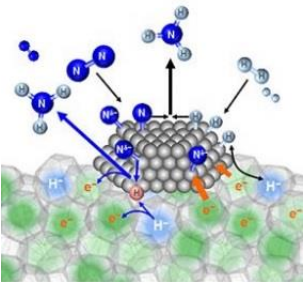


Fuel Ammonia Supply Chain Establishment Project (Amount covered by the government: Up to 68.8 billion yen)

- In order to decarbonize thermal power generation, it will be important to use fuel ammonia so as to achieve the transition while still using existing facilities.
- Currently, ammonia supply is limited to fertilizer and other raw materials. Building a fuel ammonia market will require a large-scale supply chain built through unified efforts by users and suppliers.
- Japan has already begun developing technology for ammonia co-combustion, ahead of the rest of the world. From the viewpoint of rolling it out not only in Japan but also in Asia and other overseas markets soon, develop and demonstrate manufacturing methods that will help increase the scale and reduce the cost and CO₂ emissions on the manufacturers' side, and develop technology for high-ratio co-combustion and mono-fuel combustion on the users' side.

Ammonia synthesis technology

- In order to reduce blue ammonia synthesis costs (operating costs by more than 15%), develop technology that can synthesize it at lower temperatures and pressures than the Haber–Bosch process.
- Catalysts need to be developed, and their activity and stability improved.

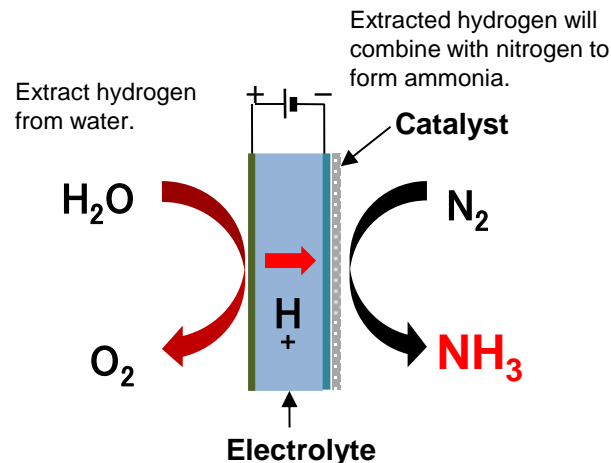


Source:
Materials released by NEDO

Note: Nitrogen and hydrogen molecules separate into atoms via a catalyst. These combine to form ammonia.

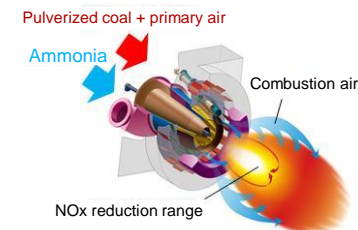
Green ammonia synthesis

- In order to reduce the cost of green ammonia, develop a hydrogen-free manufacturing method.
- A catalyst needs to be developed for the electrodes and electrolyte used for synthesis.



Manufacturing co-combustion and mono-fuel combustion burners

- Develop the high-ratio co-combustion and mono-fuel combustion burners (more than 50% on the actual equipment) needed for high-ratio co-combustion and mono-fuel combustion in boilers and turbines.
- New burners need to be manufactured to solve the technical challenges of higher NO_x emissions, poorer heat absorption, and ignition instability that will arise when the ammonia mixing ratio is increased. The newly developed burners will also need to be used to demonstrate the flow volume, flow rate, and blow-in position.



Source: IHI press release