Programme
CCS Conference 2026

Day 1

08:00 - 09:00 **Registration, morning snack and poster session**

09:00 - 09:10 

Welcome to the CCS Conference 2026. Elena Pachkova, Centre Director, DTU Offshore

09:10 - 09:30 

The Role of Emitters in the Danish CCS Value Chain – with a focus on current market status expected business Case. Torsten Schmidt-Jensen, Partner, PwC

In this session, Torsten Schmidt-Jensen will provide an up-to-date overview of the CO_2 market and current CCS-related activities in Denmark, with a particular focus on the perspective of Danish emitters.

The presentation will explore the business case for emitters and how this directly influences the development of a coherent CCS value chain, including the connection between emitters and storage operators.

Key market developments, regulatory frameworks and commercial considerations will be discussed, alongside the strategic role emitters play in enabling scalable and investable CCS solutions in Denmark.

09:30 - 10:10 **Lex Rijkels, Principal Reservoir Engineer, Ecteras, and Karen Feilberg, Senior Researcher, DTU Offshore**

Lex Rijkels, Ecteras, and Karen Feilberg, DTU Offshore, will jointly present the pressure limitation to CO_2 storage capacity in the Gassum saline aquifer using various dynamic screening tools, and how brine extraction might unlock capacity upside and provide a potential revenue stream based on lab experimental work.

Realistic Carbon Storage Potential through Simulation of Pressure Limitations

Storage potential in saline aquifers is not limited by pore space in traps, but by the pressure required to displace brine out of those traps. In 2023 Ecteras reviewed the capacity of potential CO_2 licenses in Denmark using reservoir simulation in OPM-Flow, an open-source reservoir simulator, and derived a general proxy model for multi-well injection forecasts. Because of property degradation in steep flanks and pressure interference between sites, the total storage capacity of the Gassum formation is an order of magnitude lower than static assessments using a fixed storage efficiency. Although this is enough to start CO_2 storage at significant scale, it won't fill most structures to spill. Pressure buildup triggers a hard limit on injection long before mitigation factors like CO_2 dissolution or plume migration become relevant. A comparison to simplified physics tools in public literature shows that these can also model the pressure limitations – although effects like geological heterogeneity and depth trends still require reservoir simulation.

Bridging the Gap: Water Production and Advanced Brine Analysis

To overcome these pressure limitations and "unlock" the pressure space required for long-term, large-scale CCS, active water production from aquifers has emerged as a possible solution. By extracting brine to stabilize reservoir pressure, operators can significantly expand the viable storage horizon. However, managing high-salinity brines requires specialized expertise. DTU Offshore leverages decades of experience from the oil and gas industry to provide a dual-value proposition: determining the most effective treatment options for produced water while simultaneously identifying high-value minerals. Using state-of-the-art laboratory procedures, DTU Offshore can detect trace elements like lithium, rubidium, and rare earth metals whose detection is typically masked by high salt concentrations. This approach not only optimizes CO_2 injection volumes but might also create a secondary value stream from the very water that previously limited storage potential.

10:10 - 10:35

Mikael Dan Frørup, Principal Reservoir Engineer, CarbonCuts

2025 was an important year for the Rødby carbon storage project. A 3D survey was acquired over the main structure, and a successful logging campaign was performed in one of the legacy wells.

The first wells in the Rødby structure were drilled in 1956 as part of an exploration program targeting the formations down to Rothliegend. The locations were supported by a few 2D seismic lines. As no oil nor gas was encountered, the exploration was deemed unsuccessful, and the wells were hastily abandoned. The exploration found that no source was present eliminating the hope of finding oil or gas in Lolland. Little subsurface activity took place after 1956 in the region, apart from an exploration well in Søllested, which was drilled North of the regional fault from the Rødby structure in 1982.

The Rødby project is different from other onshore CCS projects in Denmark as it targets the Bunter formation. The Gassum formation is too shallow in the region to be considered for carbon storage. The Bunter formation contains three sand levels in the region. Despite their thinner nature, there is a significant upside in the permeability due to the aeolian nature of the deposition.

In 2025, two activities took place: Acquisition of 3D seismic survey covering the main structure and rig entry into one of the legacy wells.

A 3D seismic survey was acquired in the first part of 2025 with the following processing and analysis. The result validated a soft done structure with a peripheral closing with the regional fault passing to the north of the structure.

The successful entry into the old Rødby-2 well was a significant milestone. It allowed a significant acceleration of the appraisal program. The old legacy wells represent a storage integrity risk. But the entry into Rødby-2 demonstrated that hole was preserved all the way down to the base of the Bunter formation. This and the successful execution of 2 extended leak off tests have given confidence in the integrity of the storage site and the maximum pressure limitation.

The entry into the old well was problematic. The hole had been used for waste and contained some difficult intervals which required significant fishing operations to recover the metal debris.

Extended leak-off tests are normally executed in open holes. In Rødby-2, the cement was adequate to support two tests in the seal above the Bunter formation. These measurements ties to the geomechanics interpretation and provide an upper pressure limitation for the assessment of capacity.

A DST was carried out in the lowest Bunter sand, the Volpriehausen and used to acquire fluid samples. The fluid samples have exhibited a high salt content. The main salt is Halite.

The 2025 data acquired successfully validated key assumptions in early work and justifying the drilling of the first exploration well in 2026. The key information from the 2026 activities is the acquisition of modern openhole logs and the testing of the formation conductivities in the Bunter sands.

10:35 - 10:55

Coffee break, poster session and networking

10:55 - 11:20

Over-coming under-forecasting for CCS projects: mapping cumulative residence for incremental storage.

Ed Stephens, GeoEnergy Institute Visiting Researcher, Heriot-Watt University
Mark Bentley, Tutor at TRACS International and Associate Professor, Heriot-Watt University

In production scenarios, we are familiar with the issues of underestimating the negative impact of reservoir heterogeneity and over-forecasting production; in storage scenarios, we build large models for the full storage complex, often at the expense of small-scale detail. In these cases we are likely to be under-forecasting the benefits of storage, and residual trapping in particular.

The work here looks at the impact of structural heterogeneities, and the use of very high resolution models - cells decreasing in size to a few millimetres in fault cores.

The models capture significant capillary hold up of a plume's progress, and associated upward percolation within and around the fault. The key parameter here is 'residence time' which we show is a mappable property directly linked to incremental storage potential.

We propose that estimates of capillary trapping related to residence, combined cumulatively with a forecast of both seismic and sub-seismic fault frequency in a storage project volume, provide a measure of incremental storage lost in coarser models. One step closer to over-coming under-forecasting for CO_2 storage projects.

11:20 - 11:35

A brief introduction to Fault Seal for CCS. Michael Welch, Senior Researcher, DTU Offshore

Michael Welch, Senior Researcher at DTU Offshore, will give an overview of the key factors in fault seal analysis and its importance for CCS, based on his experience of over 10 years studying fault seal analysis for the hydrocarbon industry at Rock Deformation Research and Schlumberger.

He will highlight some of the pitfalls, and also describe some methods and workflows for overcoming these and predicting the effect of faults on CO_2 and pressure flows in the subsurface

11:35 - 12:00

Legacy Wells in CCS Development. Yves Slagmulder, Well Operations Advisor for the Porthos project and Well Operations Manager at EBN.

In CCS developments, existing wells can present both opportunities and challenges. Substantial cost savings can be achieved by reusing wells for CO_2 injection, monitoring, or pressure management, but they can also pose a risk by providing potential migration pathways.

In the Porthos project, offshore the Netherlands, four gas producer wells have been worked over and repurposed as CO_2 injectors, while three other wells have been abandoned.

Yves Slagmulder, Well Operations Advisor for the Porthos project and Well Operations Manager at EBN, will shed light on Legacy wells in CCS development, sharing experiences of some of the technical challenges encountered, covering topics such as well design, abandonment philosophy, material requirements, and cement placement.

12:00 - 12:15

Solutions to the Storage Site Monitoring Requirements. Simon Ivar Andersen, Professor, DTU Offshore

The requirement to monitor the integrity of the CO2 storage site can be addressed in different ways. There are no cost-effective commercial solutions for the direct detection, localisation, and quantification of CO2 leaks.

Therefore, DTU Offshore has been exploring a number of novel methodologies for the direct measurement of the presence and type of leakage (if any). Monitoring at the seabed presents additional challenges, e.g., some proposed techniques require extracting the gas into a water- and moisture-free sensing zone, deployment can be challenging, and CO2 readily dissolves in water.

At DTU Offshore, we are developing a number of solutions with our partners that detect and quantify leaks, addressing different needs such as point-source (wells, weak points, etc.) and fixed spatial areal monitoring, as well as the ability to distinguish and rule out false positives caused by naturally occurring biogenic CO2, e.g., in the seabed. These solutions can also be used in onshore locations.

Simon will briefly present three solutions we are working on at different TRLs and discuss the challenges and gaps to address.

12:15 - 12:35

Coffee break, poster session and networking

12:35 - 13:00

Integrated MMV Workflow for CCS Risk Assessment, Monitoring and Control. Steve Fayers, Well Construction Advisor, Baker Hughes

The successful implementation of carbon capture and storage (CCS) requires a robust Measurement, Monitoring and Verification (MMV) workflow that can demonstrate CO_2 containment, confirm conformance with expected reservoir behaviour, and support regulatory confidence throughout the project lifecycle. This paper presents an integrated MMV workflow that brings together subsurface modelling, risk assessment, legacy wells evaluation, field monitoring deployment, and digital control technologies to provide a practical and scalable approach for CCS project assurance.

The proposed workflow is structured around several connected components. First, an integrated Baker Hughes–Spotlight–CMG workflow links subsurface characterisation, dynamic simulation, geomechanics, and monitoring design. Static geological models, petrophysical interpretation, seismic data, and well information are integrated with dynamic flow simulation and geomechanical assessment to evaluate CO_2 plume migration, pressure evolution, caprock integrity, and fault-related risks. The modelling outputs are then translated into monitoring requirements, ensuring that MMV design is directly linked to the key subsurface uncertainties and project-specific containment risks.

A second critical component is the assessment of legacy wells, which is an essential part of the MMV risk framework. Existing wells within the expected areal extent of the injected CO2 plume, known as the area of review, are systematically screened, categorised, and risk-ranked based on well integrity information, completion history, abandonment status, available records, and proximity to the predicted plume and pressure footprints. This assessment supports the identification of potential leakage pathways and informs targeted inspection, remediation, re-abandonment planning, and long-term monitoring priorities.

The workflow then proceeds to field deployment and control, where monitoring technologies are selected and implemented based on the identified risk profile and local regulatory requirements. This includes baseline acquisition, operational surveillance, conformance monitoring, containment assurance, and adaptive updates as new data become available.

A key technology advancement is CO_2Watch, which enables autonomous, continuous, low-impact monitoring using ambient noise interferometry, passive seismic methods, microseismic surveillance, and shallow environmental sensing. CO_2Watch provides ongoing visibility between conventional survey campaigns and supports early detection of deviations from expected storage behaviour.

Digital integration is provided through CarbonEdge, which connects subsurface, surface, operational, and regulatory data streams into a unified digital platform. CarbonEdge supports risk mitigation, performance monitoring and tracking, anomaly detection, operational optimisation, and reporting, allowing operators to move from periodic assessment to continuous project control.

By combining the wider MMV workflow with integrated modelling, legacy wells review, field deployment, CO_2Watch monitoring, and CarbonEdge digital control, the proposed approach provides a closed-loop system for CCS risk assessment and assurance. It enables operators to connect subsurface understanding with real-time monitoring and decision-making, supporting safer storage operations, improved regulatory transparency, and more efficient long-term management of CO_2 storage projects

13:00 - 13:20

No Data, No Scale: Digital Readiness as a Prerequisite for Bankable CCS. Jacob Bang, Director, Industry Advisor for CCS, Microsoft

As CCS projects enter industrial operation, scalable deployment increasingly depends on the ability to maintain trusted, verifiable data across a multi-party value chain. In practice, CO_2 must now move in lockstep not only with infrastructure and commercial contracts, but with auditable evidence from capture through transport, injection, monitoring, and ultimately to carbon accounting and market claims.

Based on operational experience from CCS projects in production today, including Northern Lights, this session examines how digital readiness must be embedded from the outset through MRV-by-design principles. Integrating subsurface models, sensor telemetry, operational workflows, and reporting into a unified digital foundation enables continuous data integrity across interfaces - from emitter to storage site to market registry.

The presentation will share lessons learned on how end-to-end data continuity reduces execution risk, strengthens regulatory confidence, and improves project bankability by enabling trusted verification and chain-of-custody across the CCS lifecycle.

13:20 - 14:15

Lunch, poster session and networking

14:15 - 14:40

Subsurface Insights from Viking CCS. Tom Martin, Senior Geologist, Viking CCS Harbour Energy

The Permian Leman Sandstone Formation has underpinned gas production in the UK Southern North Sea for several decades. Its depleted fields are now emerging as candidates for large-scale CO_2 storage.

Among these, the Victor Field, now designated Viking South Carbon Store, has emerged as a prime geological target, benefitting from good reservoir quality, regionally extensive Zechstein caprock, well-constrained production history and robust legacy well integrity.

After producing 1.05 TCF of gas, the site is now positioned as one of the UK's most significant future storage hubs, capable of playing a key role in decarbonising the Humber region of the United Kingdom.

The talk will provide an overview of the subsurface characterisation undertaken by Harbour Energy and its non-operated partner, bp, in support of maturing the Viking South Carbon Store toward a Final Investment Decision.

14:40 - 15:05

CO_2 storage in Denmark - Status, challenges and next steps. Henrik Sulsbrück, Head of Division, Danish Energy Agency

15:05 - 15:30

Progress of ACCSION, large-scale CCS project at Aalborg Portland. Jesper Sand Damtoft, Group Sustainability Director, Cementir Holding N.V.

Aalborg Portland has submitted its best and final offer for the Danish CCS Fund.

If granted, this will enable the development of a fully integrated value chain for onshore capture, transport, and storage of CO_2 in Denmark.

The project aims to capture 1.4 million tonnes of CO_2 annually from 2030 and will make Aalborg Portland one of the first zero-CO_2 cement producers in the world, measured by direct emissions.

Jesper Sand Damtoft, Group Sustainability Director at Cementir Holding N.V., will present the progress of ACCSION, the large-scale CCS project at Aalborg Portland, and discuss the reasons for selecting the onshore option.

15:30 - 15:55

Public acceptance, what does it take? Regitze Reeh, Head of Corporate Affairs, Harbour Energy

Between January and March 2026, the Greenstore project carried out one of the largest and, for sure, the most complex onshore 3D seismic surveys in Europe. To secure sufficient land access, the project held direct dialogue with more than 3,000 landowners, resulting in around 80% consent.

While processing and analysing the data, the project is now moving into the next phase of the work programme: drilling the first exploration well to more than 3,000 metres. The activity is limited to a private field with few neighbours but will be highly visible in the area, requiring a completely different stakeholder and communications approach.

Project Greenstore is operated by Harbour Energy in partnership with INEOS Energy and Nordsøfonden.

15:55 - 16:15

Coffee break, poster session and networking

16:15 - 16:40

CO_2 Storage Kalundborg: Subsurface Evaluation and Stakeholder Engagement for Onshore CO_2 Storage in Denmark. Ulrik Olbjørn, Project Manager of CO_2 Storage Kalundborg,

The CO_2 Storage Kalundborg project is evaluating the Havnsø structure in western Zealand as a potential site for safe and permanent onshore CO_2 storage. The project is operated by Equinor in partnership with Ørsted and Nordsøfonden under a six-year exploration licence.
Approximately 20 months into the work programme, seismic acquisition and interpretation have been completed to improve the understanding of the potential storage complex. The next phase includes drilling an exploration well to around 1.9 km depth to obtain core samples and subsurface data, followed by testing activities to further assess formation behaviour and storage potential.
In parallel with the technical evaluation, the project has focused on stakeholder dialogue with local communities and landowners. The presentation will share experiences from progressing both the subsurface evaluation and the stakeholder engagement process, and outline considerations relevant to developing onshore CO_2 storage in Denmark.

16:40 - 17:05

Project Greensand – Preparing for Operations. Mette Lind Fürstnow, Project Greensand Manager, INEOS Energy

Greensand Project Future is approaching CO_2 injection operations. With the first license for permanent CO_2 storage in Denmark, we can very soon welcome CO_2 emitters to our new terminal at the Port of Esbjerg where the purpose-built Carbon Destroyer 1 vessel has just arrived at the quayside.

Behind lies years of preparation; validation of the offshore storage site,including CO_2 pilot injection; cross-industry agreements with CO_2 emitters; storage site application and permitting; certifications; engineering and construction.

A complex and exciting, cross-disciplinary project which is soon to go live.

17:05 - 17:30

TotalEnergies Bifrost – Preparing for CCS market growth. Esbern Hoch, Senior Business Developer, TotalEnergies

TotalEnergies and partners are advancing the development of the Bifrost Phase 1 offshore CO_2 storage with a flexible project aimed at targeting the early market growth of Danish and Northwest European CCS from 2030.

With the entry in the Inez Licence, Bifrost Phase 2 outlines the next steps to support the continued growth of the CCS market into the mid-2030s.

The ability of storage projects to keep pace with the growth of the CCS market is crucial for achieving climate targets in Denmark and the EU.

TotalEnergies shares its current status and plan towards reaching 15 million tonnes of CO_2 storage annually.

17:30 - 17:55

Maximising "Value" in the Value Chain: A Platform for Automatic Design and Optimisation of Large-Scale CCS Networks in Europe. Ali A. Eftekhari, Computational Expert, DTU Sustain

The deployment of Carbon Capture and Storage (CCS) at continental scale remains constrained by how the value chain is typically represented. Capture, transport and storage are often treated as separate elements, which makes it difficult to assess the performance of CCS systems as a whole. In this work, CCS is instead modelled as an integrated process within a single optimisation framework.

The approach follows a physics-first principle. First-principles models are used to establish detailed inventories of equipment, materials and energy requirements, which then form the basis for the economic calculations. This ensures that cost estimates are directly linked to the underlying engineering assumptions.

The platform is supported by a proprietary geographical dataset of European emission sources, which is continuously updated and combines data from ETS, E-PRTR and EDGAR. This includes information on exhaust gas composition and fuel types at a relatively granular level.

Transport is represented through multiple modes, including pipelines, trucking, rail and maritime shipping. These are embedded in a mathematical optimisation framework that seeks to reduce both energy demand and overall cost, while accounting for right-of-way and environmental constraints.
Routing and system configuration are handled algorithmically, whereas design constraints are specified by domain experts. This allows the model to reflect established process design practice rather than purely abstract optimisation.

The platform is a tool intended for screening and comparison of CCS system configurations, providing a basis for assessing both environmental and economic performance.

17:55 - 18:00

Closing remarks. Elena Pachkova, Centre Director, DTU Offshore

18:00 - 19:00 **Poster session and tapas**