Weekly News Update

Friday 15th June 2012 - Friday 22nd June 2012

Member Update

Norway

- *What new CCS activities have been undertaken this month?*

CSLF Technical Group Meeting in Bergen

The technical group of The Carbon Sequestration Leadership Forum (CSLF) took one step further to stimulate the realisation of full scale CCS projects. At a meeting in Bergen in Norway June 11th till 14th, three new large-scale CCS projects received CSLF recognition: The Illinois Basin - Decatur Project, the Illinois Industrial Carbon Capture and Storage Project, and the Air Products CO_2 Capture from Hydrogen Facility Project. The recognition secures international visibility and status.

Two important Norwegian R&D projects on storage are followed with international interest: The CO_2 Field Lab Project south of Oslo on monitoring, and The CCS Activities in Svalbard on storage.

A visit to the brand new Technology Center Mongstad north of Bergen was an impressive tour showing both a world class CCS large-scale test center and the Norwegian coast. Aker Clean Carbon and Alstom are testing their different capture technologies here. The TCM management welcomes more vendors to test new technology at the Mongstad site.

One of the lessons learned in the CSLF CO_2 Capture Interactive Workshop was that it is possible to build a full scale CCS plant connected to a coal fired power plant today. Saskpower in Canada has demonstrated it. Opening later this year the plant will be the first in the world.

CSLF is a ministerial-level international climate change initiative that is focused on the development of improved cost-effective technologies for the separation and capture of CO_2 for its transport and long-term safe storage. The mission is to facilitate the development and deployment of such technologies via collaborative efforts that address key technical, economic, and environmental obstacles.

Information about the CSLF activities can be found here: **http://www.cslforum.org/index.html?cid=nav_index**

- *What new CCS research has been carried out this month?*

Groundbreaking environmental surveys

TCM has during the last year, prior to the start-up, conducted environmental surveys of air, vegetation and water in a wide area around the TCM plant at Mongstad. This work can provide important references for future full-scale CCS plants.

Background surveys are conducted to determine the environmental status in the areas around Technology Center Mongstad before start-up of the plant.

- The surveys already performed and the work ahead will be of great benefit both to TCM and as a reference when future full-scale plants will be designed and operated. Since similar work is not carried out anywhere else in the world, our efforts provide important references in the construction of large CCS plants globally, says Olav Falk-Pedersen Technology Manager of TCM.

TCM has investigated the consequences of the operation of the technology center very carefully from an environmental perspective, and the conclusion is that it will not have emissions that adversely affect people or the environment. TCM will start to follow up and document this carefully through regular surveys of the environment around the plant.

After an evaluation of potential pollutants from the technology center, a number of environmental indicators such as amines, nitrosamines and nitramines were selected.Environmental surveys are conducted by the Norwegian Institute for Air Research (NILU), Norwegian Institute for Water Research (NIVA) and the Norwegian Forest and Landscape.

None of the studies showed findings of nitrosamines nor nitramines. We found other

types of amines, but the levels were very low. Similar levels have been reported from similar studies. Amines are normally found in nature and the very low levels measured do not represent an environmental risk.

The reports are submitted to local authorities and Agency and are available ***here***

- ***What reports on CCS have been published this month?***

CLIMIT Annual report 2011

CLIMIT's main goal is to accelerate commercialization of CCS through financial stimulation of research, development and demonstration. The Ministry of Petroleum and Energy established CLIMIT in 2005 to support development of technology for CCS for gas power plants. In 2008, the subsidy scheme was expanded to power production based on all fossil fuels, and industry emissions were also included in 2010.

The programme is a collaboration between Gassnova and the Research Council of Norway. CLIMIT comprises the Research Council of Norway's subsidy scheme for research and development (the research part), and Gassnova's support for development and demonstration (the demo part). Gassnova has the overall responsibility and heads the programme secretariat.

The efforts in CLIMIT must be seen in context with the Norwegian authorities' ambitious climate targets, which have entailed considerable efforts in CCS.

2011 has been an eventful year for CLIMIT with a wide spectrum of projects that cover the different disciplines within CCS. NOK 170.2 million has been allocated to CLIMIT projects – NOK 75.3 million through CLIMIT Demo and NOK 94.9 million through CLIMIT R&D. www.climit.no

- ***Any other comments/activities regarding CCS***

Opening of CO_2 Technology Centre Mongstad by Prime Minister Jens Stoltenberg 7 May 2012

News about the inauguration of the world's largest carbon capture test facility at Mongstad has spread all across the world!

Follow this link to the website www.milestonemongstad.com where you will find videos, photos and news reports from the Inauguration event 7th May.

On 7th May Prime Minister Jens Stoltenberg opened the CO_2 Technology Centre (TCM) at Mongstad. "Today we are opening the world's largest and most advanced laboratory for testing carbon capture technologies", the Prime Minister said in his speech. He congratulated and emphasized the importance of expertise and technology to reduce CO_2 emission. Also the Minister of Petroleum and Energy Ola Borten Moe was present. The owners Gassnova, Statoil, Shell and Sasol received recognition from the Prime Minister for their efforts to establish the centre.

The two technology suppliers, Aker Clean Carbon and Alstom, were praised for how they participate in TCM and help with technology development within carbon capture. International congratulations came from, among others; Günther Oettinger, European Commissioner for Energy, Maria van der Hoeven, Executive Director of the International Energy Association (IEA) and the CEO of the Global CCS Institute (GCCSI), Brad Page.

In the days after the opening, 8th – 10th May, the CO_2 players took the opportunity to meet at a CCS Seminar and discuss different CCS topics of interests in Bergen. Gassnova, IEA and GCCSI have collaborated on the events in the days following the opening. Management and experts presented their latest news and discussed challenges and the way forward. GCCSI continued with a members meeting. 9th - 10th May IEA Greenhouse Gas R&D Programme arranged their executive committee meeting.

TCM provides opportunities for new research and development

On the seventh of May the world's leading centre for testing and developing carbon capture technologies, TCM, opened at Mongstad. It represents an important learning arena with great relevance to CLIMIT.

"Much new research will emerge from the

Technology Centre at Mongstad. I expect greater involvement from CLIMIT in research and development activities related to TCM," says Klaus Schöffel, head of the CLIMIT Secretariat and Director of Technology and Expertise in Gassnova SF.

He points out that TCM plays an important part in technological development. A test facility like this provides conditions approaching those of a full-scale plant, with operational data from real processes. This means that process models can be further developed and refined.

Covers the entire chain

CLIMIT is a unique range of instruments that is integrated in the entire chain from early research via pilots to demonstration. The programme has already invested in projects where the results are being implemented at Technology Centre Mongstad. One example is the large SolvIt programme where Aker Clean Carbon, one of TCM's technology providers, has developed new solvents together with SINTEF. These solvents will be tested at TCM. "This is a concrete example of where CLIMIT is already linked to TCM," says Schöffel. **www.climit.no**

Clean coal technology to be tested in the U.S.

ThermoEnergy Corp. and ITEA S.p.A. announced that they will work together to promote, finance, design and construct a 50 MW pilot plant and a 320 MW commercial facility in the U.S. using a clean coal technology called pressurized oxy-combustion. The goal is to accelerate the development of clean coal electricity generation by enabling utilities to continue burning coal while still removing emissions such as sulfur dioxide (SO_2) and carbon dioxide (CO_2). Moreover, the technology can be retrofitted to existing coal plants. The pressurized oxy-combustion technology will be developed and marketed by Unity Power Alliance LLC, a joint venture between ITEA and ThermoEnergy. It's not yet clear what the optimal pressure will be for commercial plants. ThermoEnergy holds patents for very high-pressure systems, while ITEA has patents on approaches that use somewhat lower pressures. Together the companies' patents cover a broad range of possible pressures. Unity Power Alliance expects to begin building a 50 MW pressurized oxy-combustion power plant next year that will serve as the gateway to a 320 MW electricity-producing commercial power plant.

Toshiba enters agreement to develop thermal power system

Toshiba has entered an agreement with NET Power, Shaw Group and Exelon to develop a next-generation thermal power system that demonstrates a low-cost, high-efficiency power generation cycle that produces little to no air emissions. NET Power is the owner and initial developer of the NET Power system, which can produce a supercritical pressured CO_2 stream to drive a turbine generator. The system can offset emissions of nitrogen oxides by burning a mixture of natural gas with oxygen instead of nitrogen-rich air. It separates and collects pressurised CO_2, without adding on a carbon capture system. The CO_2 can later be used for enhanced oil recovery process. The four companies intend to commission a 25MW natural gas plant by 2014 and a 250MW full-scale natural gas commercial plant by 2017, which will be equipped with NET Power's high efficiency power generation cycle system. Using its material, combustion and cooling technology Toshiba will develop the system's high-temperature and high-pressure turbine and combustor, the key equipment of thermal power plants. Exelon will be responsible for the development and operations of the 25MW plant including site selection, obtaining permits and commissioning the facility, while NET Power and Shaw will undertake overall plant engineering work. The four companies plan to achieve early verification of the system which will be sold globally by Toshiba.

How bright is the future for CCS demo in Europe?

The TCM project, which opened this month, is the world's most advanced centre for testing and development of carbon capture technologies. The sharing of this expertise will play an important role in supporting new European CCS projects

Europe's ambitious CCS plans have suffered setbacks over the past 12–18 months, with a number of high-profile projects falling by the wayside, primarily because of financing concerns and the lack of a coherent legislative framework. So where does this leave its all-important CCS demo roll-out?

Carbon capture and storage (CCS) stands out as one of the most important technological solutions if Europe is to achieve its goals for energy and climate change. It can play an important role in reducing emissions for coal and gas power plants as well as heavy industry, while renewable energy solutions are further developed – so said the EU Commissioner for Energy, Guenther Oettinger, early last year. Fast forward 18 months, and the deployment programme of large-scale integrated CCS projects has slowed to a snail's pace, with some expressing concern that is has stalled completely. To date, there are no large-scale CCS demonstration plants associated with a power station in operation in Europe. Although research into CCS – the capture of carbon dioxide from power stations and other major industrial users of coal and gas, compressing it, transporting it and storing it safely underground – began back in the 1990s, it has only been in the past 5–10 years that CCS has been recognised as an important tool for cutting greenhouse gas emissions and helping to mitigate the risk of climate change.

The article also discusses the status of NER300 funding, How to resolve the large-scale CCS conundrum, and asks if there is room for any optimism?

New public exhibitions for Yorkshire carbon dioxide pipe

The plan, by National Grid, would transport the gas underground from major power stations to the east coast. It will then be stored in natural porous rock beneath the seabed. Details, including the amount of above ground infrastructure, will be given at seven locations along the 40 mile (64km) preferred route.

'Ideal location'

National Grid believes the project, known as carbon capture, transportation and storage (CCS), has the potential to reduce CO_2 emissions from power stations across Yorkshire and the Humber by up to 90%.

Russell Cooper, National Grid's CCS design manager, said: "The region is an ideal location for a CCS project due to its high concentration of power stations and large industrial plants that release a large amount of carbon dioxide. "Most of these facilities are located relatively close together and so could potentially be connected to a single CCS pipeline network, capturing tens of millions of tonnes of carbon dioxide each year."

The proposed pipeline would run from Stainforth in South Yorkshire to Barmston in East Yorkshire. It could transport liquid carbon dioxide from both the proposed Don Valley Power Project at Hatfield, near Doncaster, and the White Rose CCS project at Drax Power Station in North Yorkshire. The exhibitions will take place throughout June and Mr Cooper said they would be an opportunity for communities across the region to comment on the plans.

New Report Showing How CO_2 Can Be Removed From The Atmosphere

A new report - "Biomass with CO_2 Capture and Storage (Bio-CCS), the way forward for Europe", was launched today as a result of a common work by two EU technology platforms. The document shows how climate-warming emissions can be removed from the atmosphere on a large scale.

To combat climate change and the greenhouse gas emissions as its cause, it becomes increasingly clear that we'll need to find ways to remove CO_2 from the atmosphere in the future, creating so-called carbon-negative emissions. Those could be achieved through capture and permanent geological storage of biogenic CO_2. A new report - "Biomass with CO_2 Capture and Storage (Bio-CCS), the way forward for Europe," was launched today as part of the official programme of the European Commission for its Sustainable Energy Week. The publication is the first example of a joint report by two EU technology platforms: the Zero Emissions Platform (ZEP) and the European Biofuels Technology Platform (EBTP). This balance exercise was initiated and co-chaired by Bellona, a member of both platforms, who also provided the secretariat and meeting premises during the last 1.5 years.

Managing CCS liabilities should not slow project development

The potential financial risk associated with leaking gas from carbon capture and storage (CCS) projects should not hamper investment in the technology, according to a new study.

Concerns over the "liability" arising from CCS projects is often cited as an important barrier to its widespread implementation, which the International Energy Agency (IEA) estimates could account for nearly a fifth of the emissions reductions required to cut GHG emissions from energy use in half by 2050. Last week Ian Marchant, chief executive of SSE, the only Big Six energy company with a current interest in CCS, told a committee of MPs that more public funding is needed beyond its £1bn commercialisation competition if companies are to bring "risky" CCS projects online. "My own belief on CCS is we are at the demonstration stage and what is principally needed is capital support," he said. "We do not know that this technology will work. We need to demonstrate that it will work." But a report published today by the Global CCS Institute seeks to bolster investor confidence by, for the first time, putting a value on the key liabilities a well-sited and well-managed CCS project would face. It suggests that such a project would have a relatively small impact on the surrounding environment, mainly because the risk of leaks are low and project managers should be able to detect any problems that do occur in a reasonable timeframe.