Center for Olie og Gas - DTU
The Danish Hydrocarbon Research and Technology Centre

AALBORG UNIVERSITY
DENMARK

Danish Hydrocarbon Research and Technology Centre (DHRTC)

Aalborg University Seminar

Thursday, 8 December 2016

Venue: Aalborg University Campus, Fredrik Bajers Vej 7H, Aalborg

The aim of this AAU-DHRTC dissemination seminar is to give an overview of the technological challenges that the Danish Oil & Gas industry is facing and to highlight how DHRTC is working on getting Oil & Gas industry and academia closer and aligned towards increased and responsible extraction of Danish North Sea oil. At the seminar, practical information will be provided on how to get in touch with DHRTC, propose research ideas aligned with the centre's objective, and develop the ideas into funded research projects in close collaboration with the centre's management.

Program

11:30 – 11:40 Welcome by Dean Mogens Rysholt Poulsen

11:40 – 11:50 Introduction to the seminar
Marco Maschietti, Local Focal Point for AAU towards DHRTC

11:50 – 12:30 The Danish North Sea – Overview and technological challenges
Martin Kaster, Lead Production Engineer – Corporate Technology and Innovation, Mærsk Oil

The Danish North Sea has been in production since the early 70's. Whilst there is still significant remaining potential, the production is declining and operating costs of the aging facilities is increasing. Research and development of new technologies (and adaptation of existing ones) can help significantly in realizing the remaining potential, either by reducing extraction costs or by improving the recovery efficiency of the hydrocarbons. Examples of specific challenges and technologies pursued will be discussed.

12:30 – 13:15 Lunch

13:15 – 13:40 Rational decision making in the face of extreme complexity
Claus M. Myllerup, DHRTC Programme Director

Massive amount of experience and information has been collected during 50 years of oil & gas production in the Danish North Sea. This represents a rich data set from which causal

relationships can be derived to inform decision making by employing the latest advances in informatics and digitalization – the Big Data paradigm. A few examples involving a cross section of scientific disciplines will be given to stimulate discussions.

13:40 – 14:00 Reliability and risk based decision support
John Dalsgaard Sørensen, Professor, Department of Civil Engineering

Many decision on different components and systems related to offshore oil & gas production has to be taken. These decisions are in many cases subject to large uncertainties and large consequences. This presentation introduce how reliability- and risk-based methods can be used and is illustrated by ongoing and planned projects within Probabilistic Response Modelling, Risk Based Inspection (RBI) Planning for jacket platforms, Preparation of targeted experimental investigation of the fatigue lives of selected weld types and RBI for topsite components and systems.

14:00 – 14:20 Smart produced-water treatment systems for offshore oil & gas production
Zhenyu Yang, Associate Professor, Department of Energy Technology, Esbjerg Energy Section

One of the biggest environmental concerns in offshore oil & gas production is the quality of tremendous amounts of Produced Water (PW) discharged into the oceans. Today, in average three barrels of water are produced along with each barrel of oil. The Enhanced Oil Recovery (EOR) using water flooding technology even makes further challenges to the conventional PW treatment. This presentation will introduce some key investigation and development of innovative PWT technologies committed by the OG research group at ET-AAU via the cooperation with DHRTC.

14:20 – 14:45 Coffee break

14:45 – 15:05 AAU Sprint Projects

- Micro- and ultrafiltration of produced water aimed at reinjection
  Dario Spina, Yusuf El-Majid, Marco Maschietti, Jens Muff, Department of Chemistry and Bioscience.
- Preliminary evaluation of the impact of modified injection water composition on the oil/water separation in produced water treatment facilities
  Nikolaos Montesantos, Viken M. Kaprielian, György Imrenyi, Marco Maschietti, Department of Chemistry and Bioscience.

- Effect of production chemicals on scaling
  Rudi P. Nielsen, Morten Strandgaard, Department of Chemistry and Bioscience.
- Further development and validation of flotation as EOR screening before core flooding experiments, Muhammad Adeel Nasser Sohal, Geoffrey Thyne, Erik Gydesen Søgaard, Department of Chemistry and Bioscience.

15:05 – 15:20 Collaboration model DHRTC-Academia
DHRTC Programme Management

15:20 – 15:30 How AAU researchers can engage with DHRTC
Marco Maschietti, Local Focal Point for AAU towards DHRTC

15:30 – 16:30 Networking and snacks

The Danish Hydrocarbon Research and Technology Centre

A billion kroner fund from the Danish Underground Consortium (DUC) allowed the establishment of The Danish Hydrocarbon Research and Technology Centre (DHRTC) in 2014. It is a national centre based at DTU in Lyngby and involving Aalborg University, Aarhus University, Copenhagen University, DTU, and GEUS as partner institutions.

The overarching purpose of DHRTC is to identify new technological and conceptual solutions that boost oil and gas extraction in the Danish section of the North Sea. This goal is pursued by means of:

- reinforcing existing research areas with the potential to form the basis for generating new ideas, solutions and innovations that increase extraction from the Danish North Sea oil and gas fields in a responsible manner;
- establishing new areas of research or strengthening underdeveloped ones with the potential to lay the foundations for innovative, commercial solutions that can increase extraction from Danish oil and gas fields in the North Sea;
- stimulating broad interest among students and researchers in oil- and gas-related research in Denmark, thus contributing to raising the number of highly qualified technical experts who are crucial to maintaining and developing extraction of Danish oil and gas resources.

DHRTC has set an ambitious objective for 2020 to demonstrate 100 Million Barrels of Oil Equivalent (MMBOE) of increased hydrocarbon recovery at Technology Readiness Level 3 (TRL 3). In order to reach this goal, some projects have already been initiated while many others will be started in the near future in collaboration with the partner institutions.

Read more: http://www.oilgas.dtu.dk/