绿色科技塑造POWER-TO-X
低碳未来

SHAPING THE FUTURE OF POWER-TO-X

TOPSOE

托普索低碳解决方案——

加速全球可持续能源变革

With Topsoe's Technology

武娟，托普索中国
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历史与未来 —— 着眼于解决世界的严苛挑战
A HISTORY OF TAKING ON SOME OF THE WORLD'S TOUGHEST CHALLENGES

五十年代 1950s

开发合成氨技术，帮助世界人口解决粮食问题Topsoe ammonia technology to produce fertilizer helps feeding the growing world population

九十年代 1990s

托普索洁净空气解决方案，从工业尾气中取出有害颗粒物、温室气体和烟尘Topsoe clean air solutions remove hazardous particles, greenhouse gases, and smog from industrial emissions

1940年 1940

基于对科学的热忱和积极改变世界的决心， Haldor Topsøe 博士创建了托普索公司Dr. Haldor Topsøe founds the company based on his passion for science and determination to make a positive difference in the world

八十年代 1980s

利用托普索技术，每年去除约1800万吨硫化物Topsoe technology removes 18 million tons of sulfur oxides every year

2022年

托普索解决方案将对洁净能源转型进行全程支持Topsoe solutions support all phases of the clean energy transition

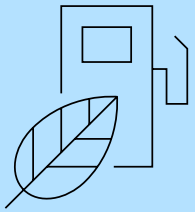
#1
制氢

H_2

#3
甲醇

MeOH

#1
可再生柴油领域



#1
合成氨市场

9%
每年研发投入占营业额百分比

6,225
营业收入
(丹麦克朗，百万)

903
息税前利润（扣除特殊项目前）
(丹麦克朗，百万)

2,133
员工总数

全球温室气体排放中占比居高的行业
SECTORS RESPONSIBLE FOR A LARGE PART OF GREENHOUSE GAS EMISSIONS

全新思路 ——

为减排困难的行业提供解决方案

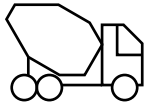
重工业和长途运输的污染排放在全球温室气体排放中占比巨大

CREATING NEW SOLUTIONS FOR HARD-TO-ABATE SECTORS

数据来源: Climate Watch, the World Resources Institute (2020)

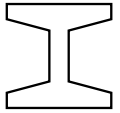
3%

水泥Cement



7%

钢铁Iron & Steel



6%

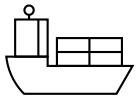
化工、石化Chemical & Petrochemicals

2%

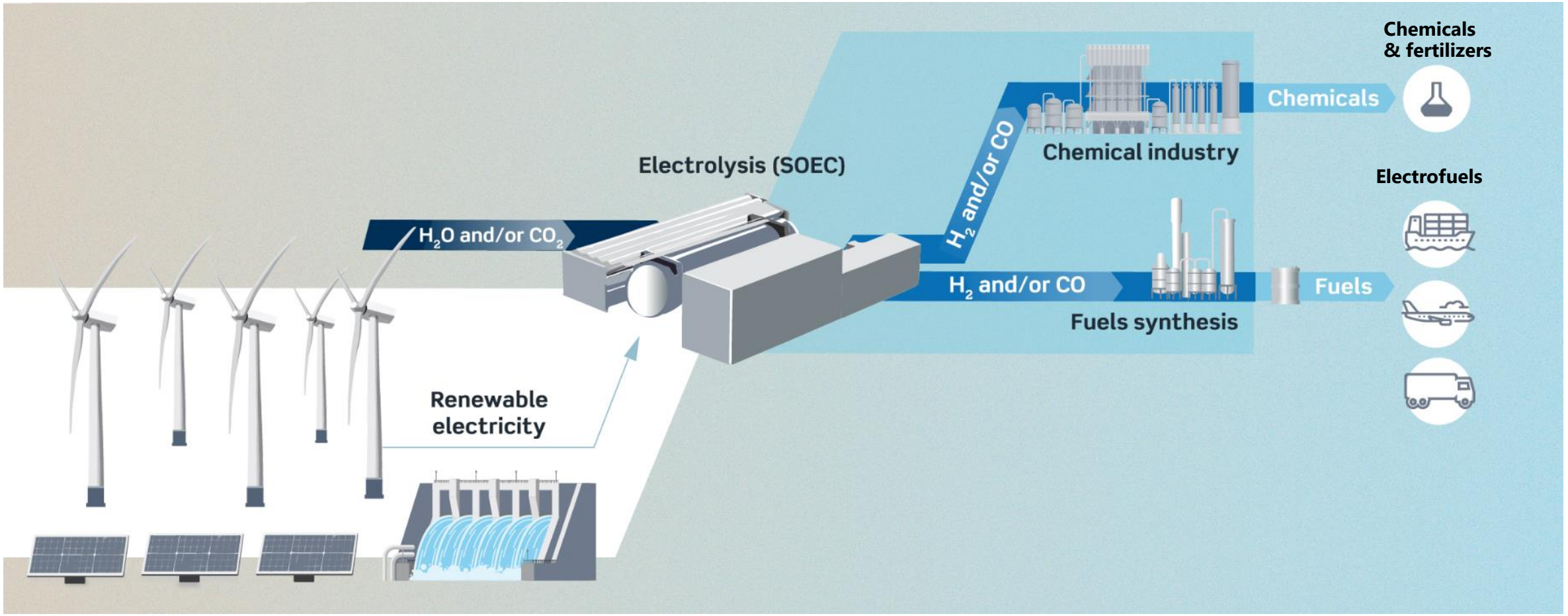
航空Aviation

2%

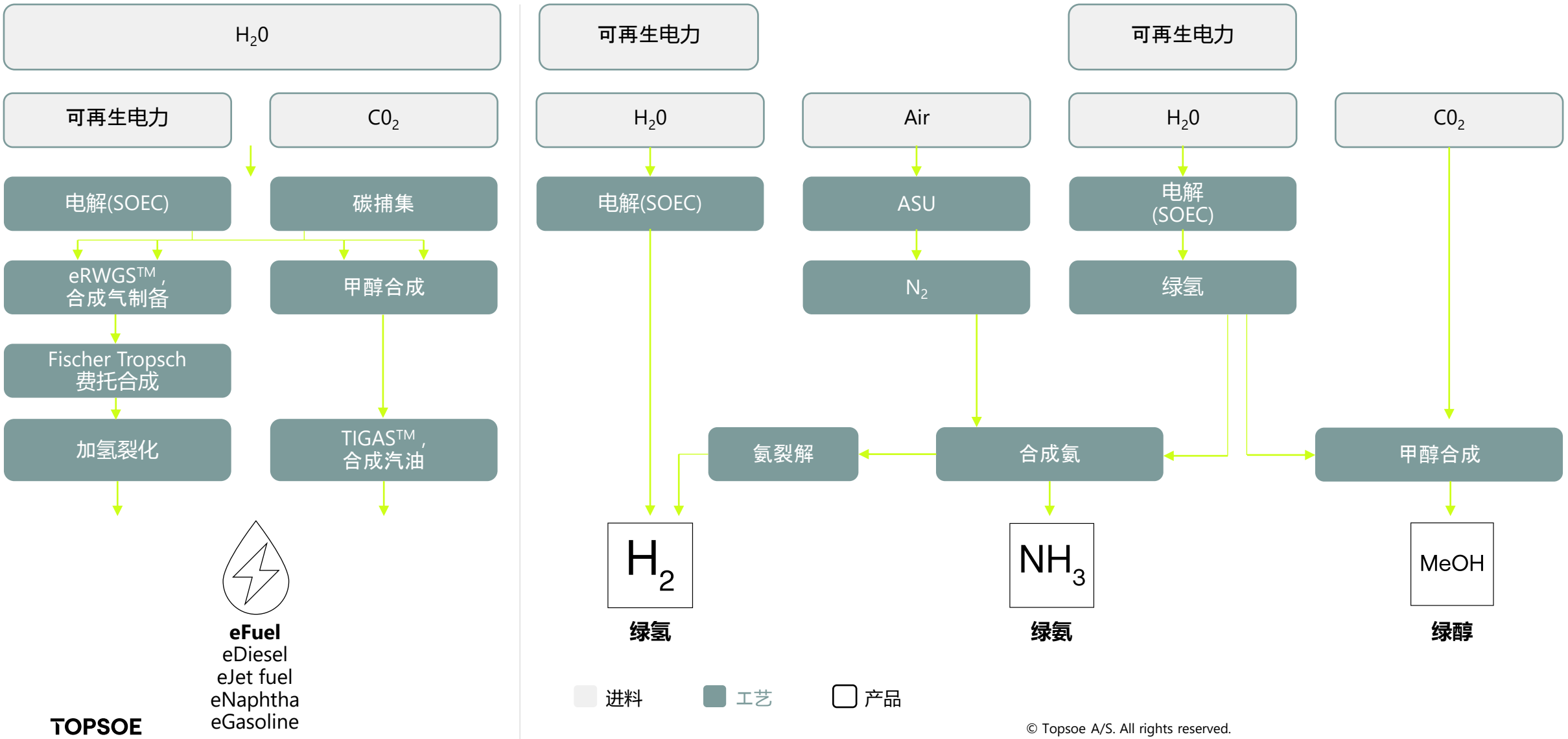
船运Shipping



POWER-TO-X电力多元转化的意义
WHAT IS POWER-TO-X?



POWER-TO-X 解决方案可以将可再生能源转化为绿色燃料或化学品
TO TRANSFORM RENEWABLE POWER INTO GREEN FUEL, ENERGY, OR CHEMICALS



TOPSOE

托普索项目进展TOPSOE PTX PROJECTS

全球重大项目

正在建设500MW的SOEC电解槽生产线

- 预计2024年底投产，后期可以扩展到5GW

Building a 500 MW SOEC Manufacturing plant

- Start-up in end 2024 with expansion to 5 GW

托普索在做的全球**最大动态绿氨**项目 - 沙特NEOM 年产120吨绿氨 Topsoe provides technology for the **world's biggest** green ammonia plant in Saudi Arabia (1.2 MTPA)

丹麦**"Green Fuels for Denmark"** IPCEI 项目参与者 – 将绿氢和捕来的二氧化碳合成绿色甲醇以及航煤 Part of the "Green Fuels for Denmark" IPCEI project to produce **green methanol** and **jet fuel**

First Ammonia的绿氨项目 - 采用托普索**SOEC** 电解技术以及**动态合成氨**技术（一期500MW，后期长约5GW) First Ammonia using **SOEC** and **dynamic ammonia** technologies

瑞典Liquid Wind项目 – 采用绿氢和生物质捕集的二氧化碳合成绿色甲醇 Part of the **Liquid Wind consortium** in Sweden to produce clean methanol from green hydrogen and carbon from bio waste

与丹麦**Skovgaard**以及**Vestas**合作，开发建设和运营一套全动态的10MW的绿氨示范项目 Cooperation with **Skovgaard and Vestas** to build a fully dynamic 10MW green ammonia plant

为实现最高的利用率及能效 - 采用我们的行业领先的合成氨技术
ACHIEVE THE HIGHEST UTILIZATION AND ENERGY-EFFICIENCY WITH LEADING AMMONIA SOLUTIONS

绿色合成氨 GREEN AMMONIA

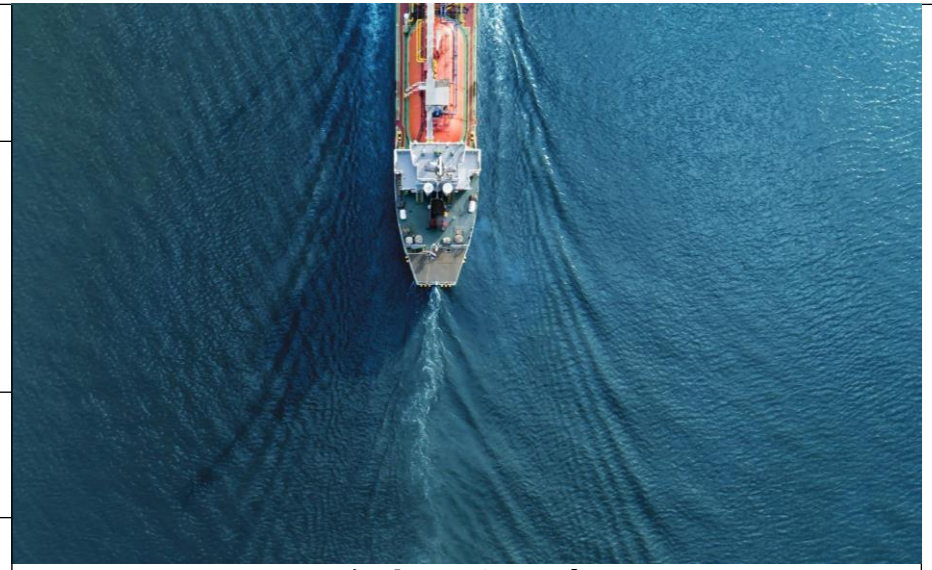
绿氨是一种优秀的的燃料以及化肥，可以替代大量化石燃料，并有助于加速全球向可再生能源的转型 Green ammonia is an excellent fuel and fertilizer, which can replace significant volumes of fossil fuels and help accelerate the global transition to renewable energy

巨大的市场商机 Massive business opportunities

低投资成本 Low cost of ownership

混合生产可以将绿氨整合进现有的基于化石能源的装置中
Hybridized production integrates green ammonia into existing hydrocarbon-based facilities

高效的氨裂解技术可将绿氨在消费终端转化回绿氢
High-efficiency ammonia cracking converts green ammonia back into green hydrogen at the point of consumption



绿氨可以驱动
Green ammonia could fuel

1/3

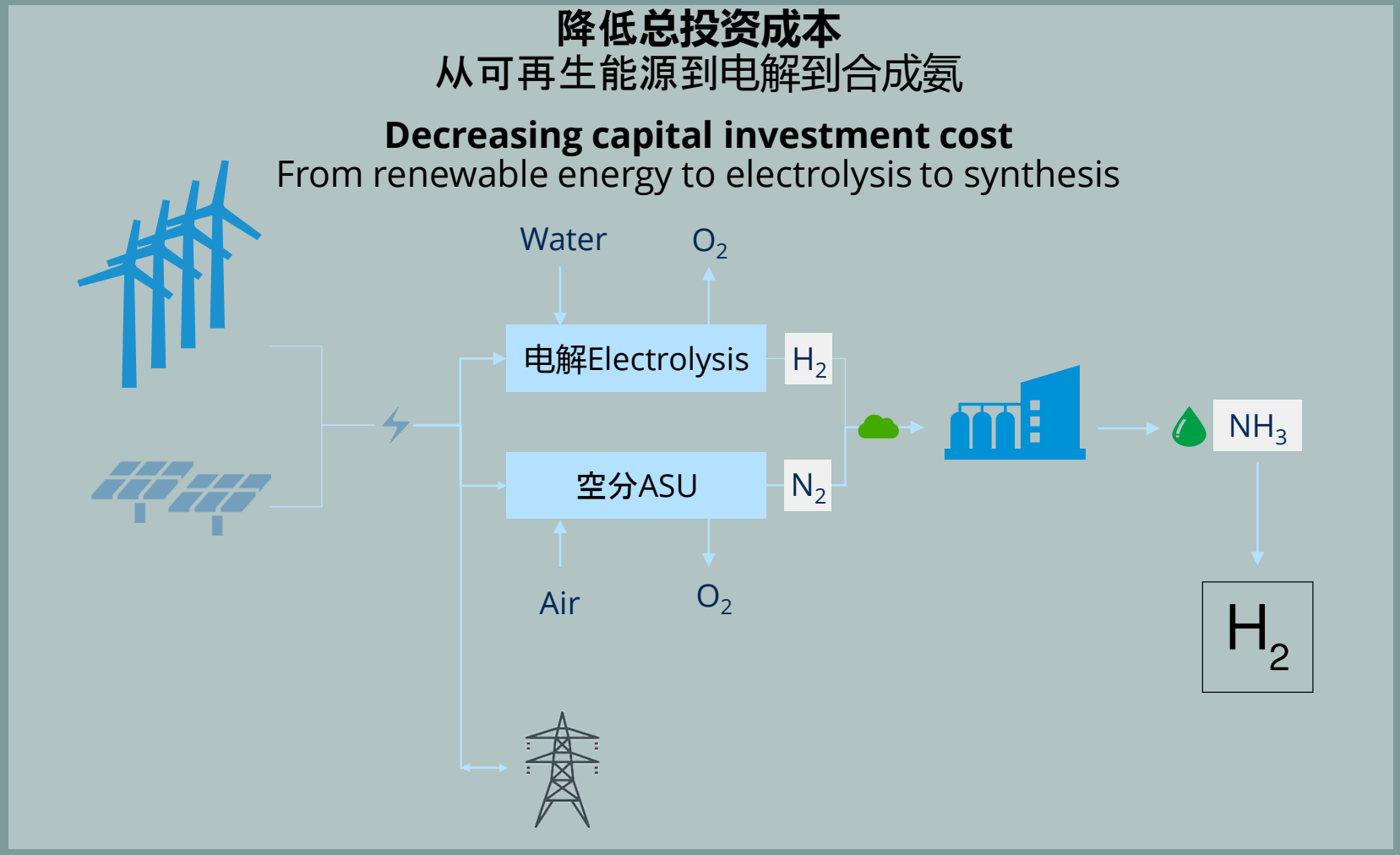
全球运输船队
of the global shipping fleet*

*State of Green, 2020

优势Advantages

- 负荷在10%~100%的全动态灵活操作Fully flexible operation 10-100% plant load
- 3%/分的快速响应速度 Quick response rate (3%/min)
- 热备以及快速启动Hot standby and quick restart
- 无须储氢No hydrogen storage
- 零碳能源载体Store energy as NH3
- 平衡电网负荷Grid balancing

绿色动态合成氨 Green Dynamic Ammonia



国内首套全动态绿氨装置签约
FIRST DYNAMIC GREEN AMMONIA IN CHINA

Topsoe signs agreement on first commercial size dynamic green ammonia plant in China

Topsoe has been chosen by Mintal Hydrogen Energy Technology (Mintal Hydrogen) as technology provider for a new green ammonia plant in Baotou, Inner Mongolia, China The new...

明拓包头动态绿氨项目

MINTAL DYNAMIC GREEN AMMONIA PROJECT IN BAOTOU

地点 Location：内蒙古包头 Baotou, Inner Mongolia

规模 Capacity：1800吨/日 1800 ton/day

投产时间 Start-up：2025年中 Mid 2025

原料Feed：自建风电 New installed wind power

碳减排 Carbon Reduction：每年减少85万吨煤 ~ 850,000 tons of coal annually

特色 Features：无储氢，动态平稳运行 NO hydrogen storage and safe operation in dynamic way













欲了解更多信息或联系我们，请参考我们的网站
www.topsoe.cn 和 **www.topsoe.com**

谢 谢！