eccsel erate

An ECCSEL ERIC project

WEDNESDAY, DECEMBER 16TH, 2020

14.00 CET

WEBINAR

Research for safe and efficient CO_2 transport and injection

REGISTER HERE

https://attendee.gotowebinar.com/register/6608742593266976782

SPEAKERS

Svend Tollak Munkejord, PhD, Chief Scientist
Sigurd Weidemann Løvseth, Dr. Ing., Senior Research Scientist
SINTEF Energy Research

Q&A session chaired by **Lynn Hunter** - TÜV SÜD

WHAT YOU WILL LEARN

In order to limit the global temperature to 1.5 – 2 °C, as agreed in the Paris Agreement, virtually all scenarios developed by the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC) include CO_2 capture and storage (CCS). At a smaller scale, it is frequently argued that **captured CO_2 could be utilized (CCU) as feedstock for useful products, which otherwise would rely on extraction of fossil fuels** and/or have a long-term CO_2 storage potential. Only in exceptional cases will the CO_2 source be collocated with the storage or utilization site. Hence, massive amounts of CO_2, comparable to that of natural gas production today, will have to be transported over longer distances.

The thermophysical properties of CO_2 are substantially different from natural gas. For instance, both vapor, liquid, dry ice, and, with some water present, hydrates occur at conditions that can occur during CO_2 transport, and the fluid properties typically change substantially as a function of temperature, pressure, and impurity level. In other words, **in most cases, transport technologies used for natural gas cannot be directly applied for CO_2.**

In this webinar two experienced SINTEF scientists will introduce the audience to **CO_2 current and future CO_2 transport concepts and associated processes**, some of the challenges that are seen, and how these are addressed with help from relevant ECCSEL infrastructure. Developing robust models for flow phenomena and thermophysical fluid properties are key for safe and efficient CO_2 transport, but such models are also useful for optimization of other processes along the CCUS chain, such as CO_2 capture and conditioning, as well as injection and storage reservoir management.

Topics that will addressed in the webinar include:

- Fracture-propagation control;
- Pipeline and ship operation: Cooling, dry-ice formation;
- Transient flow of CO_2 in injection wells; well integrity;
- Thermophysical properties of CO_2 with impurities
- Flow metering

FOR FURTHER INFORMATION VISIT OUR WEBSITE:

WWW.ECCSEL.ORG

HTTPS://ECCSEL.ORG/ABOUT/ECCSELERATE/

ECCSEL ERIC (European Research Infrastructure Consortium) was established in June 2017 as a permanent pan-European distributed research infrastructure, with the main objective of enhancing European science, technology development, innovation and education in the field of CCUS, in order to combat climate change.

ECCSELERATE project is aimed at increasing the accessibility to the excellent network of facilities already established in ECCSEL ERIC for a wider user group, part of the research and industrial community.

KEYNOTE SPEAKERS

Svend Tollak Munkejord
is chief scientist in multiphase flow modelling at SINTEF Energy Research, were he has been employed since 1998. He holds a master's degree in mechanical engineering and a PhD in applied mechanics, thermo- and fluid dynamics, both from NTNU. The research interests include mathematical modelling, scientific software development and experiments. He has worked on operational and safety aspects of CO_2 transportation for more than a decade. This includes leading the CO_2 transport activity in the NCCS Centre, and in its predecessor, BIGCCS.

Sigurd Weidemann Løvseth
is senior research scientist in SINTEF Energy Research, where he has been working on CCS-related research since 2009, especially on thermophysical properties of fluids. He has managed the design and construction of a number of advanced experimental facilities, four of which are included in ECCSEL, and led a number of research projects within CCS. Among other tasks, he is currently managing the R&D activity within thermo-physical properties and fiscal metering in the Norwegian CCS Research Centre (NCCS). He holds a master's degree in technical physics, a doctoral degree in fiber optic sensor technology, as well as four patents.

WHAT IS CCUS?

Carbon capture, utilisation and storage, or CCUS, is an important emissions reduction approach that can be applied across the energy system, in both power generation and industrial sectors.
CCUS encompasses **methods and technologies** to remove CO_2 from the flue gas and from the atmosphere, followed by recycling the CO_2 for utilization and determining safe and permanent storage options:

- **Capture** technologies allow the separation of CO_2 from gases produced in electricity generation and industrial processes.
- After capture, carbon dioxide must be **transport**ed to the storage or utilization site. CO_2 is an inert gas and can be easily handled and transported in high-pressure pipelines. Alternatively, it can be transported in industrial tanks by ship, rail and truck.
- There are several possibilities for long-term CO_2 **storage** in safe conditions. Generally, CO_2 is stored in carefully selected geological rock formations that are typically located several kilometres below the earth's surface.
- **Utilization** technologies allow to use CO_2 to make valuable products, such as clean fuels, building materials or consumer goods. A clear example of circular economy, where the CO_2 becomes a raw material rather than a waste by-product.