CO_2CARE Newsletter

May 2013

CO_2CARE – Second Annual Scientific Conference 2013 at TNO, Utrecht

On the 12th and 13th of March the second CO_2CARE conference took place at TNO in Utrecht (The Netherlands). Participants from research institutes, universities, the industry, and national authorities attended the conference.
In total, 24 presentations were given in three sessions: "*Regulatory Session", "Recent Developments at Project Sites", and "Technical Session"*.

The joint meeting of the Steering Committee and the General Assembly was held on the second day. (*Mario Wipki, GFZ*)

Obligatory group photo at TNO. (Photo: J. Wollenweber).

After the Conference in Utrecht, CO_2CARE members visited one of the most innovative coal-fired power plants, *Maasvlakte 3*, which is still under construction.

Guided tour for CO_2CARE members to the E.On power plant Maasvlakte 3- (Photo: Mario Wipki)

The operator E.ON will finish this 1,100 MW power plant in the industrial area of Rotterdam`s harbour until the end of 2013. A budget of more than 1.2 billion Euros is calculated for this plant.
Beside hard coal the plant is also able to fire 30% of biomass in the fuel mix. The energy efficiency is approximately 46%. In comparison, German hard coal fired plants have an average (gross) energy efficiency of 41% for the year 2011 (Bundesumweltamt 2012).

Moreover, a CO_2 capture facility has been implemented (CO_2-ready) which can capture 25% of CO_2 from the flue gas. This installation will be operational by 2015.

E.On power plant Maasvlakte 3 under construction (Photo: Gualtiero Böhm)

In the frame of the "ROAD" project (*Rotterdam Opslag en Afvang Demonstratie-project*), which is one of the first industrial integrated CCS demonstration projects in the world, the captured CO_2 will be transported via a pipeline to the nearby depleted P-18 gas reservoirs, 20 km off the coast of Rotterdam. This will be done in cooperation with TAQA and GDF Suez. The aim is to capture 1.1 megatons of CO_2 per year and store it at a depth of around 3,500 metres.
(*Mario Wipki, GFZ*)

CO_2CARE Newsletter

May 2013

EGU 2013, Vienna 7-12 April 2013

This year, the European Geosciences Union – General Assembly 2013 welcomed 11,167 scientists from 95 countries. 4684 oral and 8207 poster presentations were given by the participants. Also CO_2CARE members took part and presented their results in form of a poster and an oral presentation (GFZ, Imperial College). (*Mario Wipki, GFZ*)

(Photo: M. Wipki)

8th CO2GeoNet Open Forum – 9-11 April 2013, San Servolo Island, Venice, Italy


(Photo: CO2GeoNet)

CO2GeoNet is the European scientific authority dealing with all aspects of geological storage of CO_2. More than 150 delegates from 30 countries attended the meeting this year. Main objectives were:
- "*Are pilot-scale CO_2 storage projects the way forward for CCS in Europe?*" and
- CGS Europe knowledge-sharing workshop on "*International cooperation and key results from European projects".*

The outcomes of the meeting are available on the CO2GeoNet-website. Axel Liebscher, coordinator of CO_2CARE, presented the newest results of our project: "*Research on site closure assessment - results from the CO_2CARE project".*

Moreover, the Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences was officially welcomed as a new member of CO2GeoNet. (*Mario Wipki, GFZ*)

Brainstorming Day 2013 in Trondheim

Long term fate of geologically stored CO_2 – 3.06.2013, Trondheim.

The Brainstorming Day is a workshop that brings together specialists from five European funded (FP7) projects about CO_2 storage: **MUSTANG, ULTIMATECO2, CO_2CARE, CARBFIX and PANACEA**. The objective of this workshop is to present and discuss transverse topics shared by those different projects as: stabilization of CO_2, mechanical impacts, monitoring technologies, modelling, leakage, and risk assessment.

The Brainstorming Day will take place just before the bi-annual Trondheim CCS Conference (TCCS-7) *(Source: EWRE)*
(http://www.sintef.no/Projectweb/TCCS-7/)

European Commission - NER300

NER300 is one of the world's largest funding programmes for innovative low-carbon energy demonstration projects. The programme is conceived as a catalyst for the demonstration of environmentally safe carbon capture and storage (CCS) and innovative renewable energy (RES) technologies on a commercial scale within the European Union.

CO_2CARE Newsletter

May 2013

NER300 enables the safe capture and storage of CO2 – Photo shows modern lignite-fired power station "Schwarze Pumpe" (Black Pump) Spremberg, State of Brandenburg, Germany (Source: European Commission)

The aim of NER300 is to establish a demonstration programme comprising the best possible CCS and RES projects and involving all Member States. The programme intends to support a wide range of CCS technologies (pre-combustion, post-combustion, oxyfuel, and industrial applications) and RES technologies (bioenergy, concentrated solar power, photovoltaics, geothermal, wind, ocean, hydropower, and smart grids).

NER300 also seeks to leverage a considerable amount of private investment and/or national co-funding across the EU, boost the deployment of innovative low-carbon technologies and stimulate the creation of jobs in those technologies within the EU.

NER300 is so called because it is funded from the sale of 300 million emission allowances from the new entrants' reserve (NER) set up for the third phase of the EU emissions trading system (EU ETS).

The funds from the sales are to be distributed to projects selected through two rounds of calls for proposals, covering 200 and 100 million allowances respectively. More details can be found under: http://ec.europa.eu/clima/policies/lowcarbon/ner300/index_en.htm

(Source: European Commission – Climate Action)

CO_2 Storage Site Wallula, Washington (USA)

Continental flood basalts represent one of the largest geologic structures on the planet and exist in regions of the U.S. (and other countries such as India) where sedimentary basin storage capacity is limited. Consequently, demonstration of commercial-scale storage in deep flood basalts is important in meeting global CO_2 emissions targets. The Big Sky Carbon Sequestration Partnership completed drilling the world's first continental flood basalt sequestration pilot borehole to a total depth (TD) of 1253 m at a paper mill site near the town of Wallula located in Southeastern Washington State. Drilling of Wallula pilot borehole was initiated on January 13, 2009 and reached TD on April 6, 2009.

Hydrogeologic information obtained during borehole drilling/advancement was used to identify a suitable injection test zone between ~828 and 875 m bgs. Over this interval, three brecciated interflow zones were intersected and isolated for CO_2 injection.

A permit application to inject up to 1000 MT of CO_2 was submitted to Washington State Department of Ecology and an injection permit was issued in March 2011 after extensive review and public comment.

PNNL researcher Pete McGrail examines a basalt core sample. (Photo PNNL)

A series of hydrologic tests was conducted in 2011 to assess possible impacts to the injection reservoir due to well completion activities, and to detect any hydrologic boundaries that could impact CO_2 injection. Analysis of the hydrologic test response identified the existence of an enhanced reservoir permeability zone away from the well with causality that could not be resolved between vertically or laterally oriented features.

To resolve the observed reservoir condition, an extended duration, high-stress pumping test and concomitant satellite imaging survey was conducted in the fall of 2012. Derivative analysis of the long-time reservoir pressure response and recovery data showed transition to infinite radial flow conditions that is inconsistent with a vertically communicative structure. Fluoride concentrations were measured in groundwater samples extracted during the test and were found to be invariant with time, again consistent with lack of vertical transmissivity that would bring shallower and lower fluoride concentration groundwater into the injection reservoir.

Finally, no surface land deformation monitored via InSAR was identified above background variation during the active pumping phase. Based on this set of favourable data, the project is proceeding with CO_2 injection and monitoring commencing in the summer of 2013.
(B. Peter McGrail, PNNL)