Integrated Hydrogen Systems

Green Hydrogen: Manufacturing, Storage, Transportation & Utilization

M. Venkatesh
Chief Technology Officer, L&T Heavy Engineering

L&T Business Spectrum

Construction

Construction & Mining Machinery

L&T Realty

L&T IDPL

L&T- Metro rail

Minerals and Metals

Defence & Shipbuilding

Heavy Engineering

L&T Valves

L&T Energy - Hydrocarbon

L&T Financial Services

Mindtree

L&T Technology Services

L&T Infotech

Global Benchmarks – Key Products

Reactors (261)

EO Reactors (56)

FCCU & Columns (200+)

Coke Drums (80)

HP Heat Exchangers (450+)

Urea & NH_3 Converters (600+)

Gasifiers (47)

Steam Generators (45+)

Modification, Revamp Site Work (50+)

Critical Piping (50,000 MT+)

World Class Quality delivered On Time

Products exported to more than 50+ Countries spread over all five continents

Hydrogen Colour Spectrum

Grey Hydrogen
Process: Steam Reforming
Source: Natural Gas

Blue Hydrogen
Process: Steam Reforming With Carbon Capture
Source: Natural Gas

Green Hydrogen
Process: Electrolysis
Source: Renewable Energies

Black Hydrogen
Process: Gasification
Source: Coal

Pink Hydrogen
Process: Electrolysis
Source: Nuclear Energy

Turquoise Hydrogen
Process: Pyrolysis
Source: Natural Gas

Yellow Hydrogen
Process: Electrolysis
Source: Solar Energy

Source: Acciona

Overview of Global Green Hydrogen Policies

- $8 billion investment package for 60+ large scale hydrogen projects
- Electrolyzer capacity target – 17.5 GW by 2025 and 40 GW by 2030 committed in 2022
- Produce 10 MMTPA of green hydrogen by 2030 & import 10 MMTPA by 2030

- Production capacity of 10 GW by 2030; €7 bill govt investments for green hydrogen
- Tenders for electrolysis services, subsidies for new plants
- SEN-1 zone in North Sea for offshore green hydrogen production; auction for demo plants
- Promoted in industrial sector e.g. green steel, fertilizers, petroleum refineries
- 400 Kms of hydrogen pipelines in existence

Overview of Global Green Hydrogen Policies

- Target of 15.5 GW of electrolyzer capacity by 2030 for green hydrogen
- € 1.5 bill allocated by Spanish govt to support green hydrogen projects in 2020
- Home to 20% of world's green hydrogen projects; 50 projects under development
- In 2022, Iberdrola commissioned largest green hydrogen plant for industrial use; will reduce 10% of NG consumption of fertilizer manufacturer, Fertiberia
- € 3 bill being invested to create green hydrogen valley to produce 0.3 MMTPA by 2027

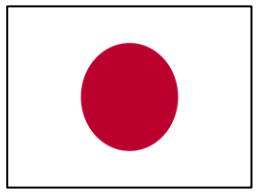
- 6.5 GW of green hydrogen production capacity by 2030
- € 7 bill investment by French govt by 2030 to support development of low-carbon & renewable hydrogen
- Use of nuclear energy for electrolysis

Overview of Global Green Hydrogen Policies

- 10 MMTPA of green hydrogen production by 2030; 20 MMTPA by 2040; 50 MMTPA by 2050
- $9.5 billion investment by US govt for green hydrogen; subsidy on cost reduction up to $3/Kg
- Green hydrogen to be utilized in industrial sector, heavy-duty transportation & long-duration energy storage
- ~2500 Kms of hydrogen pipelines are currently operational

- National Hydrogen Mission - Development of green hydrogen production capacity of at least 5 MMTPA with an associated renewable energy capacity addition of about 125 GW in the country
- Over Rs. Eight lakh crore in total investments
- Abatement of nearly 50 MMT of annual greenhouse gas emissions

Overview of Global Green Hydrogen Policies



- 3 MMTPA of green hydrogen production by 2030; 12 MMTPA by 2040; 20 MMTPA by 2050
- Boost local electrolyzer manufacturers to win 10% of global market share by 2030
- $112.8 billion of public and private investment to advance the use of hydrogen and renewable energy sources over the next 15 years

- 4 MMTPA of green hydrogen production by 2030
- Aims to become top supplier of hydrogen in the world (both renewable and low-carbon hydrogen)
- Announced that it would use a large portion from the $110 billion Jafurah project, a field estimated to hold 200 trillion cubic feet of gas, for the production of blue hydrogen

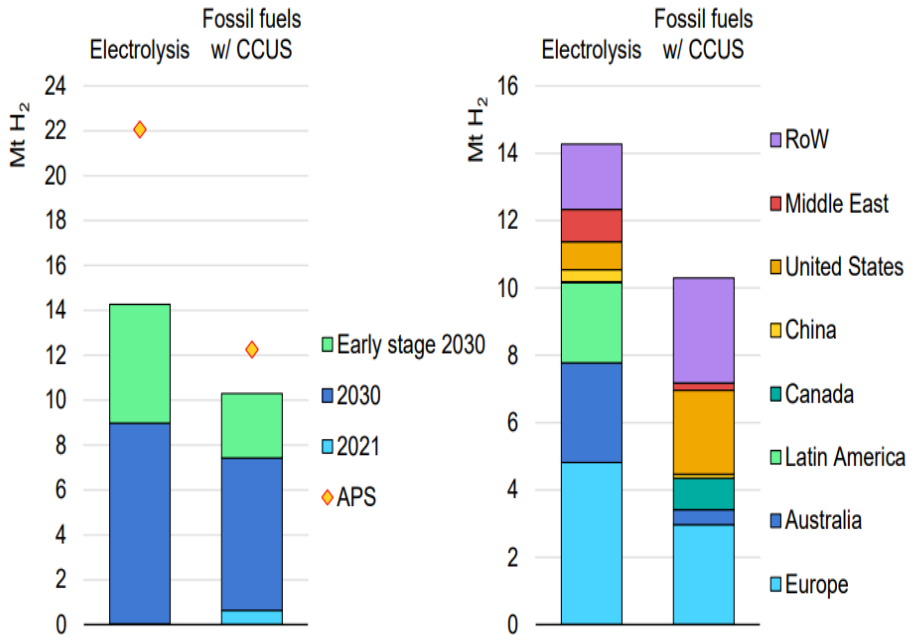
L&T's ESG Policy

Aspects	UOM	Actual	Target
		FY22	FY26
CO_2e impact - post abatement	mill tonne	0.81	1.11
Emission intensity target	tCO_2e/ bill INR	893	543
Net water consumption (excl. conservation, recharge methods)	kilolitres/Mn	9.4	13.3
Water consumption intensity	Kilolitres / bill INR	9,454	7,500
Green business	% of revenue	38.2%	40 %
% of renewable energy	% of total electricity mix	10%	50%

Source: L&T Sustainability Fact Sheet

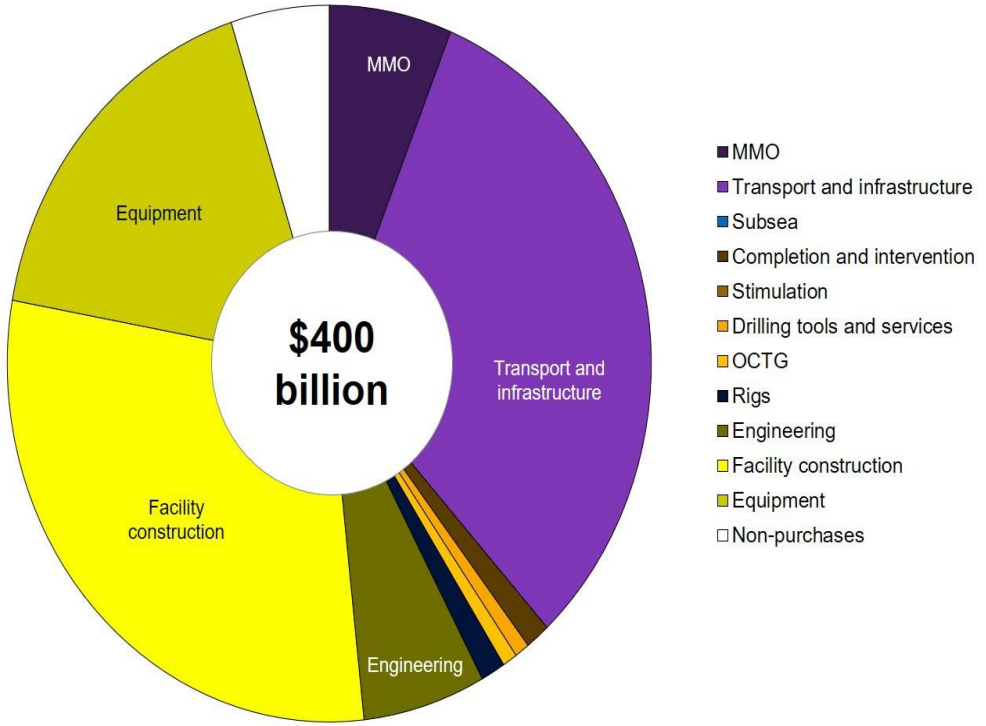
Hydrogen : Global Production & Spending

Low-emission hydrogen production, 2020 and 2030



Notes: RoW = rest of world; APS = Announced Pledges Scenario. In the left figure, the blue columns for 2020 and 2030 refer to projects at advanced planning stages. The right figure includes both projects at advanced planning and early planning stages. Only projects with a disclosed start year for operation are included.
Source: IEA, Hydrogen Projects Database (2022).

Spending related to Green Hydrogen Projects from 2020 to 2035



Source: Rystad Energy research and analysis

Partnerships / Collaborations & Key Global Projects

Key Global Partnerships
(M&A and JVs)

Technip + McPhy (Driving clean energy forward)

Linde + ITM POWER (Energy Storage | Clean Fuel)

Cummins + HYDROGENICS (SHIFT POWER | ENERGIZE YOUR WORLD)

EDF + McPhy (Driving clean energy forward)

BOSCH + POWERCELL

WEICHAI + BALLARD (PUTTING FUEL CELLS TO WORK)

SAIPEM + snam

Indian Partnerships
(JVs)

Reliance Industries Limited

adani + snam

Greenko + snam

IndianOil + ReNew POWER + LARSEN & TOUBRO

LARSEN & TOUBRO + McPhy (Driving clean energy forward)

Key Global Projects

NortH2 - RWE, Equinor, Eneco and Shell

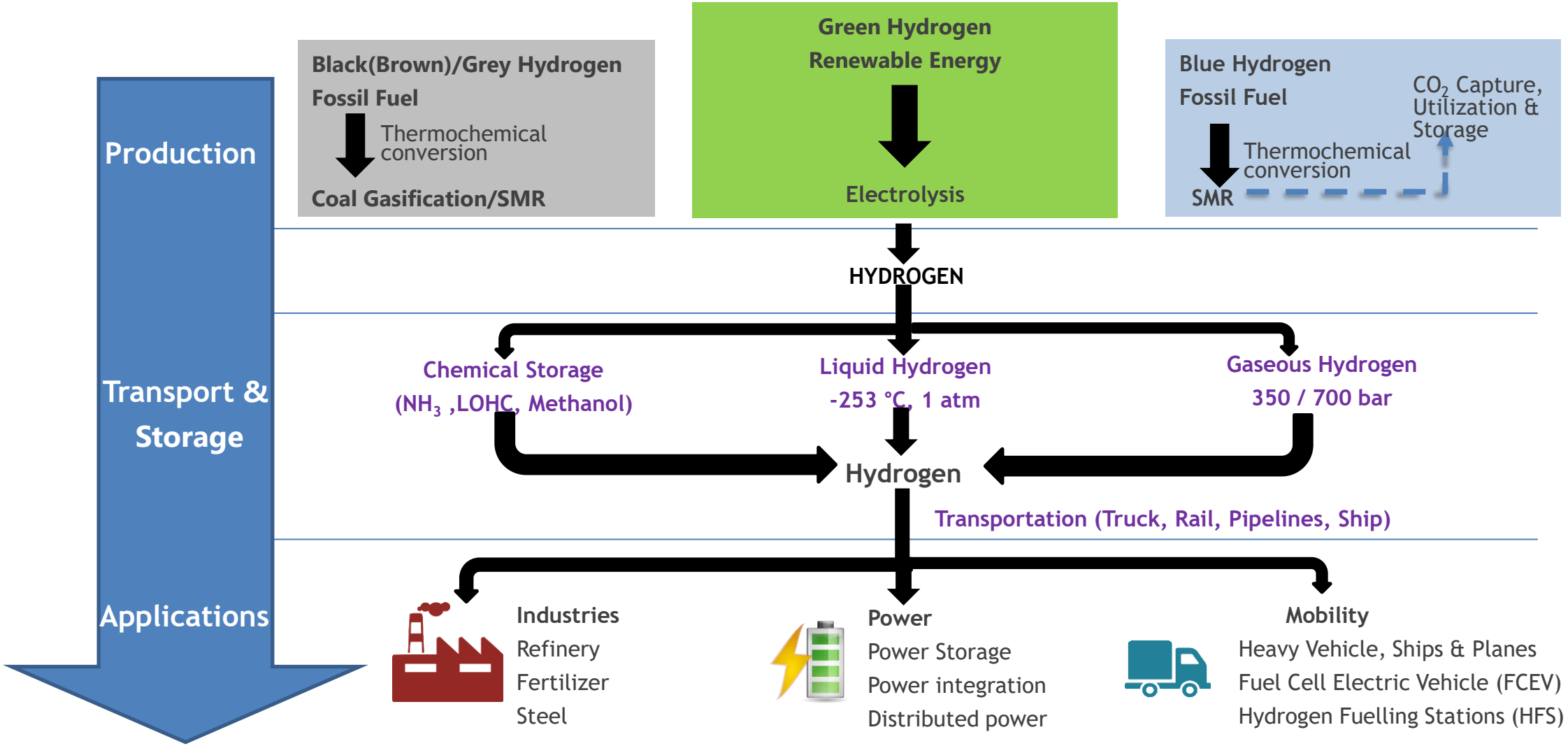
Hyport- McPhy, OQ, DMDE

H2H - Humbler,Equinor

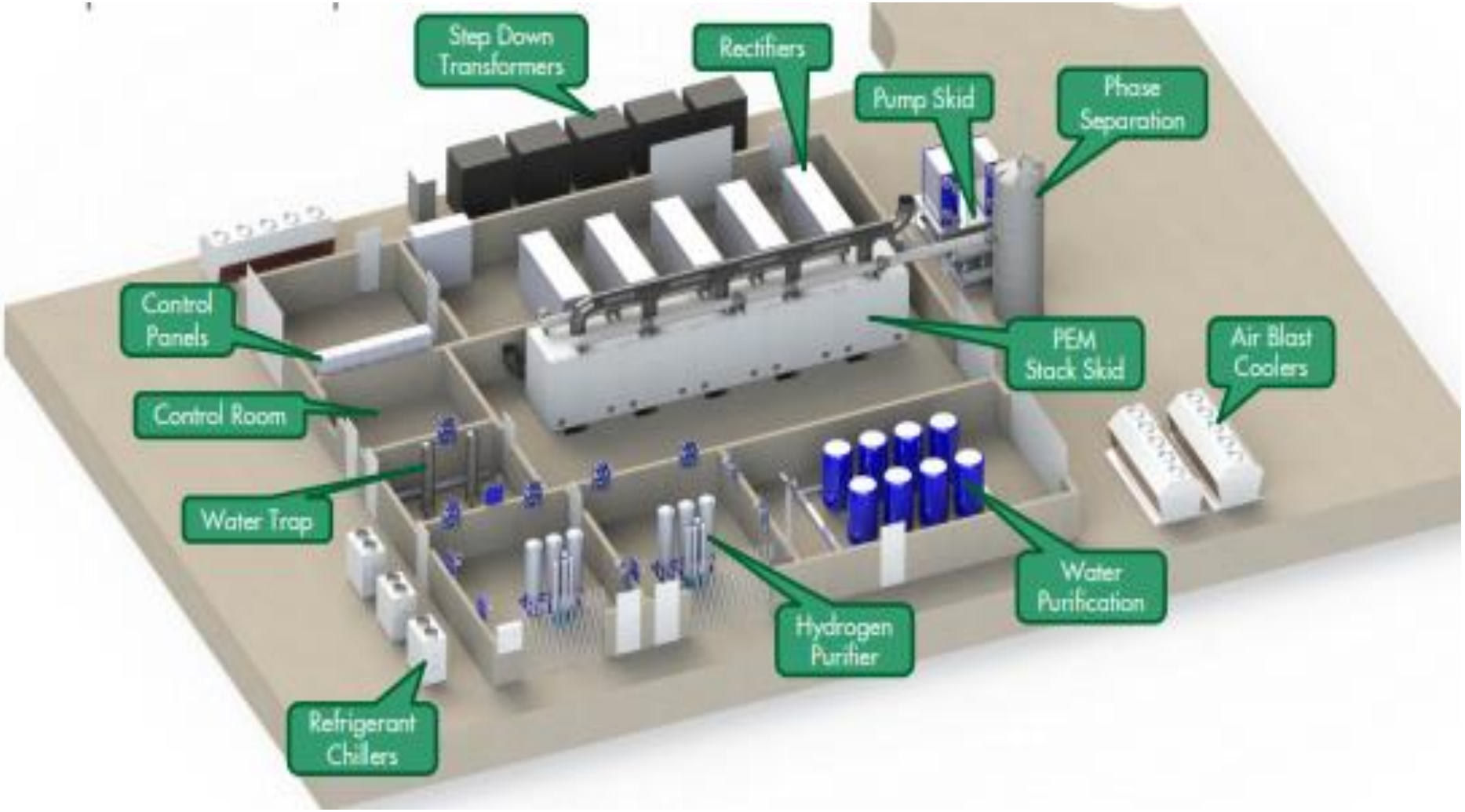
AREH H2 project - BP

NEOM

Hydrogen Value Chain



Model of a Typical Green Hydrogen Plant



Electrolyser Technologies

	Alkaline Electrolyser	Proton Exchange Membrane Electrolyser	Solid Oxide Electrolyser
Operating Condition	60 – 80 °C P < 30 bar	50 – 80 °C 1 to 60 bar	800 -1200 °C, Up to 85 bar
Electrical Efficiency (expected)	70%	68-70%	75%
Advantages	• **Lower CAPEX** • Long term durability (20 years)	• **High current density (2 A/cm2)** • **Compact design (1.5 MW/40ft container)** • **Dynamic response**	• **High working pressure** • **High electrical efficiency** • Low cost of electro catalysts
Disadvantages	• Low current density (< 400 mA/cm2) • Safety concerns due to crossover of gases • Low dynamic performance	• **High cost due to expensive electrodes** • **Low durability (8-10 years)** • Corrosive due to acidic environment	• Low durability due to severe operating conditions • Bulky design
Technology maturity	**Commercially established (Mature)**	**Commercially established (Early stages)**	**Under development**
Potential application cases	**Larger capacity plants with min. water treatment requirement (e.g. NEOM project)**	**Smaller capacity with varying/fluctuating power source e.g. Excess RE based H2 storage solutions**	**Availability of waste heat or integration with heat source e.g. Ammonia, Hybrid H2 plants, etc.**

New Electrolyser Technologies
Under development

HYDROX HOLDINGS LTD — Membrane less electrolysis

ONE SCIENTIFIC — Ionic Plasma

H_2PRO — ETAC, Electrochemical Thermally Activated Chemical

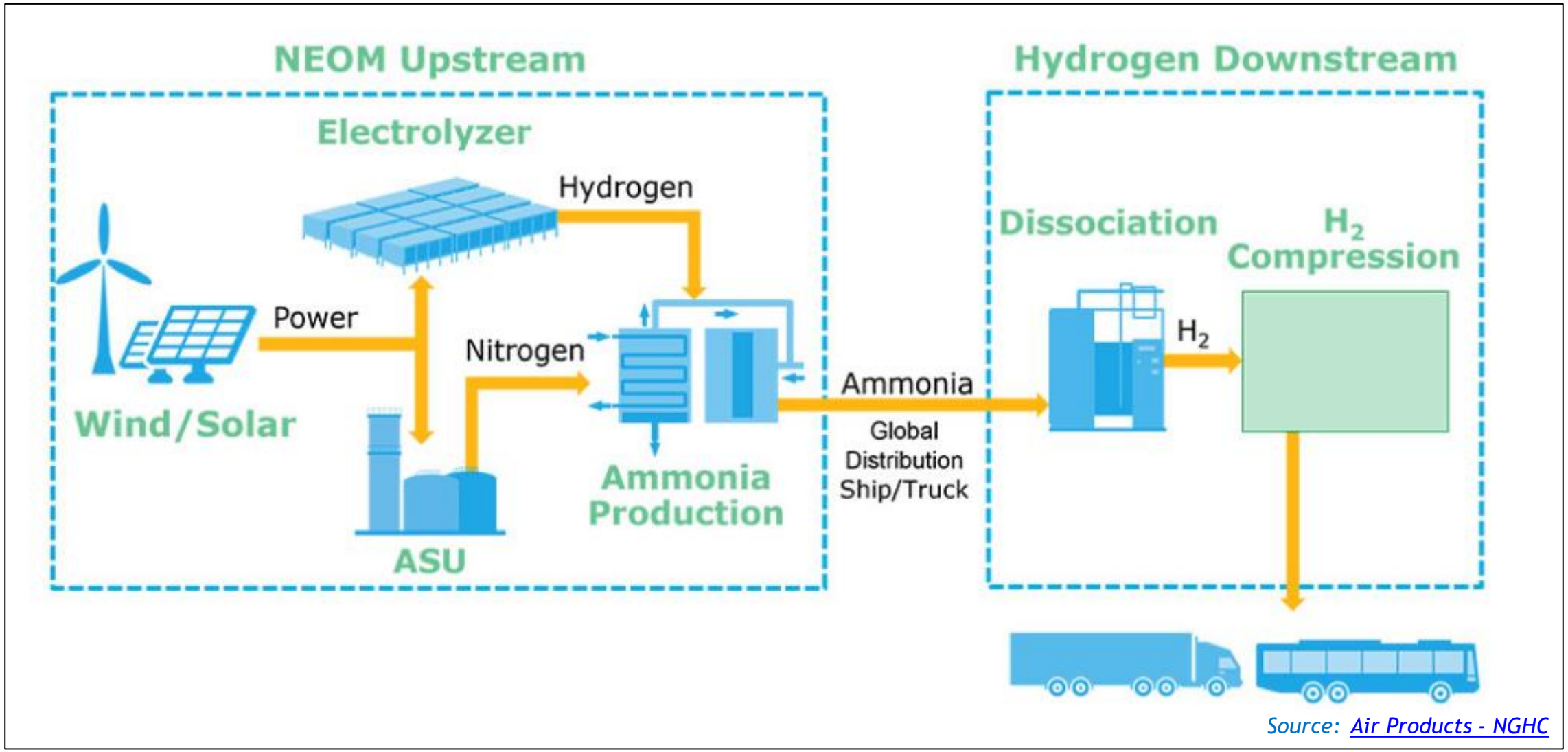
All electrolyser technologies are expected to co-exist in future

Chemical Storage : Ammonia

- By 2026, NEOM Green Hydrogen Company (NGHC), KSA plans to build the world's largest green-hydrogen-based ammonia production facility (1.2 MTPY)
- Powered by 4 GW of renewable power from onshore solar, wind
- Investment of US $ 8.4 bill
- Will produce 600 TPD of clean hydrogen by electrolysis using ThyssenKrupp technology
- Will produce nitrogen by air separation using Air Products technology
- Ammonia process technology by Haldor Topsoe
- Will avoid 5 MMTPY of carbon emissions

Source: Air Products - NGHC

Chemical Storage : Ammonia



Source: Air Products - NGHC

Equipment Design for Green Ammonia Plants : Challenges

- Renewable power for green hydrogen plant is mainly solar power
- Hydrogen production is likely to vary depending upon the availability of sunlight
- Correspondingly, ammonia plant production will also vary
- During summertime, the plant will run for long at maximum load
- During wintertime, there will be frequent and even back to back large load changes
- Each load change can be considered to be a ramp down followed by ramp up

Equipment Design for Green Ammonia Plants : Challenges

- Plant load can vary from 10% to 100%
- There will be a variation in pressure & temperature with the load changes
- The variations in load and operating conditions will result in cyclic service for the ammonia plant equipment (Ammonia Converter, Synthesis Loop Boiler)
- Fatigue analysis needs to carried out to ensure the desired life of equipment
- Necessitates transient thermal analysis of components of WHBs such as tubesheets, tubes shell, channel to determine thermal stresses

Equipment Design for Green Ammonia Plants : Challenges

Ammonia converter

Synloop Boiler

Cracking of Green Ammonia to Hydrogen

Siemens Energy led consortium

- Siemens Energy, Fortescue Future Industries and GeoPura developing new £ 3.5 mill ammonia cracker prototype in Newcastle, UK
- Will produce 200 Kgs of high purity green hydrogen per day using FFI's Metal Membrane Technology
- Suitable for PEM fuel cell use

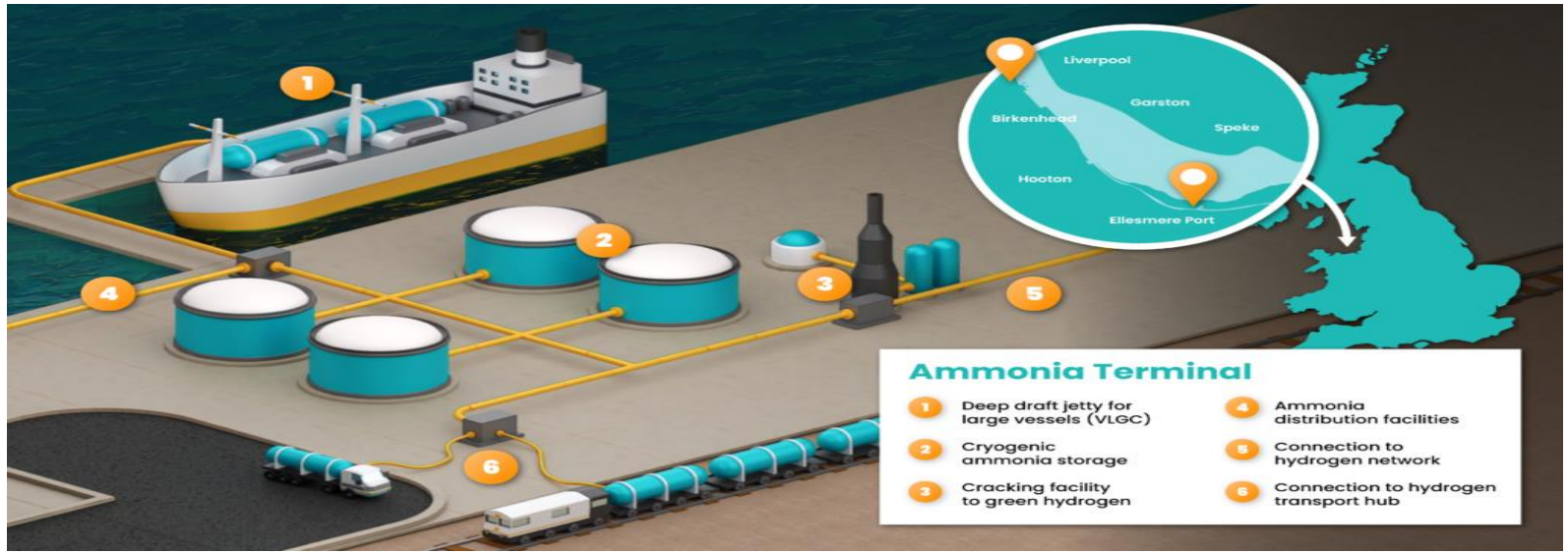
EnBW (Germany), VNG & JERA (Japan) plan feasibility study

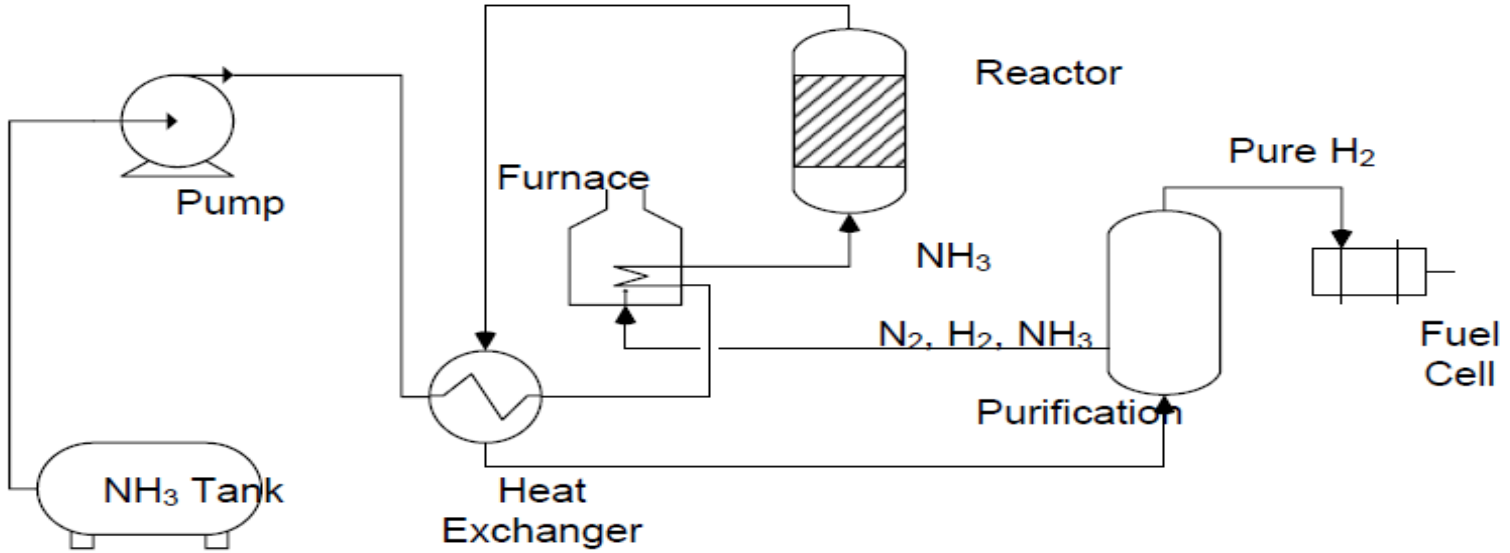
- MOU signed for joint feasibility study to evaluate construction of ammonia cracker demo plant at Rostock port area
- Cracked hydrogen will be transported to German customers

Cracking of Green Ammonia to Hydrogen

- Air Liquide will develop an ammonia cracking facility in the Port of Antwerp by 2024
- Port of Rotterdam has concluded that a 1 MMTPY cracker is feasible to construct
- Air Products will develop Immingham Green Energy Terminal in UK
- Essar Group will develop cracking facility near Liverpool, UK
- Uniper is also assessing the feasibility of an industrial-sized cracker at Wilhelmshaven in Germany
- Thyssenkrupp and ADNOC are considering to base a demo cracker at a major European port following joint development of their own technology

Cracking of Green Ammonia to Hydrogen





Source : US DOE

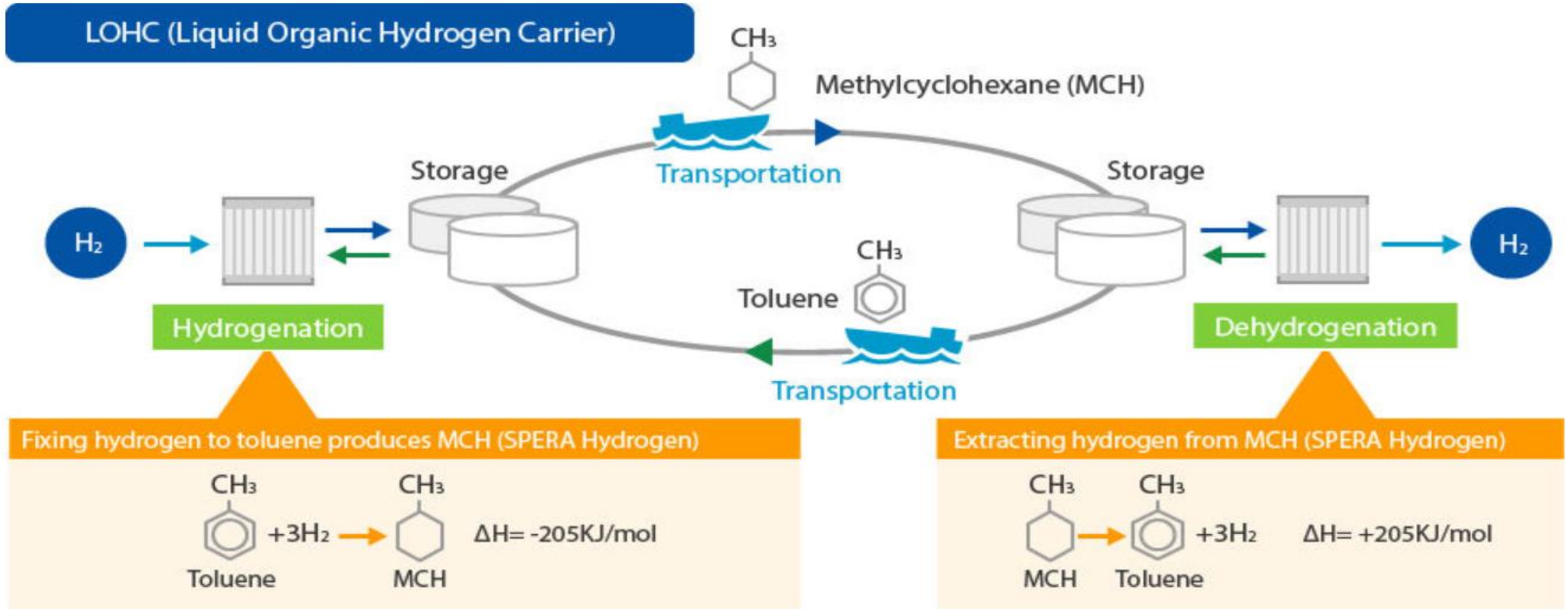
Chemical Storage : Liquid Organic Hydrogen Carrier

- Liquid methylcyclohexane (MCH) is produced from toluene and hydrogen
- Can be safely and economically stored and transported
- Both toluene and MCH are liquids at ambient temperatures and pressures
- MCH has a low degree of risk as a chemical substance
- Liquid MCH efficiently transports hydrogen because it contains 500 times more hydrogen per volume than hydrogen gas
- Gaseous hydrogen is catalytically extracted from MCH through the dehydrogenaton process at the site hydrogen is supplied to hydrogen users

Source: Chiyoda Hydrogen Innovations

Chemical Storage : Liquid Organic Hydrogen Carrier

Chiyoda's business plan for storing and transporting hydrogen utilizes the liquid organic hydrogen carrier (LOHC) method.



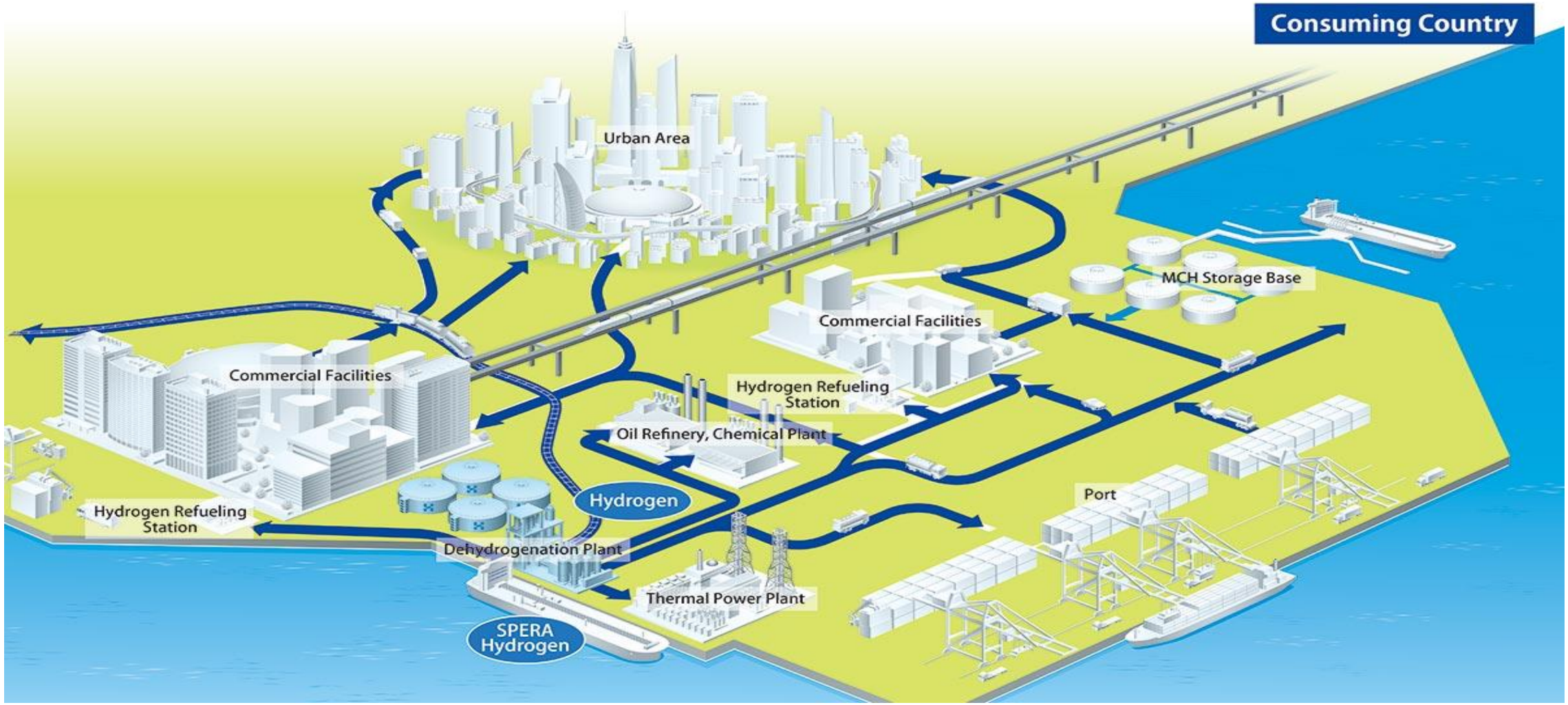
Source: Chiyoda Hydrogen Innovations

Chemical Storage : Liquid Organic Hydrogen Carrier

- Toluene is regenerated during hydrogen extraction process
- Toluene is repeatedly recycled as a raw material for producing MCH
- Chiyoda has successfully developed the proprietary dehydrogenation catalyst for MCH
- Has conducted technological demonstrations to make the catalyst for practical use
- Chiyoda has registered MCH including hydrogen for storage and transportation as the trade name SPERA Hydrogen

Source: Chiyoda Hydrogen Innovations

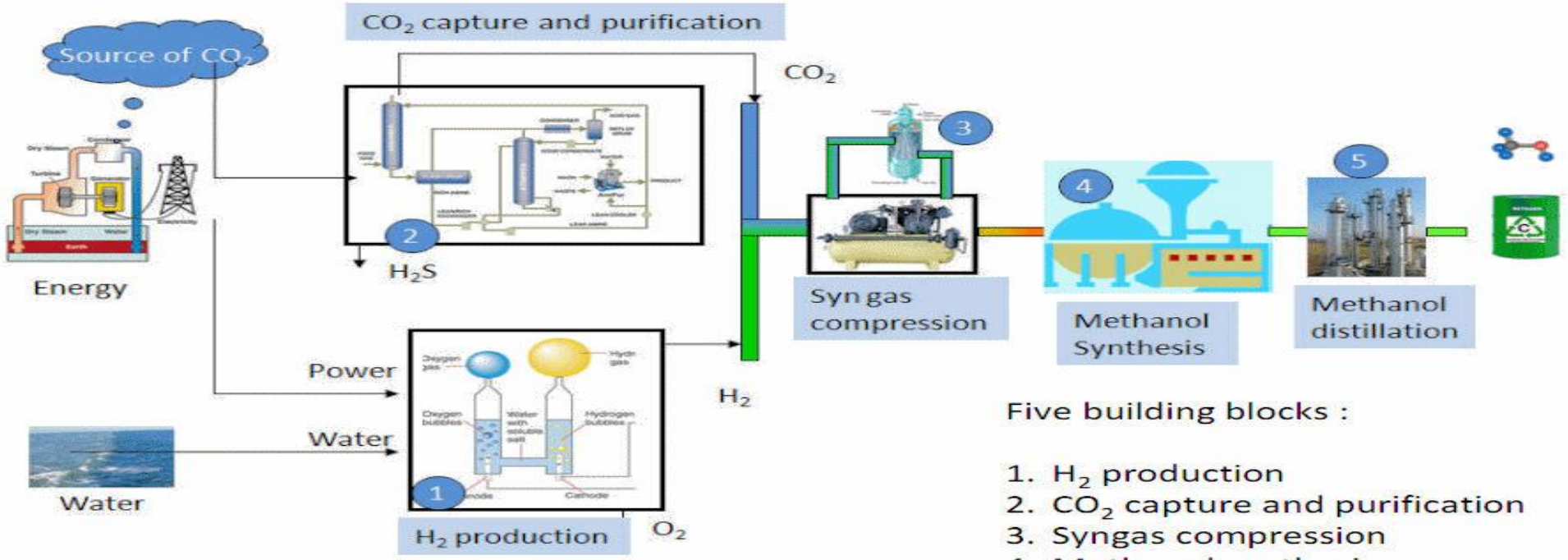
Chemical Storage : Liquid Organic Hydrogen Carrier



Source: Chiyoda Hydrogen Innovations

Chemical Storage : Methanol

CO_2 to Fuel Process



Five building blocks :

1. H_2 production
2. CO_2 capture and purification
3. Syngas compression
4. Methanol synthesis
5. Methanol distillation

Source: Green Methanol Produced in Iceland

Chemical Storage : Methanol

- World's first commercial scale CO_2-to-methanol plant has started production in Anyang, Henan Province, China
- Production process is based on the Emissions-to-Liquids (ETL) developed by Carbon Recycling International (CRI) and first demonstrated in Iceland
- ETL process uses emissions that would have otherwise been released into the atmosphere, producing liquid methanol
- Carbon dioxide is recovered from existing lime production emissions
- Hydrogen is recovered from coke-oven gas

Source: CRI

Chemical Storage : Methanol

Source: CRI

Chemical Storage : Methanol

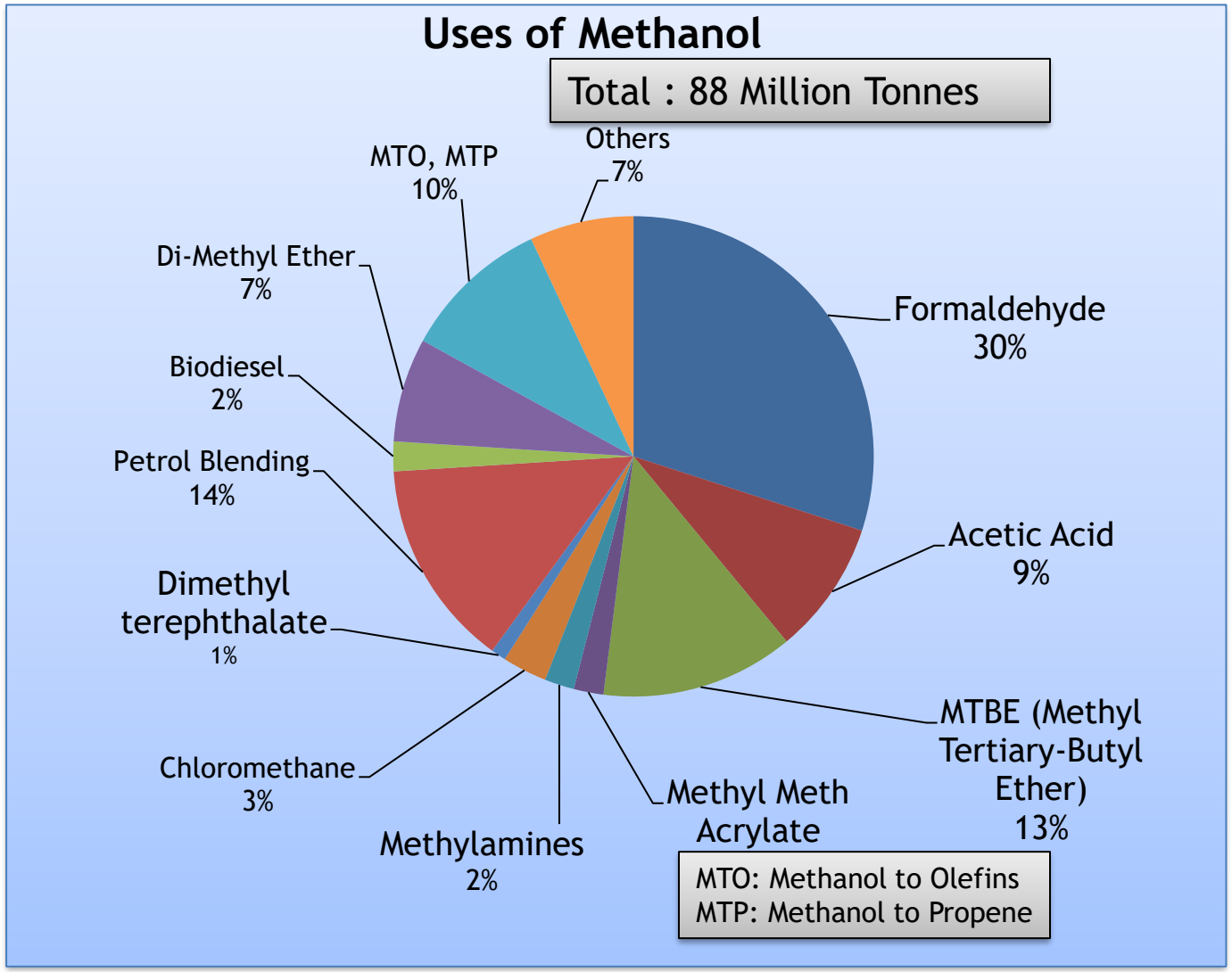
- The new facility can capture 160,000 TPA of carbon dioxide emissions a year
- Equivalent to taking more than 60,000 cars off the road
- Captured carbon dioxide is then reacted with the recovered hydrogen in CRI's proprietary ETL reactor system
- Capacity to produce 110,000 tonnes of methanol per year
- At the heart of the process is CRI's bespoke reactor that uses specialized catalysts to convert the carbon and hydrogen feed gases into low carbon-intensity methanol

Source: CRI

Methanol : Global Production & Utilization

	MTPA	Percent %
China	47	53.41
Middle East & Africa	16	18.18
South America	9	10.23
Europe & Russia	7	7.95
North America	5	5.68
S.E.Asia	4	4.55
Total	88	100

- Use of Methanol as a fuel accounts for 12.3 million tonnes in 2014
- Almost 75% of the Methanol production is used to obtain various chemicals



Ref : Data from *Argus DeWitt Methanol* newsletter 2015

Methanol Converters : L&T's Track Record

Sr	Year	Owner / End User	Customer / Buyer	Process Licensor	Project	Qty.
1	2018	Shaanxi Yanchang Zhongmei Yulin Energy & Chemical Company, China	Shaanxi Chenghe Industrial Co Ltd, China	J M Davy	Jingbian Energy & Chemical Comprehensive Utilizayion Production Zone Coal Methanol Project	2
2	2012	Shaanxi Yanchang Zhongmei Yulin Energy & Chemical Company, China	Shaanxi Chenghe Industrial Co Ltd, China	J M Davy	Jingbian Energy & Chemical Comprehensive Utilizayion Production Zone Coal Methanol Project	2
3	2011	Sinopec International Comoany, Sinopec Sichuan Vinylon Works, China	China Petrochemical International Co Ltd, China	J M Davy	771,000 MTPY Methanol Plant	1
4	2008	Saudi Formaldehyde Chemical Co Ltd (SFCCL), KSA	L&T E&C, India	HTAS	700 MTPD Methanol & 100 MTPD CO Plant	1
5	1994	Deepak Fertilizers & Petrochemicals Corp Ltd, India	Deepak Fertilizers & Petrochemicals Corp Ltd, India	J M Davy	Methanol Plant	1
6	1986	Assam Petrochemicals Ltd, India	Assam Petrochemicals Ltd, India	H&G, ICI	Methanol Plant	1

Methanol Converter for Yanchang, China

Japan : HESC Project

Hydrogen Energy Supply Chain (HESC) Project

- World's largest hydrogen demo project
- A$500 million investment
- Hydrogen produced by gasification of brown coal in Victoria, Australia
- Consortium of KHI, Electric Power Development Co. (J-Power), Iwatani Corp., Marubeni, Sumitomo & AGL. Backed by Japanese and Australian governments
- Liquid H2 will be transported to Japan

Storage : Liquid Hydrogen

Hydrogen Energy Supply Chain (HESC)

- Located in the Latrobe Valley, Australia
- Demonstrate an integrated hydrogen supply chain encompassing production, storage and transportation in delivering liquefied hydrogen to Japan
  a) Coal gasification and syngas cleaning
  b) Hydrogen gas liquefaction
  c) Liquefied hydrogen storage and loading
  d) Shipbuilding and operation of a specialized liquefied hydrogen carrier

Source: Adapted from HyResource

Storage : Liquid Hydrogen

Hydrogen Energy Supply Chain developed in two phases:

- Pilot phase : demonstrating at pilot scale a fully integrated hydrogen supply chain between Australia and Japan over a one-year period - Completed
- Commercial phase : targeted for the 2030s (with potential for 225,000 TPA of liquid hydrogen), depending on the outcomes of the pilot phase, regulatory approvals, community feedback, hydrogen demand trends and successful development of carbon capture and storage (CCS) technologies.

Source: Adapted from HyResource

Storage : Liquid Hydrogen

- KHI built the world's first liquefied hydrogen carrier Suiso Frontier
- The 8,000 tonnes ship can transport large quantities of LH_2 over long distances by sea. Here, the liquefied hydrogen is at 1/800 of its original gas-state volume, cooled to (-) 253 °C

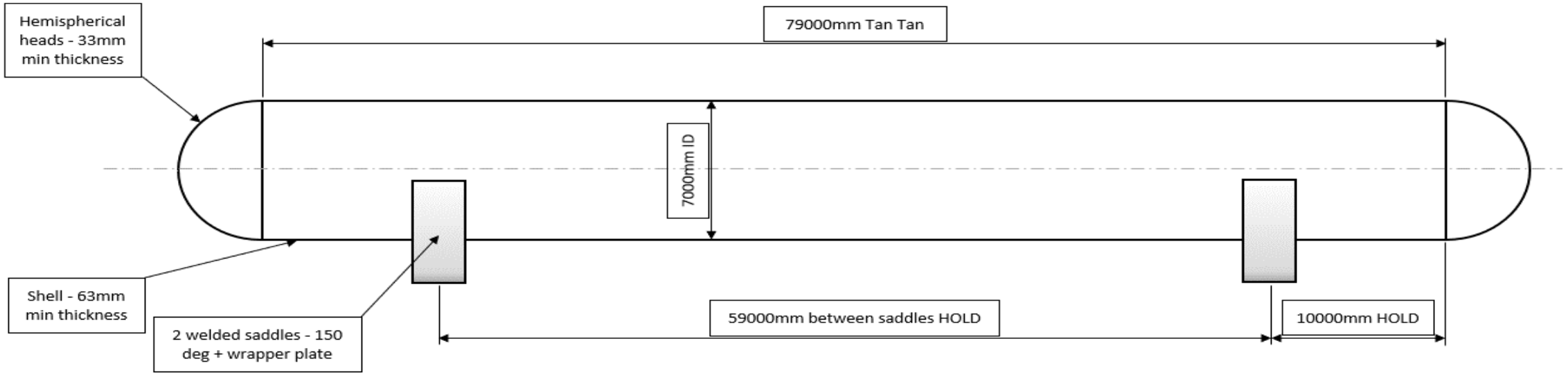
Source: Adapted from HyResource

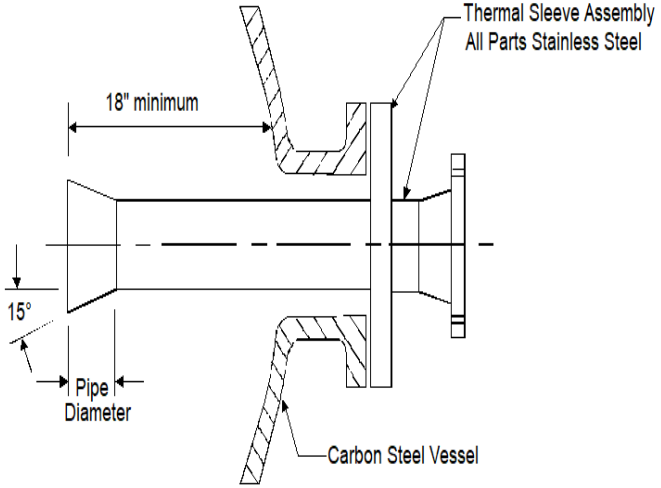
Storage : Liquid Hydrogen

- J-Power announced that hydrogen production from the facility began in January 2021
- In December 2021, it was reported that the Suiso Frontier had left Japan to pick up its first cargo of liquefied hydrogen in Australia
- The carrier arrived in Australia on 21 January 2022 to begin loading for the return journey to Kobe
- In January 2022, the Suiso Frontier left Hastings with its cargo of liquid hydrogen which (in February 2022) was unloaded at the receiving terminal in the port of Kobe, Japan

Source: Adapted from HyResource

Storage : Compressed Hydrogen Bullets

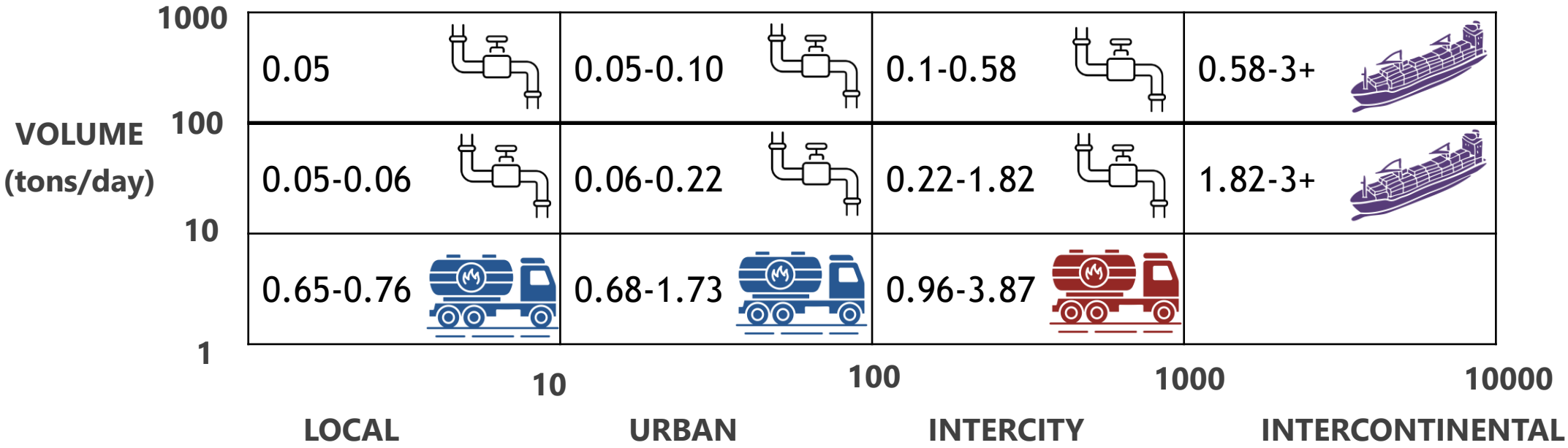




DESIGN CONDITIONS	
Design Pressure Int/Ext (barg)	34 / 0
Design Temperature (deg C)	85
NDE	100% UT / XRAY / MPI
Design Code	ASME VIII Div 2, Class 2
Code Stamping & NB Registration	Yes
PWHT	Yes
Hydrogen Service	Yes
Flammable Service	Yes
Cyclic Service	Yes

Hydrogen Transportation Costs

Hydrogen transport costs based on distance and volume, $/kg



Compressed Hydrogen Trucks

Liquid Hydrogen Trucks

Hydrogen Pipelines

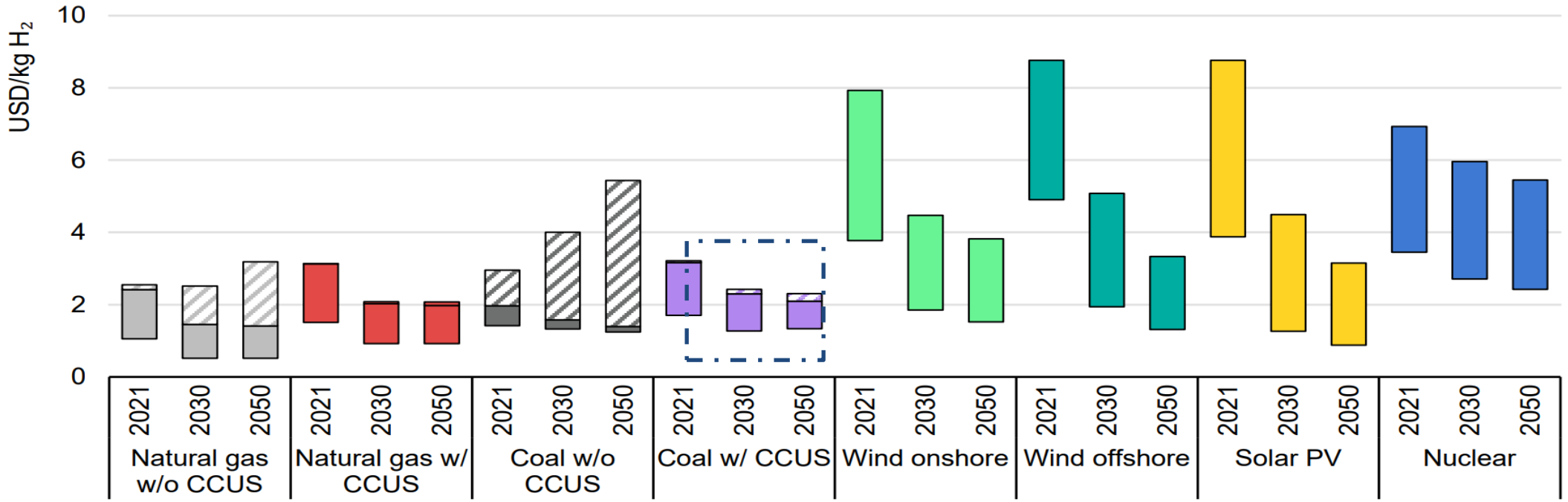
Liquid organic Hydrogen Carriers (LOHC) Ships

Source: BNEF

Alternate Routes for Producing Cost Effective H_2

Opportunities for cost reductions to produce low-emission hydrogen

Levelised cost of hydrogen production by technology in 2021 and in the Net Zero Emissions by 2050 Scenario, 2030 and 2050



Notes: Ranges of production cost estimates reflect regional variations in costs and renewable resource conditions. The dashed areas reflect the CO_2 price impact, based on CO_2 prices ranging from USD 15/tonne CO_2 to USD 140/tonne CO_2 between regions in 2030 and USD 55/ tonne CO_2 to USD 250/ tonne CO_2 in 2050.

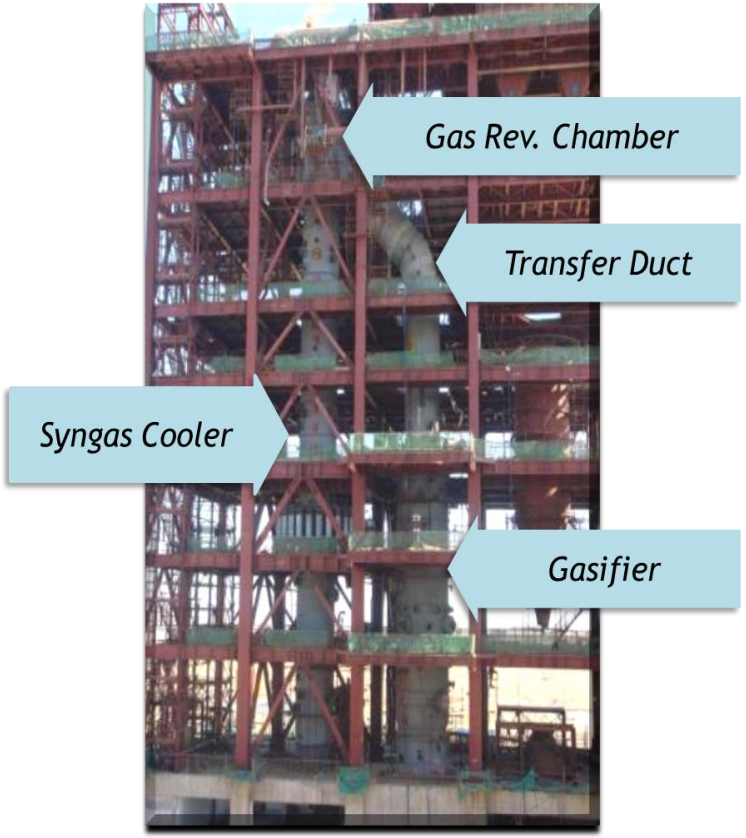
Sources: Based on data from McKinsey & Company and the Hydrogen Council; Council; IRENA (2020); IEA GHG (2014); IEA GHG (2017); E4Tech (2015); Kawasaki Heavy Industries; Element Energy (2018).

Alternate Routes for Producing Cost Effective H_2

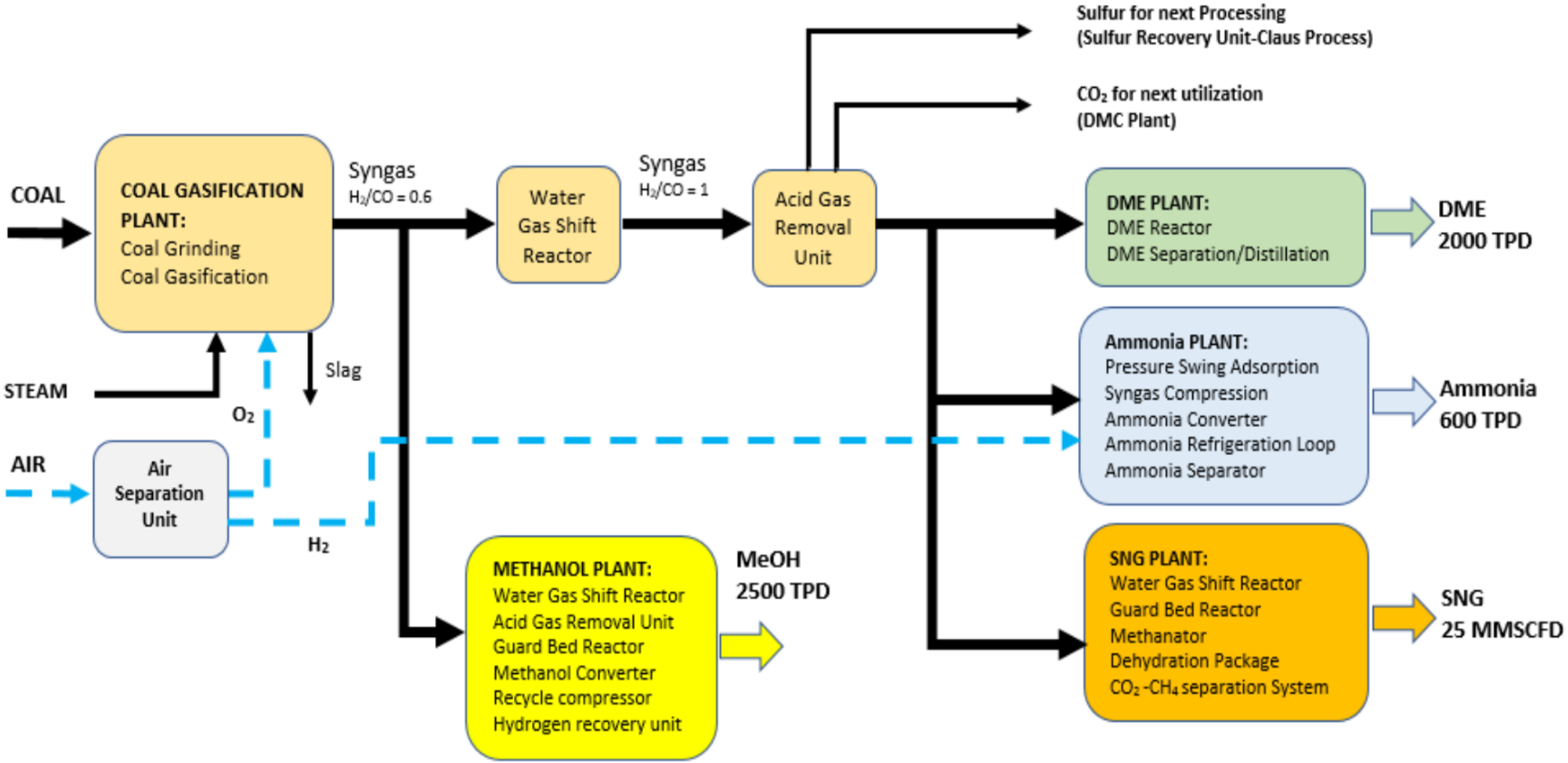
- Gasification with CCUS or Gasification for Urea/Methanol Production offers another opportunity
- CO_2 produced by gasification is partially utilized for urea production
- Excess CO_2 can be utilized for production of methanol with green H_2 (from electrolysis – renewable source)
- L&T in the past has supplied coal gasifiers for methanol, urea projects
- Integrated complexes for producing hydrogen, ammonia and methanol - Tianjin Bohai Chemical Industry Co., Ltd, Guizhou Chitianhua Group Co. Ltd, Yantai Wanhua Group, Jiangsu Huachang Chemical Industry Co., Ltd

Coal Gasification

- Gasifier systems are very complex integrated units and require strong expertise in design and manufacturing.



Coal Gasification for Polygeneration



Source: Techno-economic analysis study of coal gasification plant into various strategic chemicals

The Green Leap towards Sustainable Manufacturing

The green hydrogen plant at L&T's AM Naik Heavy Engineering Complex at Hazira in Gujarat.

L&T – IOCL R&D : Aqueous Phase Reforming

- Commercially, hydrogen is produced by SMR which takes place at high temperature of 800-900 ^{O}C and pressure of 30-35 Bar
- IOCL R&D has developed a novel catalyst for Reforming of methanol, bio-oil etc for production of hydrogen
- Advantage : Reforming occurs at low temperature (210-300 ^{O}C)
- L&T and IOCL R&D are jointly developing the technology; pilot plant is planned to be set up at IOCL R&D
- Innovative and compact design of Reformer has been developed
- Heating medium is thermic fluid, which is heated by electric heater
- Carbon footprint of technology is very low

Latest in L&T

LARSEN & TOUBRO | McPhy

Press Release
Issued by Corporate Brand Management & Communications

L&T House, Ballard Estate,
N M Marg, Mumbai 400 001 INDIA
Tel: 1800 2094545
CIN: U99999MH1946PLC004768

L&T signs Agreement with McPhy for Electrolyzer Manufacturing

- Technology leadership and emphasis on local manufacturing to bring down manufacturing cost of electrolyzers

Mumbai/Paris, 22 March 2023: Larsen & Toubro (L&T), an Indian multinational

LARSEN & TOUBRO | Hydrogen pro

Press Release
Issued by Issued by Corporate Brand Management & Communications

L&T House, Ballard Estate,
N M Marg, Mumbai 400 001 INDIA
Tel: 1800 2094545

L&T signs MoU with HydrogenPro for manufacturing Hydrogen Electrolysers in India

Mumbai/Porsgrunn, 27 January 2022: Larsen & Toubro (L&T), an Indian multinational engaged in EPC Projects, Hi-Tech Manufacturing and Services, today announced it has entered a Memorandum of Understanding (MoU) with HydrogenPro AS (OSE: HYPRO), a Norway-based leading Electrolyser technology and manufacturing company for partnership

LARSEN & TOUBRO | H2CARRIER

Larsen & Toubro and H2Carrier AS sign MoU

To develop floating green hydrogen and green ammonia projects
Topsides to be fabricated in India

Mumbai, Oslo, January 13, 2023: Larsen & Toubro, an Indian multi-national engaged in EPC Projects, Hi-Tech Manufacturing, and Services, announced today the signing of a Memorandum of Understanding (MoU) with the Norway-based H2Carrier (H2C) to co-operate towards developing floating green ammonia projects for industrial-scale applications with an aim to decarbonise the global economy. H2C has proven expertise in developing and integrating Power-to-X (PtX) projects based on affordable, often stranded, non-commercial renewable power. Under the terms of the MoU, L&T will become a partner for EPCIC of the topsides for H2C's floating process plants.

L&T Press Release
Issued by Corporate Brand Management & Communications

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CIN: L99999MH1946PLC004768

DRDO and L&T join hands for Realisation of Indigenous Air Independent Propulsion (AIP) System for Submarines of Indian Navy

Mumbai, Jun 22, 2023: Larsen & Toubro and DRDO signed a contract for realisation of two Air Independent Propulsion (AIP) System Modules for Kalvari Class of Submarines of the Indian Navy. The contract documents were exchanged between Shri Arun T Ramchandani, Executive Vice President and Head-L&T Defence and Shri. PT Rojatkar, Director - Naval Materials Research Laboratory (NMRL) in the presence of Shri J D Patil, Member of Executive Committee of Management and Advisor (Defence & Smart Technologies) to CEO & MD Larsen & Toubro Limited & Senior officials from NMRL and L&T.

These Modules constitute the core of the fuel cell based AIP System, indigenously developed by Naval Materials Research Laboratory (NMRL) of DRDO with L&T as prime industry partner, an association spanning more than a decade. The Energy Modules (EMs) comprising Fuel Cells produce the required power, along with on-board Hydrogen generation. The technology of this indigenous AIP system is a unique one that generates hydrogen on demand thereby obviating the need for carrying hydrogen onboard which is a major safety concern for a submarine. On realisation and integration of these modules in the submarines, India will

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L&T to Collaborate with IIT Bombay for Green Hydrogen Technology Development

Mumbai, April 26, 2022: Larsen & Toubro (L&T), an Indian multinational engaged in EPC Projects, Hi-Tech Manufacturing and Services, signed an agreement with the Indian Institute of Technology Bombay, the nation's premier technology and research institution to jointly pursue research and development work in the Green Hydrogen value chain.

Both the institutions have joined hands to contribute towards development of the Green Hydrogen industry in India and to develop next-generation technology in this emerging field.

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L&T ropes in Green Energy stalwarts to form Green Energy Council

- Green Energy Council Formed to Bolster L&T's Resolute Commitment to Carbon Neutrality by 2040
- Formation of council in line with company's commitment to play a meaningful role in building India's green energy future.

Mumbai, May 29, 2023: Larsen & Toubro (L&T), an Indian multinational engaged in Infrastructure, Hi-Tech Manufacturing and Services, announced the formation of L&T Green Energy Council, a think-tank comprising eminent thought leaders, in a significant step towards building a global green energy business.

Thank You