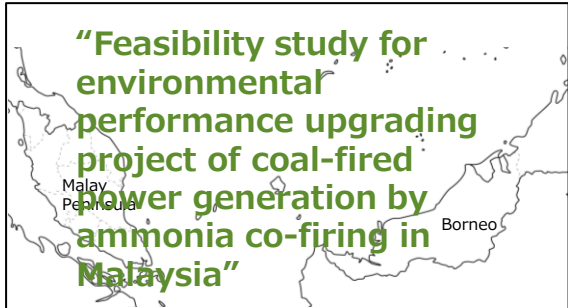
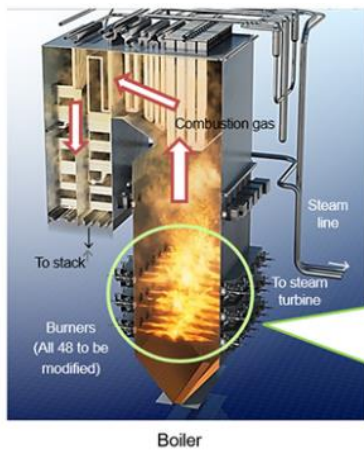
Commercial operation (after construction of ammonia terminal)

Expand ammonia co-firing technology to coal fired power plants overseas

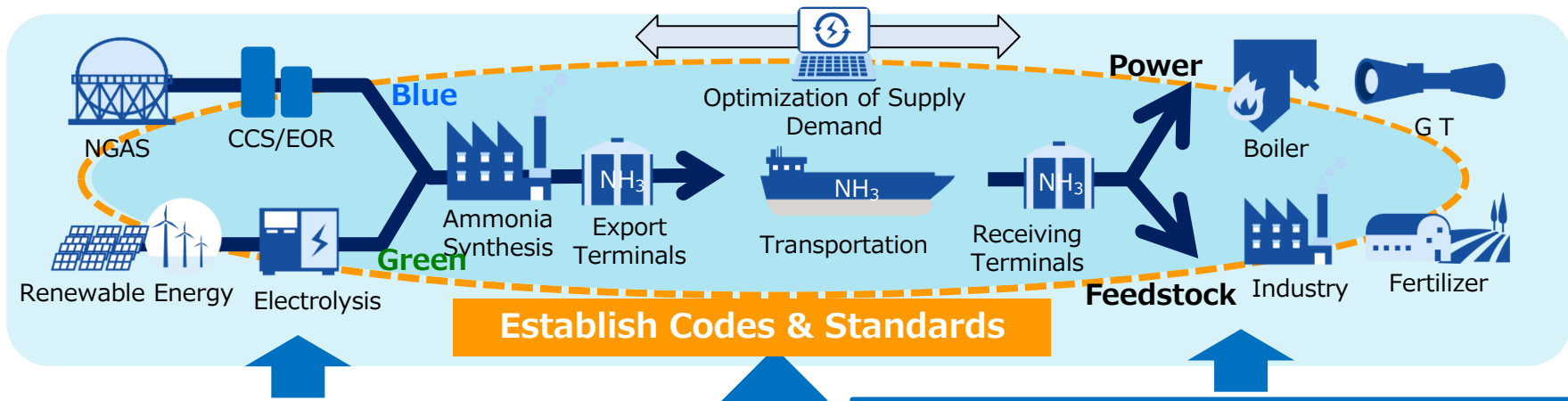


FY2019~2020
FS for 20% co-firing demonstration (NEDO)

FY2010~2018
Base technology for ammonia co-firing (SIP:2014~)



Establishing fuel ammonia value chain by IHI



Target : Reducing green ammonia cost to 30% of existing technology

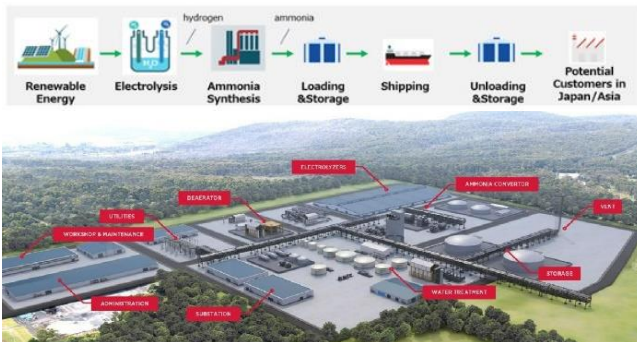
- Evaluation & execution of green ammonia project
- Promoting innovation in electrolysis technology

Target : Achieve ammonia demand of 3MTPA fuel by 2030 and 30MTPA fuel by 2050

- Development of pure ammonia combustion technology

Target : Reducing time to construct ammonia infrastructure

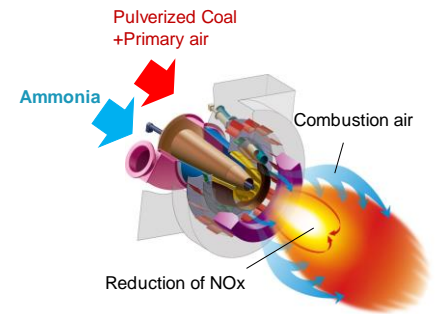
- Large scale ammonia storage/supply system



FS on green ammonia project in TAS, Australia (with Woodside Energy, Marubeni Corp.)



Carbon Neutral Port using large scale ammonia storage system



100% pure ammonia combustion technology

