

# MHI Group Activities to Establish Ammonia Value Chain for Fuel Use

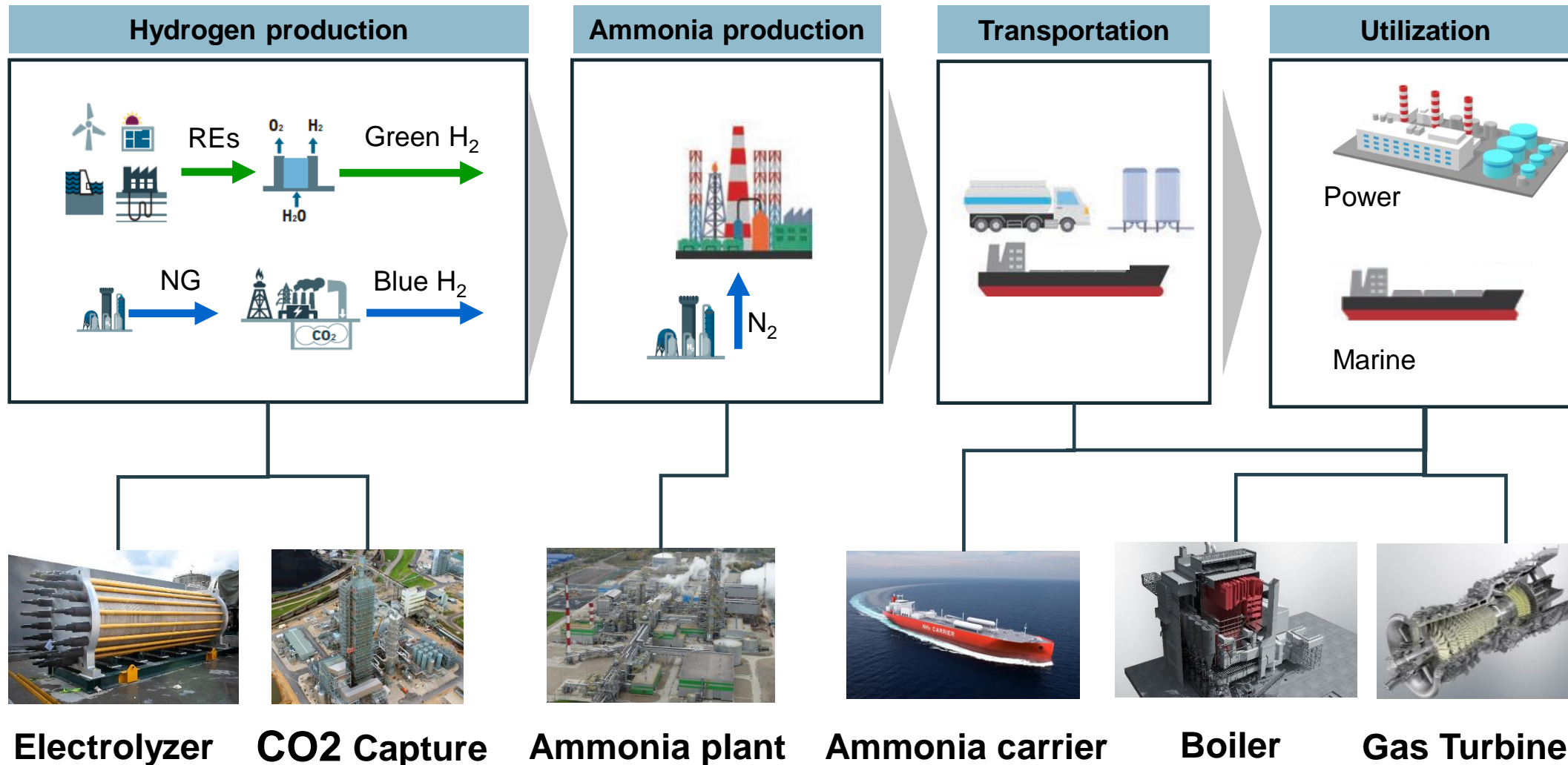
Third International Conference on Fuel Ammonia

September 29, 2023

Mitsubishi Heavy Industries, Ltd.

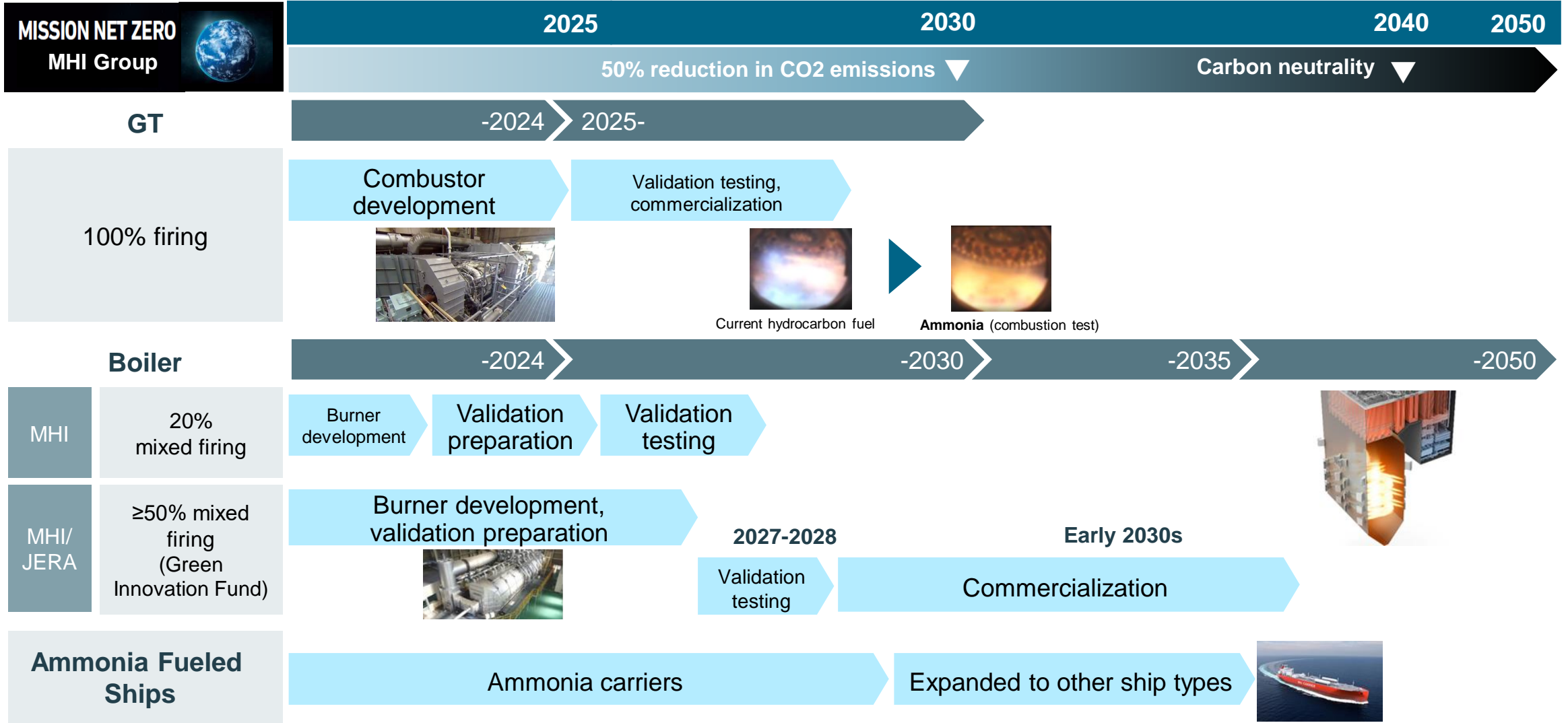
# MHI Group products related to ammonia value chain

➤ MHI Group has many products that contribute to the establishment of the ammonia value chain



# Technology Roadmap

- MHI group promotes the development of products using ammonia, a decarbonized fuel, with targets of a 50% reduction in CO2 emissions by 2030 and carbon neutrality by 2040.





# Bases of Decarbonization Technology Development

- Developing elemental technologies at Nagasaki and Takasago (Hyogo Prefecture). Planning to commercialize after validation testing at Takasago.

## (1) Develop elemental technologies (Nagasaki & Takasago)



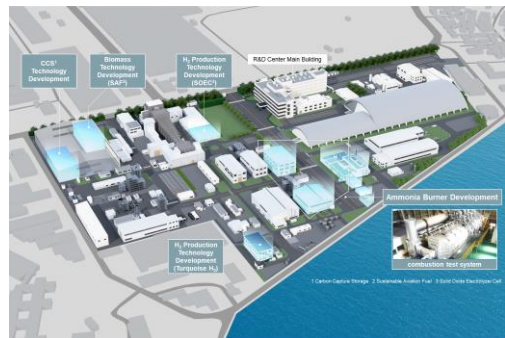
Nagasaki Shipyard & Machinery Works



Koyagi Plant, Nagasaki Prefecture



Takasago Machinery Works, Hyogo Prefecture



Nagasaki area facilities



Takasago area facilities

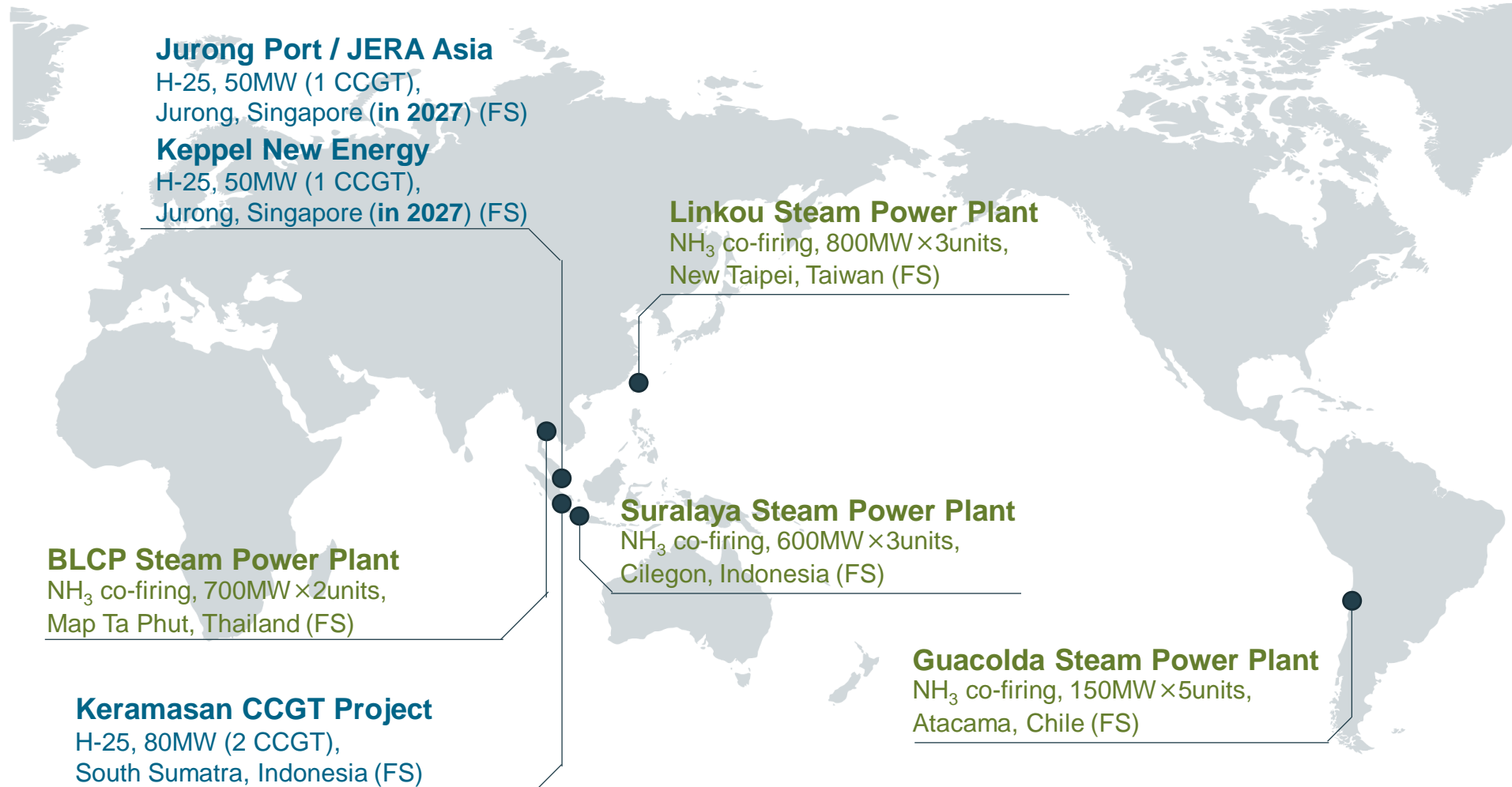


## (2) Validate technologies at commercial power generation facility (Takasago)



Validation at Takasago Hydrogen Park

# MHI Ammonia-Fired GTCC and Boiler Projects



## PRESS INFORMATION

### Mitsubishi Shipbuilding to Commence Development of Large-size Ammonia Carrier Fueled by Ammonia -- Collaboration with Mitsui O.S.K. Lines and Namura Shipbuilding Targets Decarbonization of Maritime Industry --

2021-11-04



- Aims set on achieving operation of vessels fueled by ammonia – a clean energy – and increasing volume of marine transportation of ammonia
- Basic design concept to be developed among those three partners.



## PRESS INFORMATION

### Mitsubishi Shipbuilding and INPEX Complete Conceptual Study for Ammonia Bunkering Vessel

2023-02-02



- Conceptual study for ammonia bunkering vessel to supply fuel to ammonia-fueled vessels completed for contributing to coming carbon neutral society
- With the knowledge on multi-purpose gas carriers capable of ammonia transport, technical development and commercialization will be further investigated so as to respond to the growing social needs



Image of Ammonia Bunkering Vessel.

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