

Innovative Solutions for the Oil and Gas Industry

Theme Chairs

Dr. Afrooz Barnoush (QEERI), Eng. Yousef Al Jaber (TotalEnergies Qatar), Dr. Ahmed Reda (Curtin University)

This theme brings together experts from industry, academia, and government to discuss the latest developments in corrosion solutions, hydrogen and CO₂ management, and novel materials and sustainability. Attendees will have the opportunity to hear from leading researchers and practitioners, as well as network with their peers. The session will cover topics such as the latest advances in corrosion prevention and mitigation, new technologies for hydrogen and CO₂ storage and transportation, and the use of novel sustainable materials in the oil and gas industry. The event will also provide a platform for attendees to share their own research and ideas, and to explore potential collaborations. Overall, Theme 4 aims to provide a comprehensive overview of the latest developments in these areas and highlight promising solutions for the oil and gas industry.

Session 1: Corrosion solutions

Session Chairs

Dr. Mariana Costa Folea (QEERI), Dr. Katherina Lepkova (Curtin University), Eng. Yaser Elmorin (QE)

This session focuses on the latest developments in preventing and mitigating corrosion in the oil and gas industry. Attendees will have the opportunity to hear from experts in the field about new technologies and materials that are being developed to address corrosion in pipelines, offshore platforms, and other oil and gas infrastructure. The session will also cover current industry best practices for corrosion management, including novel methods of inspection and monitoring techniques based on artificial intelligence and machine learning, as well as the use of internet of things (IoT) for data collection. Additionally, there will be a discussion on the challenges and limitations of the current corrosion solutions such as organic coating, inhibitors, cathodic protection, and corrosion-resistant alloys and how new solutions can be developed to address these limitations. The goal of this session is to provide a comprehensive overview of the current state of the art in corrosion solutions for the oil and gas industry and to identify the most promising areas for future research and development.

Session 2: Hydrogen and CO₂ management

Session Chairs

Dr. Abdulkarem Amhamed (QEERI), Dr. Sabah Solim (Qatar Shell), Dr. Dong Suk Han (Qatar University)

The session focuses on the latest developments in managing hydrogen and CO₂ as potential solutions to reducing greenhouse gas emissions. Attendees will have the opportunity to hear from experts in the field about new technologies and materials that are being developed for hydrogen production, storage,

and transportation, as well as CO₂ capture, storage, and utilization. The session will also cover current industry best practices for hydrogen and CO₂ management, including safety and regulatory considerations. Additionally, there will be a discussion on the challenges and limitations of the current hydrogen and CO₂ management solutions and how new solutions can be developed to address these limitations. The goal of this session is to provide a comprehensive overview of the current state of the art in hydrogen and CO₂ management for the oil and gas industry and to identify the most promising areas for future research and development.

Session 3: Novel materials & Sustainability

Session Chairs

[Dr. Fadwa El-Mellouhi \(QEERI\)](#), [Dr. Bilal Mansour \(TAMUQ\)](#), [Dr. Amin Esmaili \(JDST\)](#)

This session focuses on the latest developments in novel materials and sustainable practices and technologies in the oil and gas industry. Attendees will have the opportunity to hear from experts in the field about new solutions that are being developed to reduce the environmental impact of the oil and gas industry, including renewable energy solutions, carbon capture and storage technologies, and sustainable production methods. The session will also cover current industry best practices for sustainable operations, and the use of life-cycle analysis, environmental impact assessments and sustainability reporting. Additionally, there will be a discussion on the challenges and limitations of the current sustainable solutions and how new solutions such as modelling materials across the scales and additive manufacturing can be further developed to address these limitations. The goal of this session is to provide a comprehensive overview of the current state of the art in sustainable practices for the oil and gas industry and to identify the most promising areas for future research and development.