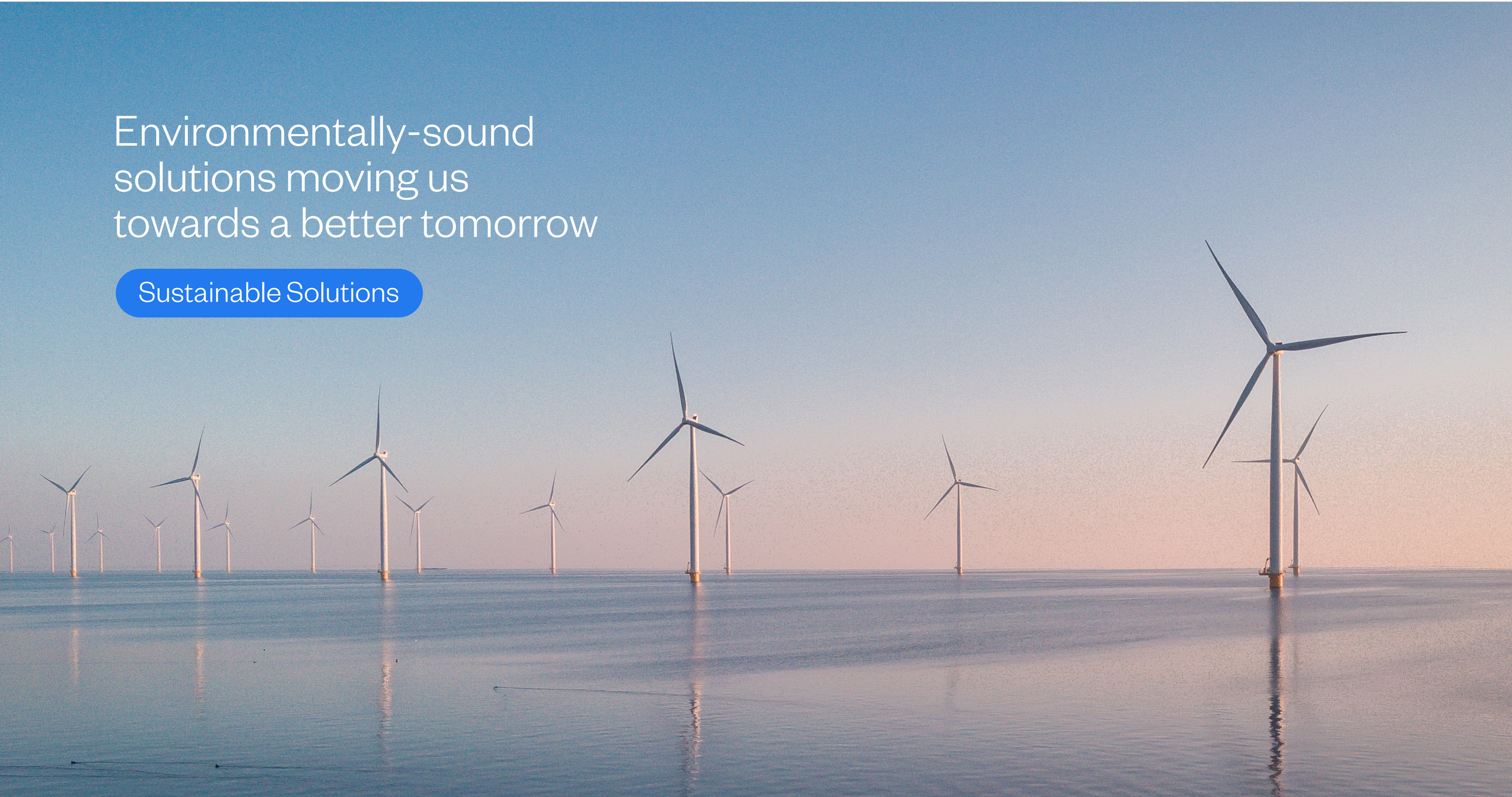
# Environmentally-sound solutions moving us towards a better tomorrow

## Sustainable Solutions



# Innovative solutions that contribute to a sustainable future

McDermott brings a holistic ESG approach to complex projects across their lifecycle.

We strive to be the best partner for customers who prioritize sustainable design and delivery and long-term value. Using our expertise in project delivery, innovative engineering, and self-owned and operated construction assets, we collaborate with customers and suppliers to increase efficiency, mitigate risks, reduce emissions, and minimize waste generation.

At McDermott, we actively seek opportunities to engage in pioneering projects that reduce emissions across the energy industry's value chain. For example, by building the world's lowest emission liquefied natural gas (LNG) facility, and building new transmission capacity for offshore wind farms.

# Providing sustainable solutions

We are dedicated to innovating and creating new solutions to lead the energy transition and improve environmental performance within the oil and gas industry, supporting decarbonization and the continuity of energy supply.

These capabilities, combined with our low-emissions EPCI delivery, modularization know-how, global asset base, and over a century of engineering and direct construction experience, make McDermott the flexible end-to-end solutions partner for lower emissions in hard-to-abate sectors.

| OFFSHORE WIND | HYDROGEN | CCUS | CIRCULAR ECONOMY | NETZERO SOLUTIONS |
|---|---|---|---|---|
| **Offshore and marine construction expertise** | **Integration at scale from generation to conversion** | **End-to-end delivery from capture to sequestration** | **Process expertise redepolyed to turn waste into value** | **Pathways to decarbonize traditional energy sources** |
| **DIFFERENTIATION:** | | | | |
| • Project management, schedule integration<br>• Management of complex logistics<br>• Experienced marine contractor in all regions<br>• Global in-house fabrication capacity | • Full value chain integration (concept to EPC/Onshore - Offshore)<br>• Technology selection advisor<br>• Storage leadership in H2 and H2 carriers<br>• Track record enhances project “bankability” | • Full value chain integration (concept to EPC/Onshore - Offshore)<br>• Technology selection advisor<br>• Standard capture and compression solutions to enhance project viability and execution | • Over 60 years of process work track record<br>• Strategic relationship with Lummus Technology (Green Circle)<br>• Well-posistioned storage solutions: multiple anaerobic digesters, biogas storage, and handling projects | • Onshore and offshore global expertise in traditional energy<br>• Developing low carbon footprint pathways to design and build low-emissions oil and gas assets |

**Driven by:**

Smart modularization + Selective partnerships + Digital delivery and innovation

# Offshore wind

Large High-Voltage Direct Current (HVDC) converter platforms are increasingly required as offshore wind farms are installed further from the shoreline.

McDermott combines decades of offshore technical experience with fully integrated engineering, procurement, construction, installation (EPCI), and commissioning services, to offer the right combination of complicated engineering and large-scale fabrication needed to construct offshore HVDC converter platforms for new wind farm projects. In 2022, we continued evaluations to integrate offshore wind developments with hydrogen production.

## TENNET BORWIN6 980MW HIGH-VOLTAGE DIRECT CURRENT (HVDC) PROJECT

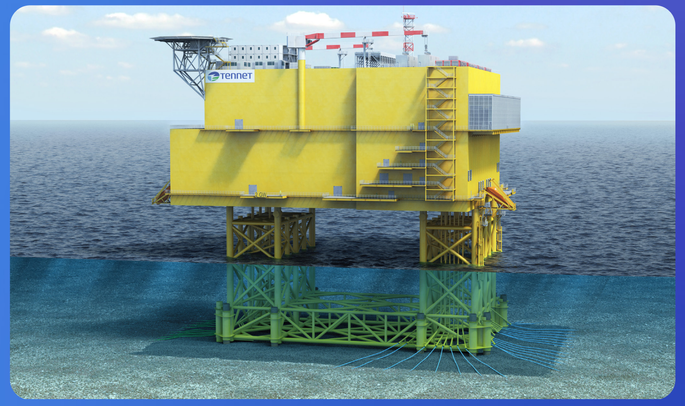
Our integrated EPCI delivery model, combined with nearly a century of experience executing some of the most challenging offshore projects in the world, make us ideally suited to support TenneT on this important offshore grid connection project.

Fabrication executed in

3

McDermott yards

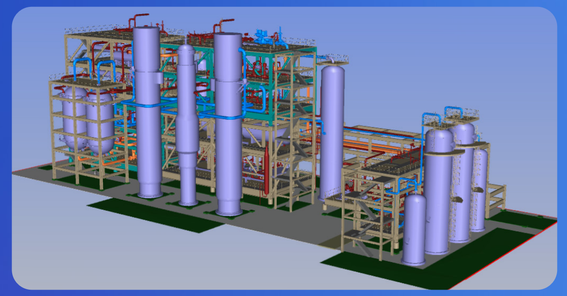
Jebel Ali, QMW & Batam



# Hydrogen

Our hydrogen strategy focuses on green hydrogen produced by electrolysis using renewable energy, and blue hydrogen produced from natural gas with carbon capture and storage.

We have partnerships with developers of proton exchange membrane and alkaline electrolysis technologies and with methane reforming licensors to optimally scale facility sizes.



## MCDERMOTT AND JOHNSON MATTHEY COLLABORATION

Together with a world-leading technology licensor Johnson Matthey, McDermott completed a study to modularize 355 MWHHV and 710 MWHHV Low Carbon Hydrogen (LCHTM) plants, including the balance of plant facilities. The team also performed CAPEX modeling for global site locations, identifying key cost drivers, enhancing the estimate with pricing from suppliers of critical equipment and systems, and obtaining input from McDermott's in-house Fabrication Yards.

## GUNVOR GREEN HYDROGEN IMPORT TERMINAL PROJECT

Front-End Engineering Design (FEED) contract from Gunvor Petroleum Rotterdam B.V. for the Green Hydrogen Import Terminal project, which is part of Gunvor's program to transform their Rotterdam facility into a green energy hub.

## WOODSIDE H2PERTH

Pre-FEED services for a proposed export-scale production facility for renewable and lower-carbon hydrogen and ammonia. Hydrogen will be produced using electrolysis technologies and natural gas reforming with carbon emissions abated or offset.

## PLUG POWER

McDermott was awarded a contract for engineering, procurement, and construction of two 500,000-gallon double-wall liquid hydrogen spheres for Plug Power's new green hydrogen production facility in New York. Separately, McDermott collaborated with Plug Power on a 1GW concept design to accelerate the development of green hydrogen projects.

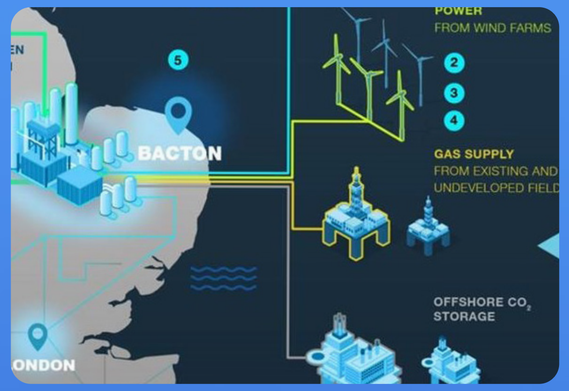
Watch video

# Carbon capture utilization, and storage (CCUS)

CCUS is a vital tool in recognized climate-change limiting pathways.

McDermott's strategy focuses on both point-source CO2 capture from large scale combustion equipment, such as that used in steel production, as well as capturing CO2 from the atmosphere, known as direct air capture. McDermott supports customers through carbon capture technology evaluations and has developed expertise in optimizing and integrating these technologies into larger developments.

We are working in partnership with pilot-stage technologies to reduce the cost of capture through scale, innovation, and integration with existing solutions.




## BACTON ENERGY HUB

McDermott joined a group of industry experts focused on unlocking the potential for a hydrogen-led energy hub located at Bacton, Norfolk, UK. The UK North Sea Transition Authority (NSTA) is spearheading the Bacton Energy Hub project, which aims to deliver a sustainable hydrogen supply by adding low-carbon hydrogen production, carbon capture, and utilization storage (CCUS) facilities by 2030. Also, through the development of offshore wind, it is aiming to develop renewable hydrogen production as part of the energy supply transition by 2050.

## MCDERMOTT, CSIRO TEAM UP TO ADVANCE CARBON CAPTURE TECHNOLOGIES

Collaboration between McDermott International and the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia's premier national science organization, has been established to evaluate technical and commercial opportunities for the deployment of CSIRO's carbon capture technologies for energy and heavy industry applications.

## TATA STEEL HERACLESS PROJECT

McDermott International was selected by Tata Steel IJmuiden B.V. to be part of an Integrated Project Management Team to shape and manage the execution of project Heracless (hydrogen era, carbonless). The project is located at Tata Steel's facilities in IJmuiden and is focused on the implementation of Direct Reduced Iron Plant and Reducing Electrical Furnace technology at the facility, as the basis for Tata Steel's sustainable hydrogen-based steel production.

# Circular economy

McDermott's circular economy strategy focuses on chemical and advanced recycling developments leveraging our experience of more than 60 years in the petrochemical industry.

In 2022, we undertook a technical due diligence study on behalf of a major sector customer for Sustainable Aviation Fuels. The scope included licensor engagement, facility integration, and establishing a value proposition for ongoing developments. Further, we conducted an internal design study for waste-to-value feedstock conditioning sites.

## RECYCLING FEED CONTRACTS

Secured two Front End Engineering Design (FEED) contracts with Michelin Group in France; one for the initial industrialization of the recycling process that converts polystyrene into regenerated styrene, and the other for a cutting-edge waste tire recycling technology that facilitates the large-scale production of carbon black.

Carbon black remains a key ingredient in advancing the next generation of sustainable tires

# NETZERO / Low carbon solutions

McDermott's low carbon solutions are the development of decarbonization options for the construction and operation of upstream, liquefied natural gas (LNG), and downstream oil and gas projects.

Our in-house design expertise, together with our self-perform fabrication and construction capability, provide unique opportunities to reduce emissions across the project life cycle.

## E-DRIVE LNG PROJECTS

An e-Drive LNG facility uses large electric motors to drive the refrigerant compressors instead of gas turbines, eliminating the GHG emissions associated with them. E-drive LNG facilities offer an opportunity to utilize power from low-carbon sources for the liquefaction process.

## G2 NET-ZERO FEED CONTRACT FOR A ZERO EMISSIONS NET POWER PLANT

Front-End Engineering Design (FEED) contract for the development of a net-zero power generation plant for G2 Net-Zero in Southwest Louisiana. The facility will use breakthrough technology developed by NET Power to provide emission-free electricity, liquefied natural gas, and industrial by-products like blue ammonia, argon, nitrogen, hydrogen, and oxygen.

## WOODFIBRE LNG

Woodfibre LNG will be the cleanest liquefied natural gas export facility on earth, achieved through the adoption of a low-emission philosophy across every element of engineering and design. The facility will use hydroelectricity for the main liquefaction process and includes state of the art technology that enables liquefaction machinery to restart without flaring, a recycling system for "boil-off" gas, and additional transformers, switchgear, and transmission lines.

# Smart modularization

For more than 50 years, we've delivered complex modular solutions across the energy value chain.

Our modular building block approach accelerates execution timelines, improves risk profiles, and reduces cost through a combination of standardized designs, and fabrication in a controlled environment.

Our expertise in smart modularization includes developments in hard-to-abate sectors such as steel production and both onshore and offshore projects.

Learn more about Modular construction

In 2022, we developed modularized solutions to:

- construct and deliver Green and Blue hydrogen facilities
- deploy CO2 capture, compression, and treatment

**179,343T**

modular fabrication completed in 2022

# Partnerships and collaborations

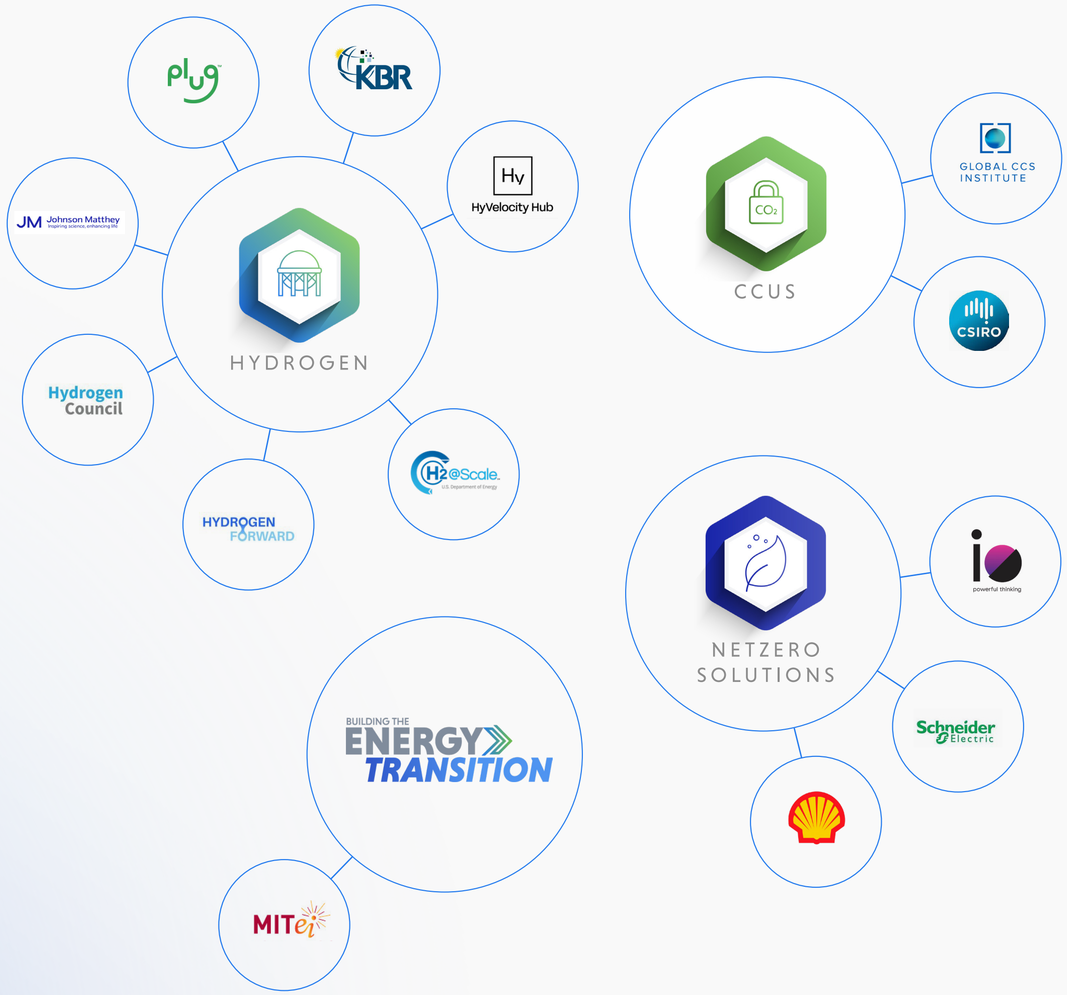
McDermott remains engaged with multiple academic institutions globally to collaborate on alternatives to achieve net-zero targets.

In 2022, McDermott joined the Massachusetts Institute of Technology (MIT) Energy Initiative as part of the Future of Energy Systems Center. The Center addresses the role that energy systems can play in accelerating the energy transition and solving the climate crisis. As the only EPCI partner of the center, we provide valuable insight into the deployment and scale-up of low-carbon technologies to support full energy system decarbonization.

## H2@SCALE IN TEXAS AND BEYOND

As we continue to progress our public-private partnerships such as our H2@Scale engagements with the U.S. Department of Energy, we are also scaling up McDermott's CB&I technology for liquefied hydrogen spheres and developing fully integrated renewable and low-carbon hydrogen demonstration and framework in Texas.

**TECHNOLOGY PARTNERSHIPS ACROSS THE ENERGY TRANSITION**



# Digital delivery and innovation

McDermott is powered by innovation. We are committed to improving the way we work and how we deliver quality, safety, and environmental stewardship in all that we do.

McDermott's use of technology improves all aspects of our business—from leveraging advanced data analytics to pioneering new, more effective paths forward, to introducing automated or remote execution solutions.

Our digital-driven culture empowers our people to innovate and develop tools to design and build sustainable lower carbon infrastructure projects globally, as demonstrated through initiatives such as:

- **Internal Design Competition:** R&D efforts utilizing diverse people, locations, and projects for sustainable solutions.
- **Knowledge Management, Innovation, and Research (KMIR):** Developing digital and differentiating technologies to deliver world class projects
- **Global Expert Network (GEN):** Identifies technical authorities and subject matter experts
- **Community of Practice (CoP):** Provides training and awareness of new trends
- **Academic Partnerships:** Engage specific disciplines to support KMIR
- **AI & Digital Tools:** Leverage best practices with technology to maximize efficiency

For more information about how our innovations and use of technology influence our work, visit our website: Technology.

## DIGITAL PROJECT DELIVERY IN CONSTRUCTION

Throughout 2022, we continued to develop and implement software and advanced data analytics to support decarbonizing construction of critical energy infrastructure.

### SubseaXD™

In 2022, SubseaXD enhanced conception and delivery of projects including:

- Equinor Energy Asterix FEED
- Turkish Petroleum Sakarya FEED
- TotalEnergies Begonia EPCI
- Shell Whale EPCI
- PetroRio Wahoo Bid
- Petrobras Sepia EPCI

Implementing the tool allowed us to reduce cost and schedule risk, and improve design certainty by working on a collaborative, automated, and cloud-based digital platform.

### ArborXD™

In 2022 we implemented our carbon footprint calculator on two projects to reduce emissions.

Find out more