

# Weekly News Update

Saturday 10th December 2011 - Thursday 22nd December 2011



## *Enel Teams Up On Carbon Capture In China*

Conclusion of “four days” of meetings between Enel and representatives of China’s Ministry of Science and Technology as well as of research institutes and universities on the development of a CCS system for a power plant in Shaanxi province.

Enel, an European leader in CCS technology with its pilot plant in Brindisi and the Porto Tolle project, remains committed to transitioning to a “low-carbon” economy worldwide.

Rome, December 15<sup>th</sup>, 2011 – Today saw the conclusion of the “four day” meeting in Rome between Chinese and Italian researchers to discuss the criteria to be used in designing, building and operating power plants that use carbon capture systems. The Chinese delegation had returned from two-day visit to Enel’s pilot plant in Brindisi.

In attendance of the final working session were Enel’s Engineering and Innovation Division Managing Director, Livio Vido; head of natural gas storage, carbon capture and storage division at the Italian Economic Development Ministry, Liliana Panei; head of Italy-China cooperation at the Italian Environmental Ministry, Massimo Martinelli; and the Director for Cooperation with Europe, Chinese Ministry of Science and Technology, Zhou Longchao.

The meeting was an important step in the partnership begun with the protocol signed in September 2009 between the Chinese Ministry of Science and Technology, the Italian Ministries of the Environment and Economic Development and Enel. A portion of the work involved agreeing upon the details, two years after the signing of the agreement, for the project to build a carbon capture system at the 600 MWe power plant in Tongchuan, in the province of Shaanxi, operated by China-Huaneng. The system involves reusing the CO<sub>2</sub> captured to improve the extraction process at a nearby oil well.

China is one of those countries where the development of Carbon Capture & Storage (CCS) technology can have an enormous impact in reducing CO<sub>2</sub> emissions into the atmosphere, and thus limiting the negative effects on climate change. The experience gained by Enel in designing and constructing the pilot CO<sub>2</sub> capture system at the Federico II plant in Brindisi is a contributing factor to the success of the initiative. This facility, which opened last March with European Commissioner Gunther Oettinger in attendance, represents the first test of “zero emissions” technology supported by Europe with funding from the European Energy Programme for Recovery. With approximately 4,000 hours of operation, the Brindisi plant has already separated more than 8,000 metric tons of carbon dioxide and has become one of the concrete symbols of Europe’s commitment to demonstrating the technology.

The CO<sub>2</sub> produced by the Brindisi plant will be transported at the ENI/Stogit site in Cortemaggiore (Piacenza), where it will be injected and permanently stored underground, creating the know-how for designing future applications of the technology on a large scale, with the aim of become the first integrated pilot CCS project in Italy.

The experience gained in Brindisi is being developed and applied in the project to build the carbon capture demonstration system at Enel’s Porto Tolle (Rovigo) plant, which was included in the road map of the Carbon Sequestration Leadership Forum (CSLF) as one of most important projects in the world.

The CSLF is a voluntary initiative of developed nations and developing countries which account for 75% of all carbon dioxide emissions and that are committed to working together to develop technologies to reduce CO<sub>2</sub>.



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## **Carbon storage technology ramps up oil production, reduces carbon emissions**

Efforts to cope with climate change are often at odds with the practices used to stimulate economic growth. But a new technology being used in an oil field in northeast China may offer the dual benefits of more efficient oil extraction and the reduction of greenhouse gases. Top Chinese energy producer PetroChina operates the Jilin Oil Field in the city of Songyuan in northeast China's Jilin province. The field is dotted with bright silver towers standing above its oil wells, connected to each other by a web of pipes that transports carbon dioxide to be injected into the ground. Zhang Hui, chief geologist at the Jilin Oil Field Prospecting Institute, said the injected carbon dioxide can dissolve the crude oil and subsequently expand the oil volume, making it easier to retrieve greater quantities of oil. The injection technique and oil retrieval process, referred to collectively as "Carbon Capture and Storage plus Enhanced Oil Recovery" (CCS-EOR), increases oil recovery efficiency rates by as much as 10 percent, compared to the older technique of using water to displace oil, Zhang said. The field's annual oil production is about 5.6 million barrels and would decrease by 12 percent every year without the CCS-EOR technology, Zhang said, adding that the technology has allowed the field to stabilize its output. The carbon dioxide used in the process is taken from the Changling Gas Field not far from the oil field. The field boasts natural gas reserves of 70.6 billion cubic meters, and its reserves contain a large amount of carbon dioxide.

"We found that over one-seventh of the total gas reserves were carbon dioxide. Figuring out how to extract clean gas without increasing emissions was a real headache for us," Zhang said. However, the CCS-EOR technology can help sequester the greenhouse gases that would otherwise be discharged into the atmosphere. A total of 147 additional injection wells will be built in the oil field by 2015, boosting its annual carbon storage quantity to 700,000 metric tons, Zhang said, adding that this amount is equivalent to the coal consumption of a small power plant. "By that time, all the carbon dioxide captured in the gas field will be utilized to ramp up oil production," Zhang said.

Zheng Chuguang, a professor at the Huazhong University of Science and Technology, is a top researcher of carbon storage and utilization. He originally proposed building the pilot CCS-EOR project in Songyuan. Although carbon capture storage technology is effective at mitigating the effects of carbon emissions on global warming, capturing and storing the carbon dioxide consumes additional energy, reducing its efficiency.

"But the EOR makes the CCS technology more appealing," Zheng said. "It allows us to extract oil even in depleted oil fields." According to Zhang, industrial-scale CSS-EOR projects are under way in Canada's Weyburn Operations and the U.S.'s Salt Creek and Sharon Ridge, but applying the technology in China is more challenging.

Wang Feng, the engineer-in-chief of Jilin Oil Field, said oil fields in China are mainly continental fields, meaning that underground oil reserves are more unevenly deposited than in marine reservoirs in North America. "Introducing oil displacement in continental oil fields is a technological breakthrough," Wang said.

## **Environmental Organisations Announce CCS Network**

Nine of the world's leading environmental advocacy organisations launch the ENGO Network on CCS (Environmental NGO Network on Carbon Capture and Sequestration), formed to jointly pursue domestic and international policies and regulations enabling CCS to deliver on its emissions reduction potential safely and effectively.

Current members include: Clean Air Task Force, Environmental Defense Fund, Green Alliance, Natural Resources Defense Council, The Bellona Foundation, The Climate Institute, The Pembina Institute, World Resources Institute, and Zero Emission Resource Organisation.

Network members plan to share knowledge and work toward common positions on international developments related to CCS.



### ***Carbon capture a UAE win***

The addition of carbon capture and storage (CCS) to the arsenal of measures that qualify for carbon credits will boost Abu Dhabi's ambitions to develop CCS as a means to reduce emissions and increase the productivity of its oilfields.

Delegates at the UN climate change talks in Durban that ended early yesterday agreed that CSS will now be eligible for carbon credits under the Clean Development Mechanism (CDM), where developed countries pay for projects that reduce emissions to offset their own.

### ***Carbon storage technology ramps up oil production, reduces carbon emissions***

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### ***Report clears Cenovus carbon capture project***

The global carbon capture and storage industry is breathing a collective sigh of relief after a report released Monday vindicated the world's largest project operated by Cenovus Energy Inc. in Saskatchewan, says a spokeswoman for the scientific organization that authored the study.

An international research group based at the University of Regina said the Calgary company's Weyburn project is not leaking CO<sub>2</sub> into the property of Jane and Cameron Kerr.

### ***Australian Draft Energy White Paper Released***

The Australian Government today released the draft Energy White Paper for public consultation, alongside the release of the 2011 National Energy Security Assessment and the Strategic Framework for Alternative Transport Fuels.

The draft Energy White Paper sets out a series of proposed Commonwealth Government priorities to address challenges confronting Australia's energy sector.

Alongside the release of the draft Energy White Paper, and following the passage of legislation giving effect to the carbon price, the Government is also today announcing it will no longer proceed with the introduction of emissions standards or Carbon Capture and Storage Ready requirements for new coal fired power stations.

### ***Jacobs Receives Contract from Gassnova SF***

Jacobs Engineering Group Inc. (NYSE:JEC) announced that it was awarded a framework contract from Gassnova SF for its "CO<sub>2</sub> Capture Mongstad (CCM) Project" at the Mongstad Refinery site in Norway.

Officials did not disclose the contract value, however, they noted that the framework contract, for which Jacobs is the sole provider of engineering and technical assistance services, is being executed from its office in Leiden, The Netherlands.

In making the announcement, Jacobs Group Vice President Robert Matha stated, "Jacobs is proud to support this important project and help Gassnova to achieve its project carbon capture goals."



### ***European Commission's Energy Roadmap 2050***

On 15 December 2011, the European Commission adopted the Communication "Energy Roadmap 2050" [182 KB] All available translations.. The EU is committed to reducing greenhouse gas emissions to 80-95% below 1990 levels by 2050 in the context of necessary reductions by developed countries as a group. In the Energy Roadmap 2050 the Commission explores the challenges posed by delivering the EU's decarbonisation objective while at the same time ensuring security of energy supply and competitiveness. The Energy Roadmap 2050 is the basis for developing a long-term European framework together with all stakeholders.

### ***Norwegian subsea CO<sub>2</sub> storage sites revealed***

The Norwegian Petroleum Directorate (NPD) has drawn up an atlas describing potential subsurface storage locations for carbon dioxide (CO<sub>2</sub>) in the Norwegian North Sea. It was due to be submitted today to the Ministry of Petroleum and Energy. According to NPD, the mapped area has a total storage capacity of around 70 billion metric tons (77 billion tons) of CO<sub>2</sub>. The objective of the atlas, claimed to be a first, is to provide an overview of geological structures suitable for secure long-term CO<sub>2</sub> storage.

### ***Project Pioneer – Project Overview***

According to GCCSI Project Pioneer will be one of the first CCS projects to utilise an integrated approach for CCS, and is expected to serve as a prototype for the long-term, commercial-scale application and integration of CCS technologies to achieve reductions in greenhouse gas emissions. Project Pioneer is being proposed to capture 1 million tons (Mt) of carbon dioxide (CO<sub>2</sub>) annually from the Keephills 3 coal-fired power plant, which is located approximately 70 km west of Edmonton, Alberta, and is jointly owned by TransAlta and Capital Power.

To read the project overview <http://www.globalccsinstitute.com/publications/project-pioneer-%E2%80%93-project-overview>

### ***Carbon capture project is on time and budget***

The carbon capture and sequestration (CCS) retrofit for Unit 3 at the Boundary Dam Power Station is on schedule to be completed in early 2014, and it's also on track for its \$1.24 billion budget, says SaskPower president and CEO Robert Watson.

Construction is progressing very well, Robert Watson said. Weather conditions in the fall have allowed contractors to proceed with very few interruptions.

### ***Nordic cooperation in CO<sub>2</sub> capture***

Scandinavian, Finnish and Icelandic experts on the capture, transport and storage of CO<sub>2</sub> are meeting for the first time in a Nordic Centre of Expertise.

While the field so far has focused primarily on the power sector, CO<sub>2</sub> capture from industry is also a key area for the new NORDICCS centre; so is the development of an atlas for CO<sub>2</sub> storage in the Nordic countries.

"How can CO<sub>2</sub> be captured most efficiently from large point sources in the Nordic countries? And what is the potential for underground storage of CO<sub>2</sub> in the five Nordic countries? The Centre will launch and carry out a series of studies to answer precisely these questions," says Nils A. Røkke, who will lead the NORDICCS Centre.

### ***FutureGen 2.0 site "suitable" for carbon storage***

The FutureGen Alliance completed drilling for the characterization well at the FutureGen 2.0 carbon dioxide (CO<sub>2</sub>) storage site in Morgan County, Ill., and that preliminary data indicates that the local Illinois geology is suitable for CO<sub>2</sub> storage.



The Alliance said the drilling team reached the final depth of 4,812 feet below the ground surface. In drilling the well, the geologists recorded a 460-foot thick Eau Claire formation that will form the caprock overlaying a 500-foot thick portion of the Mt. Simon sandstone that forms the potential CO<sub>2</sub> storage reservoir. Over the next few weeks, data collected from the well—including caprock and reservoir rock core samples that were collected during the drilling process—will undergo further geologic testing to confirm the geology for CO<sub>2</sub> storage, but initial findings are positive.

### ***DNV and KEMA create a world-leading energy and sustainability company***

DNV and KEMA will form a world-leading energy consulting, testing and certification company that can drive the worldwide transition towards a safe, reliable, efficient and clean energy ecosystem. DNV KEMA will consist of all 1,800 KEMA employees and 500 employees from DNV's renewable energy and sustainability activities. The new company will be led by Thijs Aarten, the CEO of KEMA, and headquartered in Arnhem, the Netherlands. Mr Aarten will report to a Supervisory Board chaired by DNV CEO Henrik O. Madsen.

Strategic and cultural match KEMA's activities are highly complementary to those of DNV's existing renewable energy and sustainability businesses and all these activities will be integrated to form one compelling service offering to the global energy sector. Services will cover the entire energy value chain from energy source to end user, including wind energy, carbon capture and storage, carbon trading, energy efficiency, power generation, transmission and distribution, and energy-related testing, inspection and certification.

### ***Future gas scenarios***

Gas will play a significant role going forward, according to energy consultant James Greenleaf. The two key drivers for continued gas utilisation will be the commercialisation of carbon capture and storage (CCS) and electricity and heat storage technologies.

CCS development will have to be supported by biomethane injection into the gas distribution network, allowing gas to maintain its role in domestic and industrial heating. Combined heat and power (CHP) district heating systems are on the cards as well as the electrification of vehicles.

### ***EU-funded clean coal project for thermal power sector***

The TREC-STEP (Tiruchi Regional Engineering College – Science and Technology Entrepreneurs Park) has commenced implementation of a prestigious European Union-funded project for developing a cluster for Clean Coal Technologies (CCT) and Carbon Capture and Storage (CCS) Technologies for the Indian thermal power sector.

In partnership with the Bharat Heavy Electricals Limited (BHEL), TREC-STEP will be implementing a comprehensive set of initiatives in CCT and CCS, disseminating new skills, technologies, and techniques to the Indian thermal power industry in order to take up effective demonstration and deployment actions. The Rs.5.5-crore project of 36-month duration is funded to the extent of 60.24 per cent by the EU.