



Fuelling progress

LCH technology

Applications for low carbon hydrogen

LCH Technology: Proven, Scalable, and Future-Ready

CCS-enabled (blue) hydrogen

Maximise carbon capture. Accelerate clean hydrogen deployment

LCH™ technology enables up to 99% CO₂ capture, delivering ultra-low carbon hydrogen that supports global decarbonisation targets and unlocks eligibility for clean energy incentives. By lowering project risk and ensuring regulatory compliance, LCH technology strengthens the business case for investment in blue hydrogen.

Optimised for global clean hydrogen standards

- Minimises permitting challenges.
- Adapts to global carbon pricing.
- Accelerates project deployment.
- Scales from pilot to world-scale.
- Stick built to modularised.

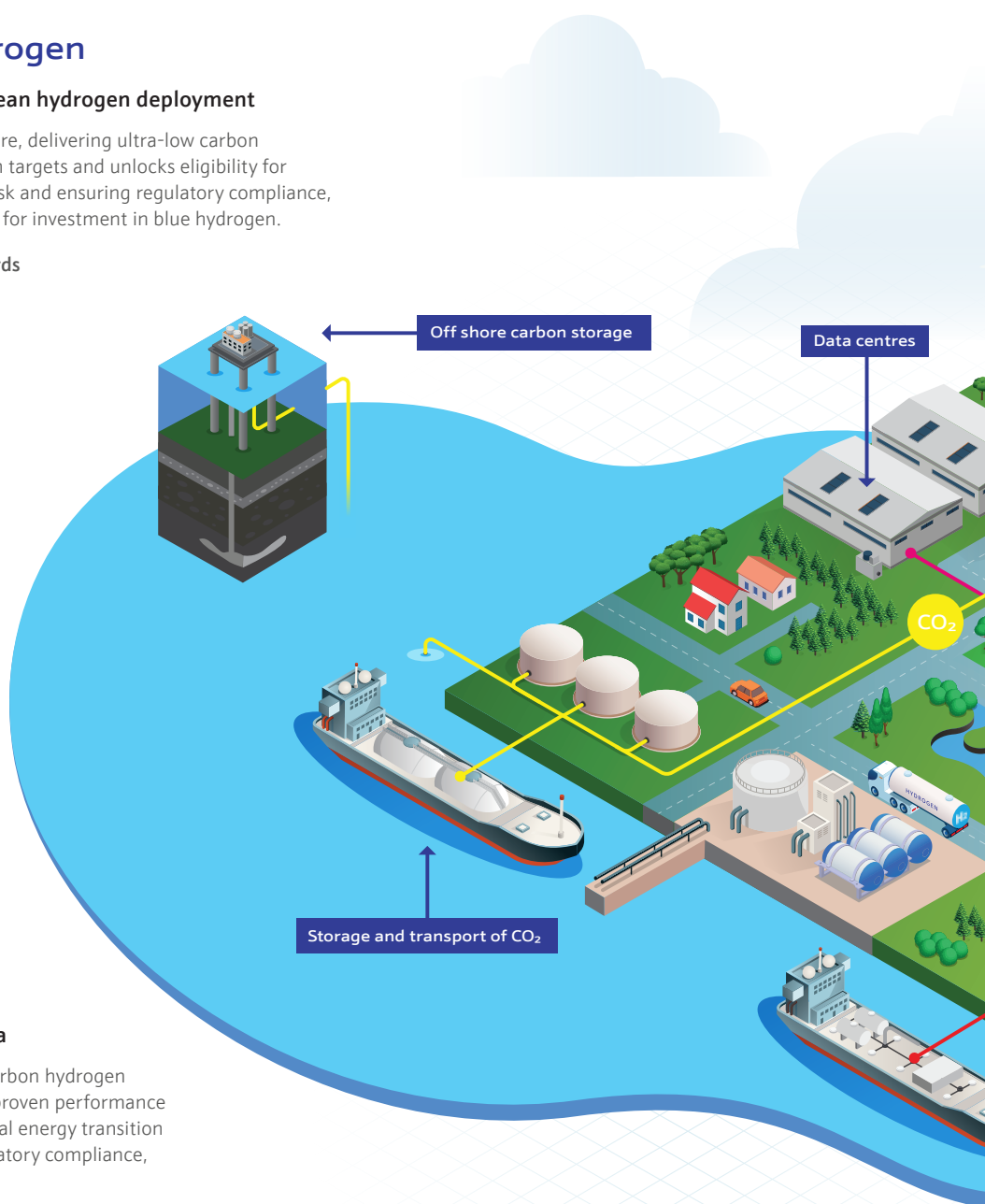
Ammonia production using hydrogen

Deliver reliable, export-grade ammonia

LCH technology provides a consistent, low-carbon hydrogen supply optimised for ammonia synthesis. Its proven performance supports the production of ammonia for global energy transition markets, ensuring operational stability, regulatory compliance, and bankable, low-carbon credentials.

Enabling bankable, export-grade ammonia

- Delivers high purity hydrogen.
- Fits new builds and retrofits.
- Supports low-carbon certification.
- Unlock value through low-emission incentives.



Johnson Matthey's **LCH** technology is redefining the economics of low-carbon hydrogen. Built on decades of reforming expertise, it delivers industry-leading carbon capture performance, operational reliability, and rapid project deployment. Deployed at world scale, **LCH** technology enables businesses to futureproof assets, meet decarbonisation targets, and drive sustainable growth across sectors such as energy, ammonia production, and industrial hubs.

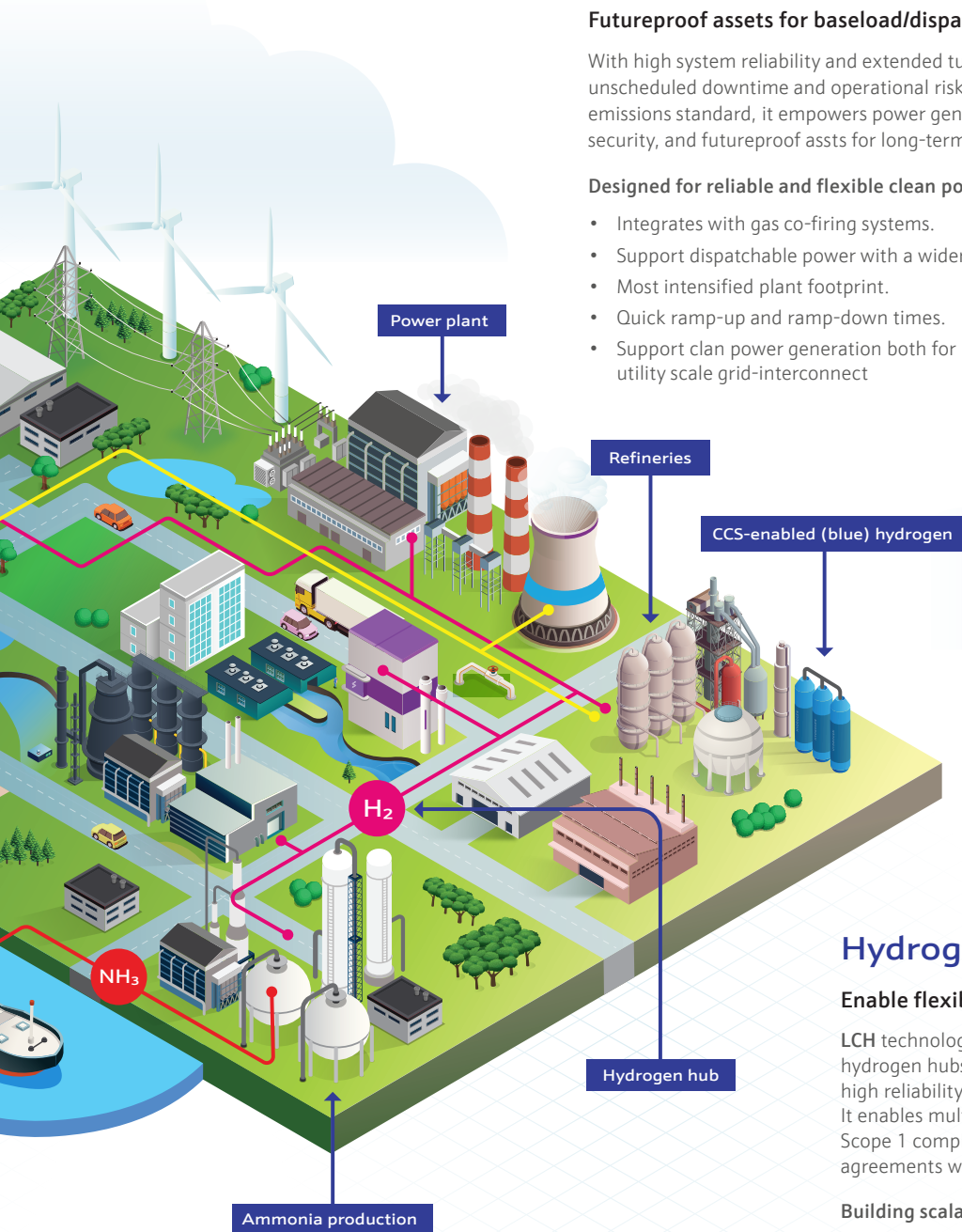
Power plants

Futureproof assets for baseload/dispatchable low carbon power generation

With high system reliability and extended turnaround intervals, **LCH** technology minimises unscheduled downtime and operational risk. Designed to meet the world's most stringent emissions standard, it empowers power generators to maintain revenue streams, energy security, and futureproof assets for long-term success.

Designed for reliable and flexible clean power generation

- Integrates with gas co-firing systems.
- Support dispatchable power with a wider turndown ratio of hydrogen plant.
- Most intensified plant footprint.
- Quick ramp-up and ramp-down times.
- Support clean power generation both for behind the meter and/or utility scale grid-interconnect



Hydrogen hubs

Enable flexible, futureproof hydrogen ecosystems

LCH technology drives the development of large-scale hydrogen hubs by offering scalable, modular solutions with high reliability and minimal maintenance requirements. It enables multi-sector decarbonisation, meeting evolving Scope 1 compliance needs while securing long-term supply agreements with industrial partners.

Building scalable, future-ready hydrogen networks

- Diversifies hydrogen offtake options.
- Reduces upfront CAPEX.
- Integrates with CCS infrastructure.
- Enables phased hub expansions.

Secure your future with proven, world-class reforming technology

JM's LCH technology offers an autothermal reformer (ATR) flowsheet and ATR coupled with gas-heated reformer (GHR) flowsheet to deliver superior efficiency and cost-effectiveness in blue hydrogen production at scale. We have over 25 ATR and multiple GHR plants worldwide with longest plant uptimes on the market with proven ATR burner life of 10+ years.

Compared to other reforming technologies, we provide highest **hydrogen production efficiency** with:

- lowest feedstock requirement;
- lowest carbon intensity; and
- lower OPEX

	Units	SMR + CC	JM's LCH technology with ATR	JM's LCH technology with GHR-ATR
CO ₂ Captured*	%abs.	95	↑	↑
Natural Gas Consumed	%rel.	100	↓	↓
Oxygen Consumed	%rel.	N/A	Baseline	↓
Energy Efficiency (NG HHV + Elec)	%abs.	73	↑	↑
Produced Carbon Dioxide to Sequestration	%rel.	100	↓	↓
Carbon Dioxide Emitted (Scope 1)	%rel.	100	↓	↓
Total Carbon Intensity (Scope 1,2,3)	%rel.	100	↓	↓
CAPEX (TIC)	-	Baseline	↓	↓

Arrow size represents scale of difference

Based on a 355MW HHV Hydrogen Capacity Plant, *CO₂ Captured >99% possible.
Energy & CAPEX values include ASU & CO₂ Compression & Drying for Sequestration. CAPEX comparison basis is USGC, stick built.
SMR data source: IEAGHG Technical Report 2017-02, with SMR & Carbon Capture data source: NETL Technical Assessment 2023-12.



To discuss how we can meet your sustainability goals, email lch@matthey.com or scan the QR code to learn more.

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