Final report

1. Project details

Project title	**EUDP 2021-II Bifrost**
File no.	**64021-9007**
Name of the funding scheme	EUDP Smartgrid and systems EUDPCO2-fangst, -udnyttelse og -lagring
Project managing company / institution	TotalEnergies EP Danmark A/S
CVR number (central business register)	22757318
Project partners	TotalEnergies EP Danmark A/S as operator of the Danish underground Consortium (Nordsøfonden, BlueNord and TotalEnergies) Ørsted Salg / Service A/S DTU
Submission date	10 December 2024

2. Summary

Describe the objectives of the project, the obtained results and how they will be utilized in the future, both in English and in Danish. The summary will be published on www.eudp.dk and www.energiforskning.dk.

Project summary :

The purpose of the project

Project Bifrost addressed the challenge of CO2 transportation and geological storage in the Danish North Sea. It repurposed existing assets, including depleted O&G fields and offshore pipelines. The project developed an innovative 'all offshore' concept and advanced CO2 monitoring technologies. The project assessed the risk and environmental impacts as well as improved understanding of the socio-economic aspects.

Results, conclusions and perspective

Project Bifrost successfully study how to repurpose existing assets, including depleted O&G fields and offshore pipelines, for CO2 storage and transportation. It developed an innovative 'all offshore' concept with floating storage injection units near the Harald platform, advanced CO2 monitoring technologies and protocols, and

assessed risk and environmental impacts. The project also improved understanding of the socio-economic aspects associated with CCS. The results will be used to further develop and optimize CO2 transportation and storage solutions in the Danish North Sea, serving as a model for future CCS projects and potentially unlocking larger storage potential in the DUC fields and additional project phases. The technology is expected to accelerate the maturation of storage potential in the Danish North Sea, contributing significantly to achieving climate targets by 2030, developing a new promising industry, sustaining employment in the O&G sector, and supporting the transition to a low-carbon economy. The advancements in CO2 monitoring and risk assessment will enhance the safety and efficiency of CCS operations, ensuring long-term environmental sustainability.

3. Project objectives

The objectives of the Bifrost project are centred around developing a concept for permanently storing CO2 in the underground of the Danish North Sea. This involves turning the depleted Harald fields into a climate solution for the future. The project aims to make Denmark a showcase for Carbon Capture and Storage (CCS) by leveraging public funding and promising results.

Additionally, the project focuses on communication, dissemination, and stakeholder engagement to maximize visibility and facilitate the uptake of demonstration results. This includes targeted information to multiple audiences, stimulating innovation and cooperation through collaborative tasks, and widely disseminating research results among the scientific community

4. Project implementation

The Bifrost project evolved significantly over the past two and a half years, focusing on developing a concept for permanently storing CO2 in the Danish North Sea's depleted Harald fields.

The project faced several risks, including the need for appropriate geological storage sites to ensure effective CO2 containment. The reservoir had to be permeable with high porosity, and the rocks above needed to be tight to form an effective seal. Additionally, the project had to ensure that the CCS solutions were safe for both the environment and people.

The implementation of the project generally developed as foreseen and according to the agreed milestones. The project structure was organized into work packages, each led by one of the partners, including different tasks. The communication and dissemination activities were successful, enhancing visibility and facilitating the uptake of demonstration results.

However, the project did experience some unexpected problems. For instance, there were challenges related to the mechanical behaviour of chalk during CO2 injection, which required additional research and adjustments6. Despite these challenges, the project made significant progress and laid the foundation for Denmark to become a showcase for CCS.

5. Project results

The project was organized into 11 work packages covering the CCS chain and project management. The WP were leads by one of the partner DTU offshore, DTU University, Orsted and DUC partners which are BlueNord, Nordsofonden and TotalEnergie as operator.

Regarding the arrival of CO2, there are two options for reception. CO2 is either unloaded onto a floating unit offshore near the Harald Platform or at a terminal located in Esbjerg. TotalEnergies, on behalf of DUC Danish Underground Consortium, the responsible JV of O&G business for Harald East and West, studied the design of the ships and the floating installation. Orsted examined the transport of CO2 via a pipeline from the Esbjerg terminal to the Esbjerg platform, passing through a pumping installation at Nybro. They also explored the reuse of the pipeline that transports gas from Ineos at South Arne to Nybro. Interestingly, the CO2 will flow in the opposite direction of the gas.

On the Harald platform, the CO2 is compressed for injection into the Harald East and West fields. TotalEnergies studied the platform's reuse, ensuring its integrity for extended operation while integrating additional equipment for CO2 storage. Additionally, we considered reusing wells for CO2 injection into Harald East and Harald West.

TotalEnergies also assessed the capacity to store CO2 in the Harald West reservoir. While Harald West has well-known geology for CO2 storage, the Harald East reservoir consists of chalk, an area where the industry has limited experience. To evaluate this new possibility, DTU Offshore conducted studies.

Once the CO2 is stored, it's crucial to ensure it doesn't leak and remains where intended within the reservoir. TotalEnergies developed a monitoring plan, and DTU introduced new technologies to better represent CO2 storage and ensure continuous control. Environmental impacts were also studied, considering current regulations. Finally, DTU University conducted surveys and assessments to evaluate the socioeconomic impact of developing such a CCS chain.

The project produced several technological results, including the development of a deep learning model for monitoring CO2 plume propagation and a geomechanical assessment of containment in depleted gas chalk fields. Unexpected results included insights into the mechanical weakening of chalk during supercritical CO2 injection.

This project is a collaborative effort among partners. Each participant has contributed their expertise and challenged one another during the studies. I also want to express gratitude to Our Advisory Board for their valuable input and highlight the relevance and quality of their recommendations. The committee included representatives from ARC Amager Resource Center, Business Esbjerg, CMP Copenhagen and Malmo Ports, Concito, Crossbridge Energy, Dansk Industri, Danish Shipping, the Export and Investment Fund of Denmark, Microsoft, and Varde Commune.

Commercially, the project laid the groundwork for Denmark to become a showcase for CCS, with the potential to store several million tonnes of CO2 per year in the Harald fields. The project also highlighted the importance of combining academia and industry to advance CCS technologies. Unexpected commercial results included the identification of new business models for CO2 transportation and storage.

The project results have been widely disseminated through various channels. This includes general events, press releases, media events, and the bifrost-ccs.com website. The project has also published several research papers in reputed journals and actively participated in scientific conferences, such as the 16th Greenhouse Gas Control Technologies Conference (GHGT-16) and the 17th Greenhouse Gas Control Technologies Conference (GHGT-17).

6. Utilisation of project results

The Bifrost project has yielded significant technological and commercial results that will be utilized in various ways in the future.

Technological Results Utilization: *The technological results obtained from the Bifrost project, such as the development of a deep learning model for monitoring CO2 plume propagation and a geomechanical assessment of containment in depleted gas chalk fields, will be utilized by major industrial plants like steel and cement factories, and bioenergy plants that emit large amounts of CO2. These technologies will help these industries capture and store CO2 more effectively, contributing to their emission reduction targets.*

Commercial Results Utilization: *Commercially, the project has laid the groundwork for Denmark to become a showcase for CCS, with the potential to store several million tonnes of CO2 per year in the Harald fields. The project has also highlighted the importance of combining academia and industry to advance CCS technologies. The commercial results will be utilized by companies involved in CO2 transportation and storage, such as TotalEnergies, Ørsted, and BlueNord.*

Impact on Turnover, Exports, Employment, and Investments: *The project has not yet led to increased turnover, exports, employment, or additional private investments. However, the project partners expect that the project will result in increased turnover, exports, employment, and additional private investments in the future.*

Competitive Situation: *The market for CCS technologies is competitive, with several companies offering similar solutions. The main competitors include Northern Lights in Norway and Aramis in the Netherlands. These projects also focus on CO2 transportation and storage, and they have established themselves as key players in the market.*

Entry or Sales Barriers: *The main barriers to entry or sales in the CCS market include the high costs associated with CO2 capture, transportation, and storage, as well as regulatory and policy challenges. These barriers are expected to be overcome through continued research and development, collaboration between academia and industry, and supportive government policies.*

Contribution to Energy Policy Objectives: *The Bifrost project contributes to energy policy objectives by providing a sustainable solution for CO2 storage, helping Denmark and the European Union meet their ambitious CO2 emissions reduction targets. The project supports the Danish government's goal of a 70% reduction in CO2 emissions by 2030 and the EU's target of a 55% reduction by 2030.*

Ph.D. Involvement and Dissemination: *Ph.D. students have been an integral part of the Bifrost project, contributing to research and development activities. The results from the project are used in teaching and other dissemination activities, such as scientific conferences and publications. This ensures that the knowledge gained from the project is shared with the broader scientific community and future generations of researchers.*

7. Project conclusion and perspective

Project Bifrost has successfully demonstrated that a long-term solution for CCS in Denmark is possible by using existing infrastructure in the Danish North Sea. The two natural gas reservoirs of the Harald fields are highly suited for permanent storage of CO_2 in a safe and cost-effective way. This initiative has laid the foundation for Denmark to become a showcase for Carbon Capture and Storage (CCS), turning the depleted fields into a future climate solution. The project faced challenges, such as the mechanical behavior of chalk during CO2 injection, which required additional research and adjustments. However, the project achieved its objectives and produced significant technological and commercial results.

The next steps for the developed technology involve utilizing the deep learning model for monitoring CO2 plume propagation and the geomechanical assessment of containment in depleted gas chalk fields.

Project Bifrost is at the appraisal phase – and the start of a journey. Further development is needed to make CCS a commercial and industrial reality, and all participants in EUDP Project Bifrost will continue to engage in this development: DTU continues working on innovative monitoring technologies; Ørsted will launch technical studies for repurposing of the offshore gas pipeline and onshore facilities in Nybro; TotalEnergies and Nordsøfonden continue to work towards storing CO_2 in the Harald fields on commercial terms with the storage exploration license, awarded in February 2023; and BlueNord is involved in CO_2 storage studies through CarbonCuts.

For Denmark to become the European hub for CO_2 storage, additional partnerships are required from the full CCS value chain to develop solutions for transporting the CO_2 from emitters to the Harald facilities.

8. Appendices

- Bifrost - Bifrost
- Bifrost_Executive_Summary_final_240613-1.pdf
- *Amour F., M.R. Hajiabadi, Hosseinzadehsadati S., and H.M. Nick (under review) What if chalk becomes mechanically weaker during supercritical CO2 injection in a depleted gas reservoir? Int. Jrnl Rock Mech. Min. Sc.*
- *Amour F., M.R. Hajiabadi, Hosseinzadehsadati S., and H.M. Nick (under review) Impacts of CO2 Injection on the Compaction Behaviour and Storage Capacity of Chalk Reservoirs. Jrnl Greenhouse Gas Control.*
- *Amour F., M.R. Hajiabadi, Hosseinzadehsadati S., and H.M. Nick (2024) A geomechanical assessment of containment in a depleted gas chalk field: Case study from the Harald East field. Int. Geomech. Symp. 2024, Kuala Lumpur, Malaysia, Nov. 2024.*
- *Amour F., M.R. Hajiabadi, Hosseinzadehsadati S., and H.M. Nick (2024): Well integrity analysis during CO2 injection in a depleted chalk field. Paper presented at the ARMA24 Conference, Golden, USA, June 2024.*
- *Amour, F., Hajiabadi, M.R., Hosseinzadehsadati, S. and Nick, H.M. (2024): Thermo-hydro-mechanical simulation of CO2 storage in a depleted chalk reservoir: Impacts of hydrocarbon production, temperature, injection rate, and rock-fluid interactions on fault reactivation and field deformation. Paper presented at the 17th Greenhouse Gas Control Technologies Conference (GHGT-17), October 2024.*
- *Amour F., M.R. Hajiabadi, Hosseinzadehsadati S., and H.M. Nick (2023): Shear and Vertical Deformation Behaviour at the Field Scale During CO2 Storage in a Depleted Chalk Reservoir (Danish North Sea). Paper presented at the ARMA23 Conference, Atlanta, USA, June 2023. Available at https://doi.org/10.56952/ARMA-2023-0673*
- *Amour, F., Hosseinzadehsadati, S. and Nick, H.M. (2023): Viscoplastic Deformation During CO2 Storage in Danish Chalk Reservoirs: Role of Petrophysical Heterogeneity and Mechanical Alteration. Paper presented at the SPE EuropEC – Europe Energy Conference featured at the 84th EAGE Annual Conference & Exhibition, Vienna, Austria, June 2023, Paper Number: SPE-214399-MS. Available at https://doi.org/10.2118/214399-MS*
- *Amour, F., Hajiabadi, M.R., Hosseinzadehsadati, S. and Nick, H.M. (2022): Impacts of CO2 Injection on the Compaction Behaviour of Chalk Reservoirs. Proceedings of the 16th Greenhouse Gas Control Technologies Conference (GHGT-16) 23-24 Oct 2022, Available at https://ssrn.com/abstract=4286144 or http://dx.doi.org/10.2139/ssrn.4286144*
- *Bonto, M., Jahanbani, M. and Nick, H.M. (2022): Microbial-induced risks associated with CO2 storage. Proceedings of the 16th Greenhouse Gas Control Technologies Conference (GHGT-16) 23-24 Oct 2022, Available at SSRN: https://ssrn.com/abstract=4282829 or http://dx.doi.org/10.2139/ssrn.4282829*
- *Ferreira, C. A. S., and Nick, H. M. (2024): Towards a deep learning tool for monitoring the CO2 plume propagation in carbon storage activities [talk]. Recent Advances in Geophysical Reservoir Characterization and Monitoring of CO2 Sequestration in Carbonate Reservoirs Workshop, May 2024.*
- *Ferreira, C. A. S., Kadeethum, T., Amour, F., Hosseinzadeh, B., Abdollahi, A., Calvert, A. S., and Nick, H. M. (2024): A deep learning model for CO2 storage in a depleted gas reservoir using sparse well data. 85th EAGE Annual Conference and Exhibition, Jun 2024. https://doi.org/10.3997/2214-4609.2024101572*

- *Ferreira, C. A. S., Kadeethum, T., and Nick, H. M. (2023a): Predicting geologic CO2 storage and plume evolution from sparsely available well data using Barlow Twins. Third EAGE Digitalization Conference and Exhibition, March 2023. https://doi.org/10.3997/2214-4609.202332073*
- *Ferreira, C. A. S., Pianos, M., Hosseinzadehsadati, S., Tian, J., Kadeethum, T., and Nick, H. M. (2023b): A predictive DeepONet model of CO2 plume propagation in geological formations based on sparse well data. Fourth EAGE Global Energy Transition Conference and Exhibition, November 2023. https://doi.org/10.3997/2214-4609.202321097*
- *Ferreira, C.A.S., Stepien, M., Hosseinzadehsadati, S., Kadeethum, T. and Nick, H.M. (2022): Predicting the CO2 propagation in geological formations from sparsely available well data. Proceedings of the 16th Greenhouse Gas Control Technologies Conference (GHGT-16) 23-24 Oct 2022, Available at SSRN: https://ssrn.com/abstract=4285942 or http://dx.doi.org/10.2139/ssrn.4285942*
- *Hajiabadi, M. R., Amour, F., Hosseinzadehsadati, S. B., and H. M. Nick (2024): Induced Seismicity of CO2 Injection in a Depleted Chalk Field with a Thermo-Hydro-Mechanical (THM) Model, The 17th Greenhouse Gas Control Technologies Conference (GHGT-17), Calgary, Canada, October 2024*
- *Hajiabadi, M.R., Amour, F. and Nick, H.M. (2022): Geomechanical Evaluation of a Depleted Chalk Reservoir for CO2 Storage. Proceedings of the 16th Greenhouse Gas Control Technologies Conference (GHGT-16) 23-24 Oct 2022, Available at SSRN: https://ssrn.com/abstract=4284515 or http://dx.doi.org/10.2139/ssrn.4284515*
- *Hosseinzadehsadati, S. B., Amour, F., A. Abdollahi C.C., Hajiabadi, M. R., and H. M. Nick: Is Two-Way Coupled Geomechanical Modeling Essential for CO2 Storage in Deformable Chalk Reservoirs? The 17th Greenhouse Gas Control Technologies Conference (GHGT-17), Calgary, Canada, October 2024*
- *Hosseinzadehsadati, S. B., Amour, F., A. Abdollahi C.C., Hajiabadi, M. R., and H. M. Nick: Multi-Physics Simulation of Reactive CO2 Transport in Chalk Reservoirs: A Case Study. The 17th Greenhouse Gas Control Technologies Conference (GHGT-17), Calgary, Canada, October 2024*
- *Hosseinzadehsadati, S. B., Amour, F., A. Abdollahi C.C., Hajiabadi, M. R., and H. M. Nick: Multiphysics Modeling for CO2 Geological Storage in a Depleted Carbonate Reservoir. GeoMontreal Conference, Montreal, Canada, September 2024.*
- *Hosseinzadeh, B., Amour, F., Abdollahi CC, A., Hajiabadi, M. R., Ferreira, C. A. S., & Nick, H. M. (2024, June). Assessing Caprock Integrity Through Thermo-Hydro-Mechanical Modeling of CO2 in a Deformable Chalk Depleted Gas Reservoir. In ARMA US Rock Mechanics/Geomechanics Symposium (p. D031S028R002). ARMA. https://doi.org/10.56952/ARMA-2024-0507*
- *Hosseinzadeh, B., Amour, F., Hajiabadi, M. R., Cheriki, A. A. C., & Nick, H. M. (2024, June). Impact of CO2 Injection on Geomechanical Response in THMC Simulation within the Chalk Reservoir: Thermal Considerations. In 85th EAGE Annual Conference & Exhibition (including the Workshop Programme) (Vol. 2024, No. 1, pp. 1-5). European Association of Geoscientists & Engineers. https://doi.org/10.3997/2214-4609.202410344*
- *Hosseinzadehsadati, S. B., Amour F., Hajiabadi, M. R., and H. M. Nick: Assessment of CO2 Injectivity in Highly Deformable Chalk Reservoirs: A Thermo-Hydro-Mechanical Analysis. The 57th U.S. Rock Mechanics/Geomechanics Symposium, Atlanta, Georgia, USA, June 2023.*
- *doi: https://doi.org/10.56952/ARMA-2023-0646*
- *Hosseinzadehsadati, S., Amour, F., Hajiabadi, M.R. and Nick, H.M. (2023): Challenges in Modeling Coupled Thermo-Hydro-Mechanical-Chemical Processes for CO2 Injection in a North Sea Hydrocarbon Chalk Reservoir. Paper presented at the SPE EuropEC – Europe Energy Conference featured at the 84th EAGE Annual Conference & Exhibition, Vienna, Austria, June 2023, Paper Number: SPE-214449-MS. Available at https://doi.org/10.2118/214449-MS*
- *Hosseinzadehsadati, S., Amour, F., Hajiabadi, M.R. and Nick, H.M. (2022): Hydro-Mechanical-Chemical Modelling of CO2 storage in a North Sea hydrocarbon chalk reservoir. Proceedings of the 16th Greenhouse Gas Control Technologies Conference (GHGT-16) 23-24 Oct 2022, Available at SSRN: https://ssrn.com/abstract=4275914 or http://dx.doi.org/10.2139/ssrn.4275914*
- *Ladenburg, J. and Soytas, U.: Danskernes accept af grønne energiteknologier – hvor er de lavt hængende frugter (In English: Danish acceptance of green energy technologies – where are the low-hanging fruits). Submitted to Samfundsøkonomen.*

- *Ladenburg, J., Kim, J., Zuch, M. and Soytas, U.: Exploring NIMBY and NON-NIMBY climate change mitigation technologies – A Danish national representative study. Submitted to scientific journal.*
- *Ladenburg, J., Kim, J., Zuch, M., Soytas, U. (2023) Taking the carbon capture and storage, wind power, PV or other renewable technology path to fight climate change? Exploring the acceptance of climate change mitigation technologies – A Danish national representative study. Available here: https://www.sciencedirect.com/science/article/pii/S0960148123014970?via%3Dihub*
- *Ladenburg, J., Soytas, U. (2023): Hvor er de lavthængende frugter? social accept af grønne teknologier [in Danish: Where are the low-hanging fruits? Social acceptance of green technologies]. Samfundsdsøkonomen. 33-40.*
- *Prevost, M., Genin, A., Ladenburg, J., Frost, J.K., Soytas, U., Lang, R., Hein, M., Vest, M.R., Andersen, S.I. and Nick, H.M. (2022): Bifrost, An Innovative CO2 Transportation and Storage Project in Denmark. Proceedings of the 16th Greenhouse Gas Control Technologies Conference (GHGT-16) 23-24 Oct 2022, Available at SSRN: https://ssrn.com/abstract=4287094 or http://dx.doi.org/10.2139/ssrn.4287094*
- *Shaheen, S. (2023): Seabed response to potential lateral CO2 plume migration (unpublished master's thesis). Technical University of Denmark, September 2023.*
- *Stepien, M., Ferreira, C. A. S., Hosseinzadehsadati, S., Kadeethum, T., and Nick, H. M. (2023). Continuous conditional generative adversarial networks for data-driven modelling of geologic CO2 storage and plume evolution. Gas Science and Engineering, July 2023. https://doi.org/10.1016/j.jgsce.2023.204982*
- *Torres, L. F. L., Ferreira, C. A. S., Kadeethum, T., Amour, F., Hosseinzadeh, B., Abdollahi, A., Shaheeen, S., Calvert, A. S., and Nick, H. M. (2024): Tracking CO2 plume propagation in a depleted gas field using sparse well data and seabed displacement. 17th Greenhouse Gas Control Technologies Conference (GHGT-17), October 2024.*
- *Zuch, M. and Ladenburg, J.: Information effects on public acceptance of carbon capture and storage: A literature review. Submitted to scientific journal.*

Overview of conferences/events

- *CCS Conference 2022: CCS and CO2 Management – from Capture to Offshore Storage.*
- *Technology Conference 2022 – R&D for the Offshore Energy Transition.*
- *IGS 2022 - International Geomechanics Symposium, (DTU Offshore – technical session presentations).*
- *GHGT-16: 16th Greenhouse Gas Control Technologies Conference, October, 2022, (TotalEnergies and DTU Offshore – poster presentations, technical session presentations, and conference papers).*
- *Workshop Directorate-General for Energy, Belgium 2023 - Social acceptance and preference for CCS – the influence of information and knowledge (DTU Management keynote).*
- *Third EAGE Digitalization Conference and Exhibition, March 2023, oral presentation*
- *Net Zero Within Reach Conference 2023: Zero Emissions Platform – Bruxelles, Belgium 26 April 2023 (DTU Management presentation on Project Bifrost "Social acceptance and public perception").*
- *ICEEEP 2023 - 7th International Conference on Energy Economics and Energy Policy 7th ICEEEP 2023 – Barcelona, Spain, April 28-30, 2023.*
- *YEEES conference 2023 - 31st Young Energy Economics and Engineers Seminar YEEES 31: Vienna 2023 – YEEES (tu-berlin.de), Vienna, Austria, May 11-12, 2023 (DTU Management: Investigating willingness to pay for Carbon Capture & Storage (CCS) contingent on information, CCS familiarity and scope in Denmark: Double-bounded dichotomous choice contingent valuation approach).*
- *CO2 Capture, Storage and Reuse 2023 - Fortes Media, CO2 Capture, Storage & Reuse 2023 (fortesmedia.com) Copenhagen, Denmark, 16-17 May 2023 (TotalEnergies presentation on Project Bifrost, CO2 transportation and storage opportunities in Denmark).*
- *84th EAGE Annual Conf. & Exhib. SPE EuropEC – Europe Energy Conference – SPE.org 5 – 8 Jun 2023, Vienna (DTU Offshore – technical presentations and conference papers).*

- *CCS Conference 2023: Denmark as a CCS hub – a technical view on upscaling, environmental footprint, and monitoring of offshore CO2 storage. DTU Offshore, Copenhagen, Denmark, 6 June 2023 (TotalEnergies keynote on Project Bifrost).*
- *Energiens Folkemøde 2023 booth for all public to visit and learn more about the project.*
- *57th US rock mechanics / geomechanics symposium - American Rock Mechanics Association (ARMA) 2023 Symposium – American Rock Mechanics Association 25-28 June 2023 Atlanta, Georgia (DTU Offshore – technical presentations and conference papers).*
- *IAEE European Conference - 18th IAEE European Conference "The Global Energy Transition Toward Decarbonization: a multi-scalar perspective and transformation" IAEE – Conference 2023 (aiee.it) – Milan (Bocconi University), Italy, 24-27 July 2023.*
- *Danish Offshore Technology Conference 2023: Powering the future – innovating offshore sustainability. DTU Offshore (Bifrost keynotes, presentations, and posters). This year's Danish Offshore Technology Conference connects the dots between the many initiatives which have been launched: Energy islands, windmill parks, carbon storage, and future technologies such as PtX. There is a need for a systems approach to understanding synergies, possibilities, and environmental impact, and DTU Offshore is looking forward to starting the conversation about this with a mix of keynote speeches and deep dive technology sessions.*
- *Fourth EAGE Global Energy Transition Conference and Exhibition, November 2023, Paris.*
- *Informationen og viden om CCS og betydningen for, hvordan vi arbejder med borgerinddragelse. Præsentation i forbindelse med workshop ved ATV Mission Lab 1 WS3.*
- *Presentation: Carbon Footprint on my doorstep. Presentation of the connection between willingness to pay for offshore CCS and proximity to wind turbines or major CO2 emitters.*
- *Presentation: Acceptance of and preferences for CCS: Scale, information, and knowledge effects. Presentation at the Ministry of Climate, Energy and Supply by Jacob Ladenburg.*
- *Recent Advances in Geophysical Reservoir Characterization and Monitoring of CO_2 Sequestration in Carbonate Reservoirs Workshop, May 2024.*
- *CCS Conference 2024: CCS Conference/a technical approach to CO2 storage and the CCS value chain. DTU Offshore, addressing Project Bifrost as case-study.*
- *85th EAGE Annual Conference and Exhibition, Jun 2024, Oslo – oral presentation*
- *58th ARMA24 Conference American Rock Mechanics Association, Golden, USA, June 2024 – oral presentation*
- *Project Bifrost End-Project Conference. The Bifrost consortium has been exploring the prerequisites for establishing efficient transport and storage solutions for a future Danish CCS industry. After extensive effort and collaboration across industries and academia, we look forward to sharing the results, an outlook and the next steps in the Danish CCS development.*
- *GeoMontreal Conference, Montreal, Canada, September 2024 - Oral presentation.*
- *The 17th Greenhouse Gas Control Technologies Conference (GHGT-17), Calgary, Canada, October 2024 – several oral presentations from DTU Offshore*