



Hydrogen
Technical Section

**Solutions.
People.
Energy.SM**



Newsletter

Society of Petroleum Engineers

Hydrogen Technical Section



Issue 04

August 2026

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SPE H2TS Chair's Message

Welcome to the SPE Hydrogen Technical Section! Started in 2022, H2TS is one of the latest technical sections championed by Bob Pearson, serving SPE members in enhancing their interest in the growing adoption of hydrogen as a clean energy solution. Under the leadership of founding chair Prof. Chris Kalli and past PF Technical Director Hamad Marri, H2TS has built closer links between industry and academia and continues to grow under the new PF Technical Director Greg Stephenson, to help industry by sharing knowledge and creating networking opportunities for oil and gas and energy-transition professionals through various activities in 2026.



Dr. Phaneendra Kondapi
Chairperson

About the SPE Hydrogen Technical Section

Started in 2022, H2TS is one of the latest technical sections championed by Bob Pearson, serving SPE members in enhancing their interest in the growing adaptation of Hydrogen as a clean renewable energy.

The Hydrogen Technical Section (H2TS) brings together technical professionals and academia who are active, or have a deep interest, in the use of hydrogen as an energy carrier. The new technical section aims to share knowledge, experiences, leading practice, promote industry awareness, and enhance technical competencies.

Become a member of H2TS: [Edit Technical Disciplines](#)

Follows us at: [Home - Hydrogen](#)

[SPE H2 Technical Section](#) – LinkedIn

[MENA H2TS Work Group](#) - LinkedIn

SPE H2TS Mission

Our mission is to engage and collaborate partnerships between academia, industry, and SPE, and proactively engage students' interests through diverse educational activities, introduce continuing education programs, facilitate knowledge sharing and best practices, collaborate with other technical sections within SPE and improve H2TS visibility and influence.



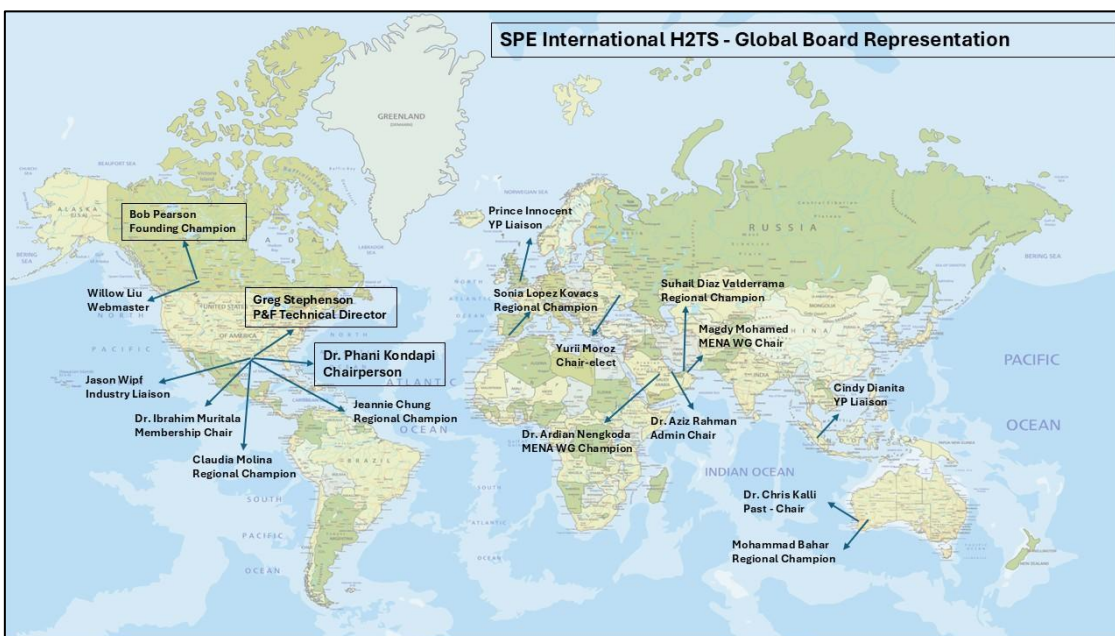
SPE H2TS Vision

Our Vision 2030 focuses on expanding membership, deepening collaboration within SPE and with external partners, and sustaining a vibrant technical community around hydrogen. It emphasizes execution and empowerment, global outreach, facilitation of knowledge sharing, continuing growth, and professional impact.

SPE H2TS Vision 2030



SPE H2TS Global Representation



SPE H2TS : Meet our team

Leadership Team



Dr. Phaneendra Kondapi
Chairperson



Yurii Moroz
Chairperson elect



Christopher J Kalli
Past Chairperson

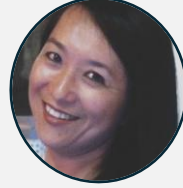
Administrative Team



Dr. Aziz Rahman
Admin Chair



Dr. Ibrahim Muritala
Membersgip Chair



Willow Liu
Webmaster

Engagement Team



Dr. Adrian Nengkoda
MENA



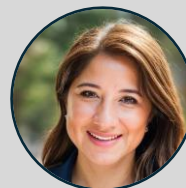
Suhail Diaz Valderrama
MENA



Agdy Ali
MENA Study Group Chair



Jeannie Chung
Western Hemisphere



Claudia Molina
Western hemisphere



Sonia López Kovács
European Union



Mohammad Bahar
Eastern Hemisphere



Prince Innocent
YP Liaisons



Cindy Dianita
YP Liaisons

Technical Director



Greg Stephenson
SPE P&F Technical Director

Liaisons



Bob Pearson
Champion / Advisor

SPE H2TS Initiatives and Deliverables

- Capability development through on-line events, online networking, workshops, and conferences.
- Transfer of knowledge and best practices through meetings, events, communications, articles in SPE publications; technical papers and presentations; and SPE Connect.
- Close ties with other SPE Sections and regions that complement and enhance current energy transition initiatives within our industry.
- Closer links between the energy industry and academia.
- Promotion of professionalism, certification, and Distinguished Lecturer programming applicable and nomination of worthy candidates for SPE Awards in the domain.
- Engagement of young professionals seeking to make a career contribution to the development of a sustainable energy future.
- Collaborations with other professional organizations working on Hydrogen R&D, Commercialization, Transportation and Delivery to the end-users.



Follow us in SPE Connect

SPE Hydrogen Technical Section

Home **SPE Connect** About Us ▾ Directory Events ▾ Resources ▾

Q

Log in

SPE HYDROGEN TECHNICAL SECTION

Hydrogen Technical Section (H2TS)

Connecting people, power, and the planet with hydrogen.

H2TS brings together SPE members, technical professionals, academia, young professionals, and industry partners interested in hydrogen as an energy carrier and potential new energy source. The section focuses on knowledge sharing, technology development, professional growth, and collaboration across the hydrogen value chain.

Explore Events

JPT Publications

Newsletters

Launch Coach MEGO



Hydrogen
Technical Section

Initiatives & Goals

Mission & Vision

Coach MEGO

Hydrogen Value Chain

Events

Publications & Newsletters

Community

Get Involved

CHAIRMAN'S WELCOME

Welcome to the SPE Hydrogen Technical Section



Welcome to the SPE Hydrogen Technical Section. H2TS serves members by sharing knowledge, creating networking opportunities, and connecting oil and gas experience with hydrogen opportunities across the energy transition.

Dr. Phaneendra B. Kondapi
Chairperson, SPE H2TS

2026 UPDATE

Initiatives and Goals for the Next 12 Months

The section below is arranged in compact vertical stacks so the new images sit with related text cards instead of forcing large empty grid rows.

New and Innovative Activities

SPE H2TS is introducing first-of-its-kind initiatives within SPE Technical Sections to advance technical excellence, improve member engagement, and build a more creative, globally connected hydrogen community.

Career Development Platform

The I-5 Methodology is a state-of-the-art coaching and mentoring framework for low-carbon hydrogen and derivatives. It has been developed, reviewed, tested, and validated through collaboration between the MENA Steering Committee and Global Steering Committee members, with rollout beginning in

Young Professionals Committee

The first-ever Young Professionals Committee within an SPE Technical Section creates a structured channel for student chapter engagement, campus and virtual sessions, industry-experience sharing, and early exposure to hydrogen career pathways.

MENA Working Group

Led by Suhail Diaz Valderrama, the SPE H2TS MENA Working Group strengthens regional low-carbon hydrogen knowledge, collaboration, best-practice sharing, innovation, and young professional engagement.

SPE Hydrogen Technical Section Young Professional Committee

SPE Hydrogen Technical Section (SPE H2TS), has officially launched its Young Professionals (YP) Committee —making it the first-ever YP Committee created across all 24 Technical Sections of **Society of Petroleum Engineers International**

Welcome our new Young Professionals to the inaugural H2TS YP Committee:

Amine Ifticene, Oxy

Sarah Wheeler, Southwest Research Institute

Cindy Dianita, University of Indonesia

Prince Innocent, African Hydrogen Fellowship

Haoming Ma, University of Wyoming

Alfred Ndorbele, IFP School



These YPs hail from 4 different countries across the globe making it a true international YP Committee.

As the first-ever YP Committee in a SPE Technical Section, our mission at SPE H2TS goes beyond professional development. Our dynamic young leaders are committed to actively engaging with student chapters worldwide to share their knowledge, industry experiences, and passion for clean energy solutions.

SPE Regional Service Awards

SPE Hydrogen Technical Section (SPE H2TS), extend heartfelt congratulations to four of our SPE H2TS board members who have been honored with 2026 **Society of Petroleum Engineers International (SPE)** Regional Awards across multiple regions around the world.

Having four dedicated leaders receive such recognition from a single Technical Section is truly exceptional and I am super proud of each one of them:

Dr. Aziz Rahman, Regional PFC Award, MENA Region

Willow Z. Liu, Regional Service Award, Canada Region

Sonia Isabella López Kovács, Regional Service Award, Europe Region

Suhail Diaz Valderrama, Regional Service Award, MENA Region



SPE H2TS Past Events

Hydrogen in the Energy Transition: From Molecule to Movement March 23rd, 2026

On **23 March 2026**, the **SPE Robert Gordon University Student Chapter** successfully hosted an engaging online technical session focused on the evolving role of **hydrogen in the energy transition**.

At a pivotal time for the global energy sector, the session explored how hydrogen is emerging as a key component of a more **sustainable, diversified, and resilient energy system**. Discussions covered its potential applications across different segments of the energy industry, as well as the challenges and opportunities associated with scaling hydrogen solutions from concept to real-world deployment.



TITLE:

HYDROGEN IN THE ENERGY TRANSITION: FROM MOLECULE TO MOVEMENT



MONDAY 23RD MARCH 2026



6:00PM (GMT)



ONLINE (TEAMS)



PRINCE INNOCENT
YP LIAISON
SPE HYDROGEN TECHNICAL SECTION



COMFORT ADAMU
SPE RGU MEMBER
MODERATOR



@robertgordonunispe



Robert Gordon University SPE Student Chapter,



@Society of Petroleum Engineers- Robert Gordon University Student Chapter



The session was delivered by **Prince Innocent**, *Young Professional Liaison* for the **SPE Hydrogen Technical Section (SPE H2TS)**, who shared valuable insights into the growing relevance of hydrogen and its positioning within the future energy landscape. His contribution helped bridge the gap between the molecule itself and its movement toward practical, impactful implementation.

The session was very well received by participants and fostered meaningful technical discussion and knowledge exchange around one of the most critical topics shaping the future of energy

SPE H2TS Past Events

SPE Live: Building a Career in Hydrogen—A Conversation With Young Professionals on Skills, Opportunities, and Industry Needs 25th March, 2026

This SPE Live episode will unlock how early-career engineers can position themselves for long-term growth in hydrogen-related projects. The hydrogen sector is growing across production, storage, transport, and end-use applications. In this [SPE Live episode](#) panelists will discuss the technical and multidisciplinary skills needed to work in this evolving field.

Young professionals will discuss industry expectations, emerging job roles, research trends, and how early-career engineers can position themselves for long-term growth in hydrogen-related projects.

Moderator: **Sonia Lopez Kovacs**, reserves audit leader at Repsol

Panelists: **Cindy Dianita**, assistant professor at the University of Indonesia

Amine Ifticene, production engineer at Oxy

Sarah Wheeler, research engineer at Southwest Research Institute

[View Event](#)

Wednesday, 25 March | 0900 CDT (UTC-5)

LIVE



SPE Live:

Building a Career in Hydrogen. A Conversation with Young Professionals on Skills, Opportunities, and Industry Needs



Sonia Lopez
Kovacs

Cindy
Dianita

Amine
Ifticene

Sarah
Wheeler

SPE H2TS Past Events

Africa Hydrogen Hub (AHH) March 11, 2026



AFRICA HYDROGEN HUB DIALOGUE SERIES

THEME:

**Burning Billions Or Building
Hydrogen: Turning Nigeria's
wasted Gas into Clean Hydrogen**

DR. -ING. IBRAHIM KOLAWOLE MURITALA
GLOBAL HYDROGEN LEADER, AMERICAN
BUREAU OF SHIPPING (ABS)

There are significant infrastructural deficits, which introduces a kind of classic chicken and egg problem. You can't process or transport gas without pipelines, but you won't invest without guaranteed markets. Flaring is often the most technically reliable way to dispose this gas.



WATCH THE REPLAY OF THE SESSION HERE: africahydrogenhub.net

Africa Hydrogen Hub (AHH) held its second dialogue series on 11 March 2026, *"Burning Billions or Building Hydrogen – Turning Nigeria's Wasted Gas into Clean Hydrogen."* The session examined how Nigeria's gas flaring challenge could be transformed into an opportunity for clean hydrogen production. **Dr. Ibrahim Muritala** joined the discussion as a participant.

Replay available here:

[Watch the replay](https://africahydrogenhub.net)

Main takeaways:

- Flaring is burning of gas that could have been utilized. It is the burning of an asset to Nigeria, essentially billions of dollars wasted. Flaring for us in Nigeria is an economic issue, is an environmental issue, and also a personal issue.
- The problem of flaring in Nigeria is one of those decisions that people took in the 70s and 80s which is still affecting us today. The whole focus was just to monetize crude oil. Most of the flaring that happens in Nigeria today are related to legacy JV contracts.
- There are significant infrastructural deficits, which introduces a kind of classic chicken and egg problem. You can't process or transport gas without pipelines, but you won't invest without guaranteed markets. Flaring is often the most technically reliable way to dispose this gas.
- The Petroleum Industry Act of 2021 phases out flaring completely. Nigeria is not short of policies, what we are currently working on is implementation.

SPE H2TS Past Events

SPE Energy Stream Geologic Hydrogen: Progress Over Past Years and Work to Come. Thermal Stimulation 25th May, 2026

This SPE webinar brought together experts to discuss the latest developments in natural and stimulated geologic hydrogen. The session examined exploration progress, remaining technical challenges, and emerging technologies designed to enhance hydrogen generation from subsurface formations. As interest in geologic hydrogen continues to grow globally, the session highlighted its potential as a low-carbon energy resource and a promising complement to the future energy mix.

Moderator: **Yurii Moroz**, SPE H2TS Chair Elect

- Geologic Hydrogen: Progress Over Past Years and Work to Come, by **Viacheslav Zgonnik**, CEO and Co-Founder, HyReveal
- Thermal Stimulation of Geologic Hydrogen, by **Robert Dombrowski**, Director of Subsurface and AI, GeoKiln Energy Innovation Inc.

[View Event](#)



Society of Petroleum Engineers

SPE
EnergyStream

● Live Webinar

Geologic Hydrogen:

- Progress Over Past Years and Work to Come
- Thermal Stimulation



WEDNESDAY, 27 MAY
1100 CDT (UTC-5)



MODERATOR

YURI MOROZ
SPE HYDROGEN TECHNICAL
SECTION



SPEAKER

VIACHESLAV ZGONNIK
HyReveal



SPEAKER

ROBERT DOMBROWSKI
GeoKiln



**REGULATORY
RESPONDENT**

MICHAEL RIGBY
ECMC

SPE H2TS Past Events

Carrer Development – Low Carbon Hydrogen

AI-Powered Career Development in Low-Carbon Hydrogen

During a recent session, **Magdy Aly** presented an innovative AI-based coaching tool designed to help professionals and students navigate career opportunities in the rapidly growing low-carbon hydrogen sector. He highlighted that low-carbon hydrogen encompasses a broad value chain, including production, transportation, end-use applications, regulation, policy, finance and engineering, each requiring different skills and competencies.

The AI-powered coaching platform helps users assess their current position within the value chain, identify suitable career pathways, and build a personalised 90-day development plan aligned with their strengths and career objectives. By providing tailored guidance rather than generic career advice, the tool aims to support professionals seeking to enter or advance within the hydrogen and sustainability industries.

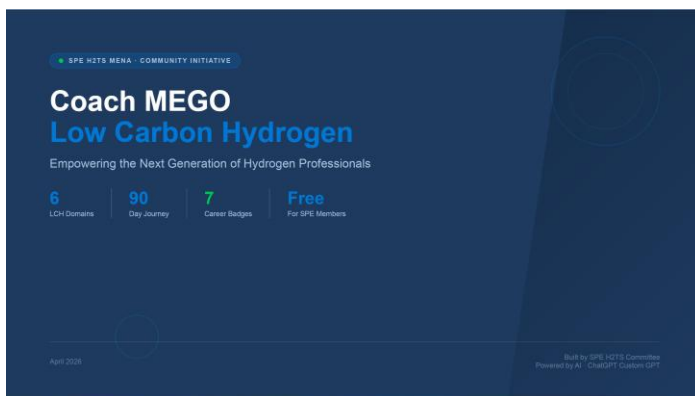


Coach MEGO — Low Carbon Hydrogen

Career Development Platform

The I-5 Methodology is a state-of-the-art coaching and mentoring framework for low-carbon hydrogen and derivatives.

It has been developed, reviewed, tested, and validated through collaboration between the MENA Steering Committee and Global Steering Committee members, with rollout beginning in June 2026.



[Link](#)

NEWLY LAUNCHED SPE H2TS MENA COMMUNITY INITIATIVE

Coach MEGO — Low Carbon Hydrogen Edition v2

An AI-powered career coach built for energy professionals who want a structured, practical path into low-carbon hydrogen. Coach MEGO helps users map existing skills, identify hydrogen competency gaps, and build a focused 90-day learning sprint.

[Launch Coach MEGO](#)

[Read H2TS Resources](#)

6
LCH Domains

90
Day Journey

7
Career Badges

Free
For SPE Members

Phase 1 — H2 Career Compass

Eight questions assign the user to a Foundation, Accelerator, or Expert track.

Phase 2 — H2 Career GPS

Gap assessment across six low-carbon hydrogen domains produces a personal gap map.

Phase 3 — 90-Day Sprint Plan

Personalized learning plan with stage reviews and progress milestones.

Phase 4 — 20/80 Mastery Modules

Focused deep dives into the high-value knowledge needed for practical hydrogen work.

Six Domains Assessed

H2 Landscape & Strategy

Production & Processing

Storage & Transportation

End-Use Applications

Carbon Accounting & Lifecycle

Standards, Regulations & Safety

Built for O&G-to-Hydrogen Transitions

Coach MEGO is especially useful for engineers, project managers, and business-development professionals who already have transferable energy-sector skills but need a clearer path into hydrogen roles, projects, and technical conversations.

Track A — Foundation

For curious engineers who are new to hydrogen and need a structured starting point.

Track B — Accelerator

For transition engineers who know the basics and want to close targeted competency gaps.

Track C — Expert

For senior practitioners preparing for strategic gaps, thought leadership, or SPE presentations.

2026 SPE Conference



SPE >> ATCE

21–23 OCTOBER 2026
GEORGE R. BROWN CONVENTION CENTER
HOUSTON, TX, USA

Link to conference:
<https://www.atce.org/>

2026 Technical Program

Hydrogen Sessions

Advances in Low-Carbon Hydrogen: Subsurface Storage, Generation, and Integrity

📅 Thursday, 22 October ⌚ 0830 - 1130 📍 Room 370 ADBE 🟡 Technical Session

In the future energy spectrum, hydrogen will play a key role in clean energy production. This session explores subsurface hydrogen storage and production, covering chemical and microbial controls, multiphase transport, and geomechanical integrity of caprock and porous media. Case studies highlight practical applications, while additional insights address mineral alteration and long-term geochemical dynamics. Presentations also feature innovative hydrogen production methods and pipeline leak detection, offering a comprehensive perspective on advancing hydrogen technologies for reliable and scalable subsurface energy systems.

Session Chairpersons

Mohammad Fassihi - Beyond Carbon LLC

Sergio Rondon Fajardo - SLB - WIS

Kalyan Saikia - Bosch Digital Twin Industries

Esuru Okoroafor - Texas A & M University

Unlocking Subsurface Resources: From Geologic Hydrogen to Critical Minerals

📅 Friday, 23 October ⌚ 0830 - 1130 📍 Room 361 AD 🟡 Technical Session

Explore the science and engineering behind geologic hydrogen generation and critical mineral recovery from subsurface resources. This session brings together multidisciplinary insights into hydrogen production mechanisms, mineral-enriched brine dynamics, and reservoir-scale modeling. Discover emerging workflows, from lab-based scaling to field applications, and examine how these resources could shape the future of energy transition and resource security.

Session Chairpersons

Malik Alarfaj - Saudi Aramco PE&D

Willow Liu - Medeng Technologies Inc

Esuru Okoroafor - Texas A & M University

Liz Valbuena Zambrano - Andes Operating Company

Recommended Resource for Reading

The International Energy Agency (IEA) Global Hydrogen Review 2026

Why We Recommend It

The *Global Hydrogen Review 2026* provides one of the most comprehensive and authoritative overviews of the hydrogen sector worldwide. The report covers the latest developments in hydrogen production, demand, policy frameworks, infrastructure, investments, and technology innovation.

For professionals involved in hydrogen projects, energy transition, subsurface storage, and emerging hydrogen markets, it offers valuable insights into current trends and future opportunities.

Who Should Read It

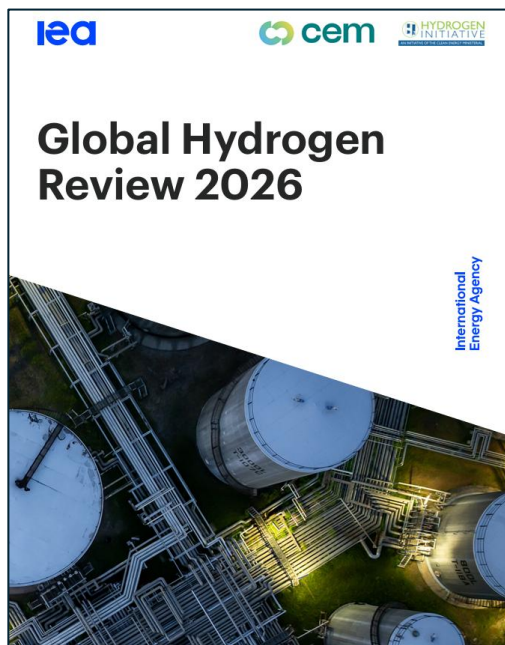
- Energy professionals evaluating hydrogen projects
- Reservoir, production, and facilities engineers
- Geoscientists exploring underground hydrogen storage and natural hydrogen opportunities
- Business development and strategy professionals
- Students and young professionals seeking an introduction to the global hydrogen landscape

Key Takeaways

- Global hydrogen deployment continues to accelerate.
- Infrastructure and storage remain critical challenges.
- Policy support is expanding in multiple regions.
- Natural hydrogen and underground storage are attracting increasing attention.
- Integration with renewable energy systems is becoming a major focus area.

Access the Report

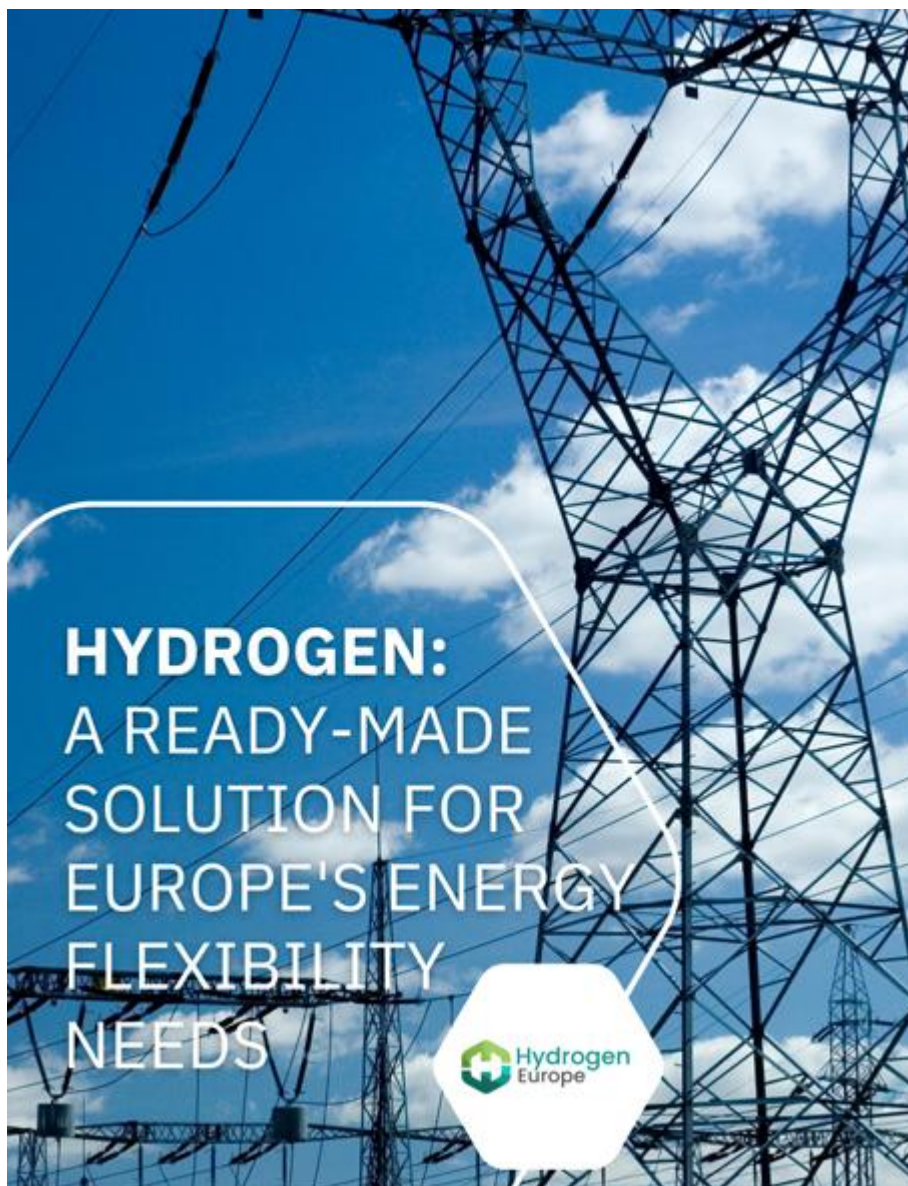
IEA Global Hydrogen Review 2026 [Link](#)



Recommended Resource for Reading

Europe's energy transition is facing growing electricity demand, increasing price volatility, and rising renewable curtailment. Greater system flexibility is needed, but regulatory barriers, limited market incentives, and delayed hydrogen infrastructure are slowing the deployment of key solutions such as flexible electrolyzers.

Download here: [Link](#)



2026 Hydrogen Conferences

Europe:

- **H2 Hydrogen Technology World EXPO** | October 20 - 22, 2026 | Hamburg, Germany.
- **European Hydrogen Week** | October 26-30, 2026 | Brussels
- **WORLD HYDROGEN & CARBON WEEK** | November, 24-27 2026 | Bella Center, Copenhagen
- **HYVOLUTION PARIS, WORLD LEADER IN HYDROGEN** | January 19, 20 & 21, 2027 | Paris, France.

Americas:

- **Hydrogen Americas Summit & Exhibition** | October 6-7, 2026 | Houston, Texas.
- **Annual Canadian Hydrogen Conference** | October 13-15, 2026 | Toronto, Canada.
- **Hydrogen Technology Conference & Expo** | February 10-11, 2027 | Houston, Texas, USA

Global/Other:

- **GASTECH Natural gas, LNG & Hydrogen** | September 14-17, 2026 | Bangkok, Thailand.
- **India Green Hydrogen Assembly (IGHA)** | November 17-18, 2026 | New Delhi, India.

SPE Hydrogen News

Southern Europe's Largest Green Hydrogen Plant Reaches Final Investment Decision

Spanish company Moeve has teamed up with Masdar and Enalter on the first phase of the Andalusian Green Hydrogen Valley, which aims to supply renewable fuels to hard-to-abate sectors.

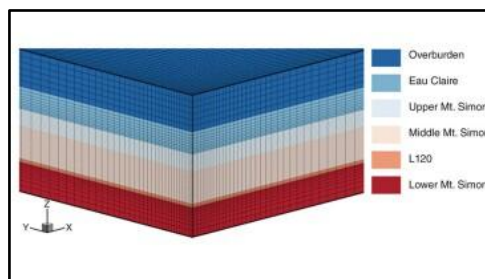
March 5, 2026 • JPT Staff • Journal of Petroleum Technology



Study Explores Storage of Hydrogen/Natural Gas Mixtures in Underground Gas Repositories

The objective of this study is to numerically investigate system behavior when storing H₂/natural gas (CH₄) mixtures in aquifer-related underground gas storage, and the effect of gas composition and salinity on energy-recovery efficiency.

March 1, 2026 • Journal of Petroleum Technology



Study Explores Wellbore-Integrity Challenges in the Era of Energy Transition

This study identifies critical knowledge gaps in wellbore integrity and underscores areas that require further investigation, providing insights into how wellbores must evolve to meet the technical demands of the energy transition.

January 1, 2026
Journal of Petroleum Technology



R&D Technical Section Q&A: The Future of Education—Innovation and Agility

This article is the sixth and final Q&A in a series from the SPE Research and Development Technical Section focusing on emerging energy technologies. In this final edition, Matthew T. Balhoff, SPE, of The University of Texas at Austin shares his views on the future of upstream education.

January 1, 2026 • Gaurav Agrawal • Journal of Petroleum Technology



SPE Hydrogen News

Building a Career in Hydrogen: What Young Professionals Need to Know

This article from the SPE Hydrogen Technical Section (H2TS) analyzes career opportunities and the capabilities professionals will need as the hydrogen sector continues to take shape.

May 25, 2026

Journal of Petroleum Technology



Source: Getty Images.

Read complete article:

[Building a Career in Hydrogen: What Young Professionals Need to Know](#)

SPE Hydrogen News

THE WAY AHEAD™
WRITTEN BY AND FOR YOUNG PROFESSIONALS

From Liability to Asset: Can Louisiana's Orphaned Wells Help Produce Clean Hydrogen?



Louisiana's orphan wells August provide an opportunity for successful microbial hydrogen production as the energy industry looks toward sustainability.

Hydrogen Generation Technologies: Unlocking a Sustainable Energy Future



Hydrogen is emerging as a key low-carbon energy carrier for the energy transition, with multiple production pathways that differ in cost, emissions, and scalability trade-offs.

India Energy Week: From Host to Global Energy Convenor



With more than 75,000 professionals in attendance, the fourth edition of India Energy Week brought together industry leaders, policymakers, and energy stakeholders to discuss not just oil and gas, but the future of energy.

Natural Hydrogen

Unlike hydrogen produced from industrial processes, natural hydrogen forms through geological reactions that occur normally within the Earth's crust, meaning it costs nothing to make – though it costs some amount to extract – and does not emit any carbon dioxide or other human-caused pollutants.

Natural hydrogen, also known as white, geologic, native, or gold hydrogen the main distinctions/differences are:

White Hydrogen	Most common term referring to naturally occurring hydrogen
Geologic/Geological Hydrogen	Highlights its origin from rock reactions
Native Hydrogen	Emphasizes it is found, not made
Gold Hydrogen	Used in some contexts to denote its high value, though sometimes associated with biotic processes

How natural hydrogen forms

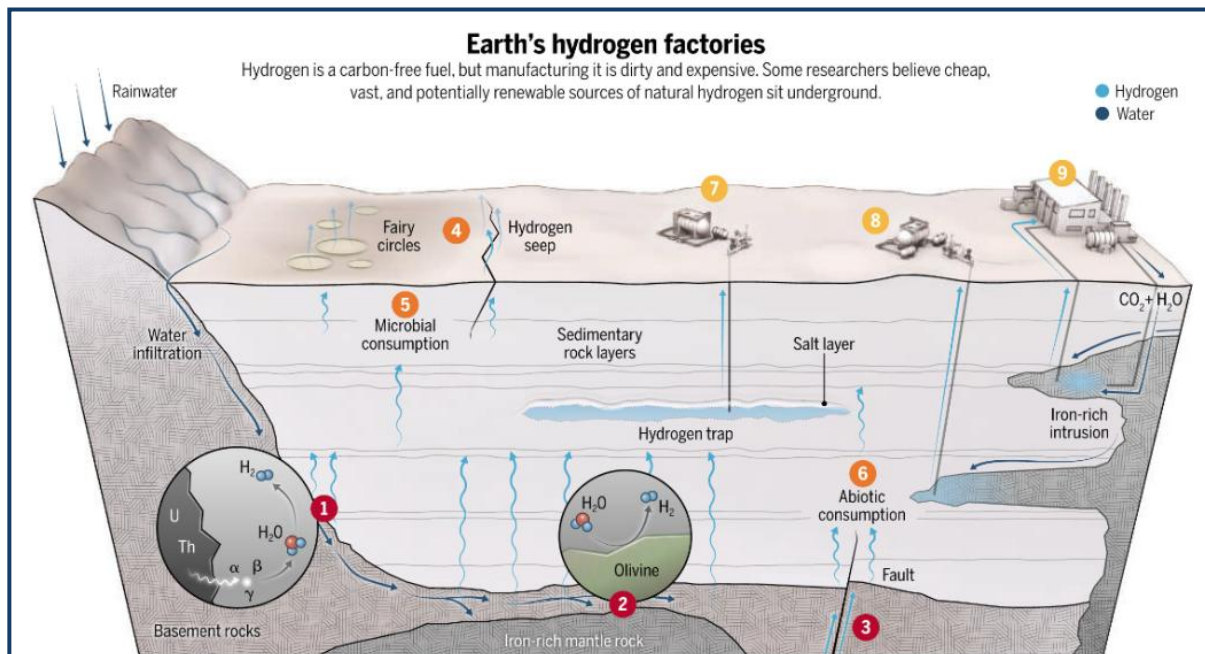
Natural hydrogen originates from several geological processes. The most well-studied mechanism is serpentinization, a reaction where water interacts with iron-rich rocks known as ultramafics, releasing hydrogen gas.

Serpentinization occurs in diverse settings around the world, including ocean ridges and continental formations such as the Midcontinent Rift in North America, a band of mostly igneous rocks with some sedimentary rocks mixed in, which extends from Minnesota through the Lake Superior region and southward toward Kansas.

Another process, thermogenic hydrogen formation, occurs in deep sedimentary basins when organic material decomposes under high temperatures, roughly 480 to 930 degrees Fahrenheit (250 to 500 degrees Celsius). These reactions can also produce hydrogen alongside other gases, such as methane or nitrogen.

Because these processes happen over millions of years, using natural hydrogen generally requires far less energy than human-made methods such as electrolysis, which consumes roughly 50 kilowatt-hours of electricity per kilogram of hydrogen produced – enough to power an average home for a day or two, and more than the energy that kilogram of hydrogen can provide. Natural hydrogen is already made – it just has to be collected.

Natural Hydrogen Generation



Generation

1 Radiolysis

Trace radioactive elements in rocks emit radiation that can split water. The process is slow, so ancient rocks are most likely to generate hydrogen.

2 Serpentinization

At high temperatures, water reacts with iron-rich rocks to make hydrogen. The fast and renewable reactions, called serpentinization, may drive most production.

3 Deep-seated

Streams of hydrogen from Earth's core or mantle may rise along tectonic plate boundaries and faults. But the theory of these vast, deep stores is controversial.

Loss mechanisms

4 Seeps

Hydrogen travels quickly through faults and fractures. It can also diffuse through rocks. Weak seeps might explain shallow depressions sometimes called fairy circles.

5 Microbes

In shallower layers of soil and rock, microbes consume hydrogen for energy, often producing methane.

6 Abiotic reactions

At deeper levels, hydrogen reacts with rocks and gases to form water, methane, and mineral compounds.

Extraction

7 Traps

Hydrogen might be tapped like oil and gas—by drilling into reservoirs trapped in porous rocks below salt deposits or other impermeable rock layers.

8 Direct

It might also be possible to tap the iron-rich source rocks directly, if they're shallow and fractured enough to allow hydrogen to be collected.

9 Enhanced

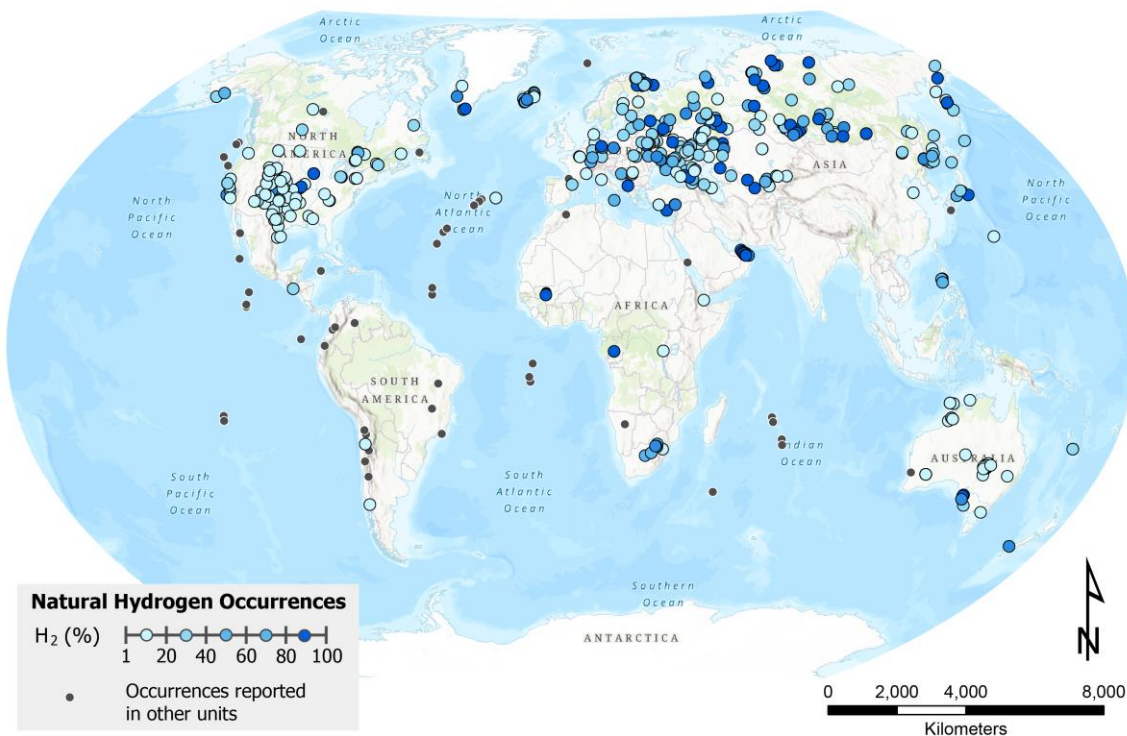
Hydrogen production might be stimulated by pumping water into iron-rich rocks. Adding carbon dioxide would sequester it from the atmosphere, slowing climate change.

Source: <https://www.science.org/content/article/hidden-hydrogen-earth-August-hold-vast-stores-renewable-carbon-free-fuel>

Natural Hydrogen Worldwide

The Natural Hydrogen Knowledge Platform (NHKP)

Recently, exploration and research on natural H_2 have gathered momentum, resulting in an exponential increase in the amount of information and data (Figure below).



Natural H_2 sites. Data and information review will allow for air-correction of H_2 concentration, assessment of drill bit metamorphism (artificial H_2 generation), and attribute assignment (sample information, field and laboratory methods, and geology) for further analysis.

NATURAL HYDROGEN KNOWLEDGE PLATFORM

Although natural H_2 systems are often compared with petroleum systems, research on the former is still in its infancy, and clarifying differences between the two systems is crucial for natural H_2 exploration. For that purpose, the team at EGI is developing a knowledge platform consisting of a GIS project of natural H_2 sites, with relevant geological data and a collection of interlinked documents. These include site summaries, source rocks, generation reactions, and H_2 properties.

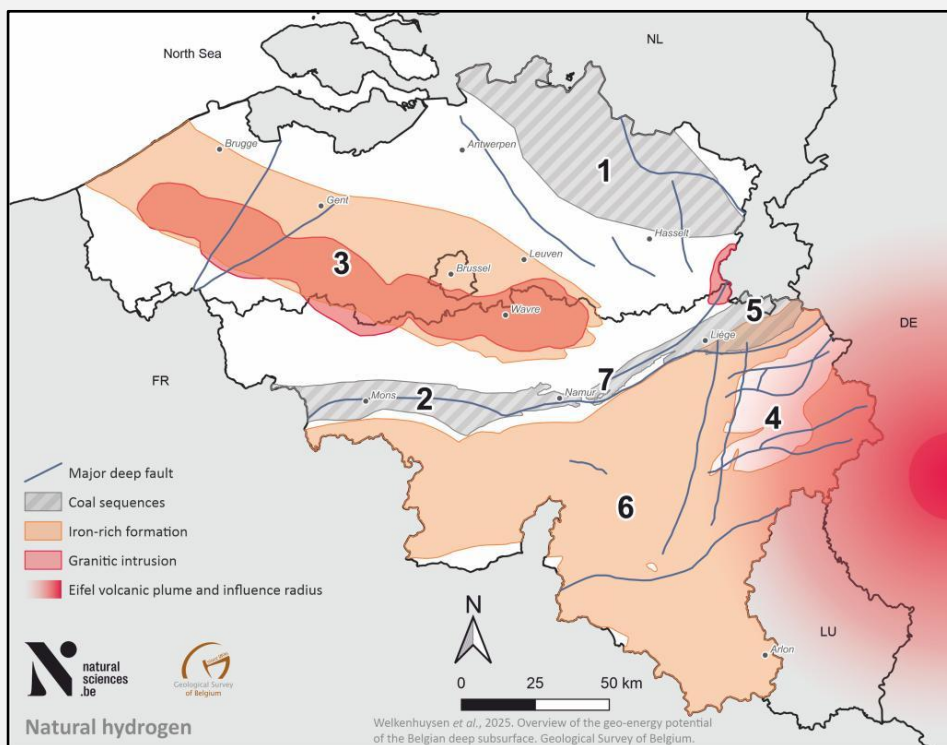
Hydrogen News

GSB launches national scientific exploration programme for natural hydrogen

The Federal Council of Ministers has approved the first phase of a national scientific exploration programme for natural hydrogen in Belgium. Natural or white hydrogen offers the potential to significantly reduce carbon emissions and increase strategic security. With this programme, the Geological Survey of Belgium aims to determine if and where natural hydrogen occurs in the Belgian subsurface.

The multi-year programme focuses on two parallel tracks: advanced 3D geological modeling and real-world field detection. Our experts will investigate various formation mechanisms, including oxidation in iron-rich rocks and radiolysis in deep granites, reaching deeper into the Earth's crust than any previous Belgian mapping efforts. By building specialized analytical capacity, we will validate where hydrogen might be forming, migrating, and accumulating. Several areas in distinct geological settings will be evaluated (indicated by the numbers on the map), providing full coverage of our country.

Read more in the [Link](#)



SPE H2TS Editorial Message

As the hydrogen sector continues to evolve, the need for collaboration, knowledge sharing, and technical excellence has never been greater. Across industry, academia, and government, professionals are working together to unlock hydrogen's potential as a key enabler of a secure, affordable, and lower-carbon energy future.

In this edition of the SPE Hydrogen Technical Section Newsletter, we highlight recent activities across our global community, share valuable technical resources, and explore one of the most exciting emerging topics in the energy transition: natural hydrogen. Interest in naturally occurring hydrogen has grown rapidly in recent years, creating new opportunities for geoscientists, engineers, researchers, and investors alike. As exploration efforts expand worldwide, natural hydrogen is increasingly being recognised as a potential new frontier in the global energy landscape.

We are also pleased to showcase the achievements of our Young Professional Committee, the first of its kind among SPE Technical Sections. Their enthusiasm, innovation, and commitment to engaging the next generation of energy professionals demonstrate the bright future of our community. Through technical discussions, outreach initiatives, and knowledge-sharing activities, they continue to strengthen the connection between today's experts and tomorrow's leaders.

This edition also features highlights from recent events, recommended reading, industry news, and upcoming conferences that reflect the breadth and dynamism of the hydrogen ecosystem.



Sonia López Kovács

*Newsletter Editor
SPE Hydrogen Technical Section*

Thank you for being part of the SPE Hydrogen Technical Section. Together, we continue to build a stronger, more connected, and more knowledgeable hydrogen community.

Hydrogen Glossary

Hydrogen: A very light gas and the most abundant element in the universe. It can be used as a clean energy carrier because it produces only water when used as fuel.

Energy Carrier: Something that stores and transports energy rather than creating it. Hydrogen carries energy produced from other sources, such as wind or solar power.

Green Hydrogen: Hydrogen produced using renewable electricity (like wind or solar) to split water into hydrogen and oxygen. It has very low environmental impact.

Blue Hydrogen: Hydrogen made from natural gas, where the carbon dioxide produced is captured and stored underground to reduce emissions.

Grey Hydrogen: Hydrogen produced from fossil fuels without capturing carbon emissions. It is currently the most common type but has a high climate impact.

Electrolysis: A process that uses electricity to split water into hydrogen and oxygen. This is the main method for producing green hydrogen.

Electrolyser: A device that performs electrolysis. It is a key piece of equipment in hydrogen production.

Hydrogen Storage: The process of keeping hydrogen for later use. Storage can be done in tanks, pipelines, or underground formations.

Hydrogen Glossary (Cont.)

Subsurface (Underground) Storage: Storing hydrogen deep underground in natural geological formations, such as salt caverns or depleted gas fields, to hold large amounts of energy.

Salt Cavern: A large underground cavity created in salt rock. Salt caverns are well suited for hydrogen storage because salt is very tight and prevents leaks.

Depleted Oil and Gas Reservoir: Underground rock formations that previously held oil or gas. They August be reused to store hydrogen.

Leakage: Unintended loss of hydrogen from storage. Because hydrogen molecules are very small, preventing leakage is an important challenge.

Energy Transition: The shift from fossil fuels to cleaner, low-carbon energy sources to reduce climate change.

Renewable Energy: Energy from natural sources that are continuously replenished, such as wind, solar, and hydropower.

Seasonal Storage: Storing energy for long periods (months) so it can be used when demand is high or renewable production is low.

Fuel Cell: A device that converts hydrogen into electricity, producing water and heat as by-products.

Carbon Capture and Storage (CCS): A technology that captures carbon dioxide emissions and stores them underground to prevent them from entering the atmosphere.

Hydrogen Resources



The Future of Hydrogen – Analysis - IEA

<https://iea.blob.core.windows.net/assets/5bd46d7b-906a-4429-abda-e9c507a62341/GlobalHydrogenReview2021.pdf>



The Department of Energy Hydrogen Program Plan | Hydrogen Program
U.S. Department of Energy (DOE) Hydrogen Program and National Clean
Hydrogen Strategy

- <https://www.energy.gov/eere/fuelcells/h2scale>
- <https://www.energy.gov/eere/fuelcells/hydrogen-storage>
- <https://www.energy.gov/sites/prod/files/2018/12/f58/fcto-webinarslides-hydrogen-carriers-120618.pdf>
- <https://www.energy.gov/sites/default/files/2021-12/h2iq-12082021.pdf>
- <https://www.hydrogen.energy.gov/pdfs/hydrogen-program-plan-2020.pdf>



ACS Executive Summary

MIT's Drake Hernandez sees a future with hydrogen solutions |
ExxonMobil



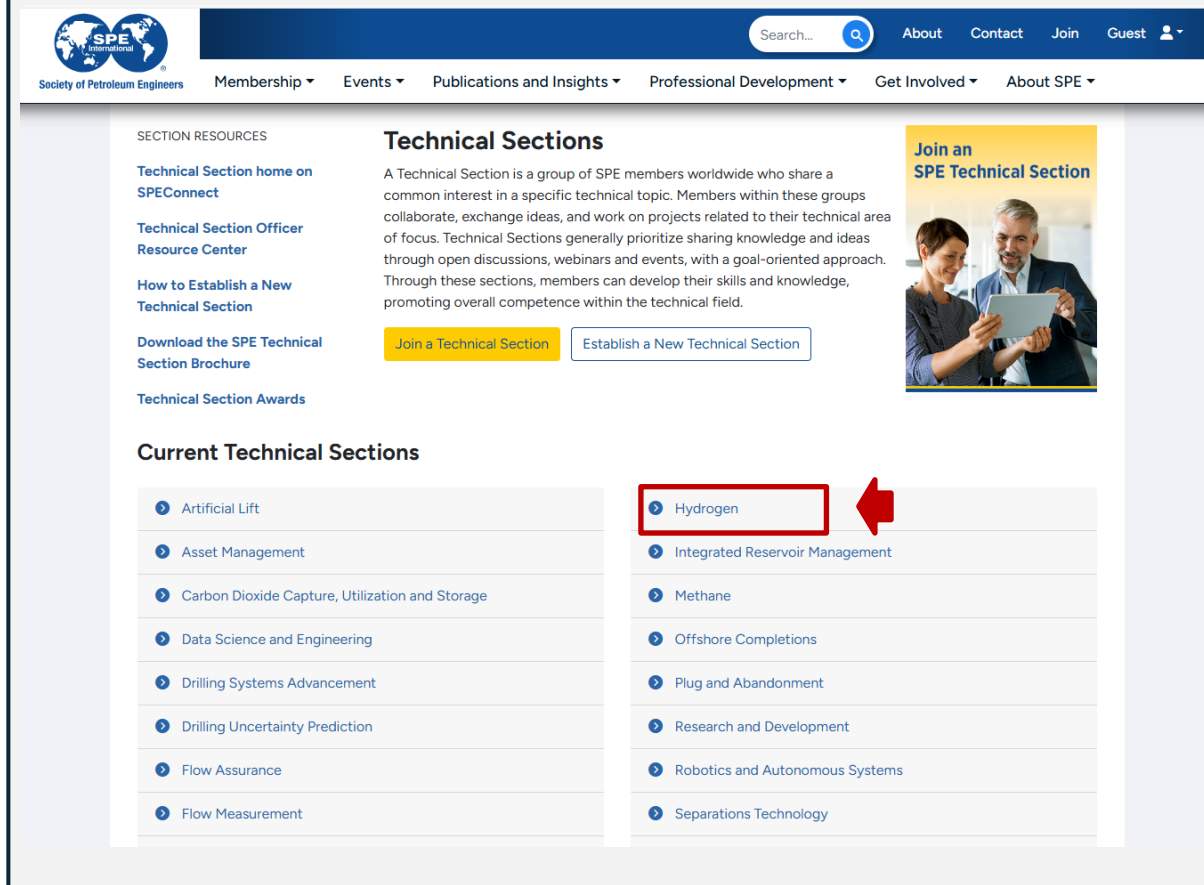
Explainer: harnessing the power of hydrogen — Chevron



BrightLoop™ Low-Carbon Hydrogen Production » Babcock & Wilcox

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If you are a professional **SPE member** and you wish to engage in our **Hydrogen Technical Section** discussion posts, please [click here](#) to join our community.



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- [How to Establish a New Technical Section](#)
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- [Technical Section Awards](#)

Technical Sections

A Technical Section is a group of SPE members worldwide who share a common interest in a specific technical topic. Members within these groups collaborate, exchange ideas, and work on projects related to their technical area of focus. Technical Sections generally prioritize sharing knowledge and ideas through open discussions, webinars and events, with a goal-oriented approach. Through these sections, members can develop their skills and knowledge, promoting overall competence within the technical field.

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➤ Drilling Systems Advancement	➤ Plug and Abandonment
➤ Drilling Uncertainty Prediction	➤ Research and Development
➤ Flow Assurance	➤ Robotics and Autonomous Systems
➤ Flow Measurement	➤ Separations Technology

For more information, you can also:

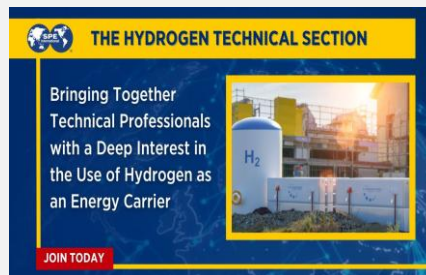


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THE HYDROGEN TECHNICAL SECTION

Bringing Together Technical Professionals with a Deep Interest in the Use of Hydrogen as an Energy Carrier

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