

Poor foundations

Offshore wind projects are on shaky ground as project economics threaten development

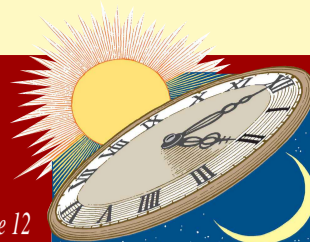


Page 8

All in a day's work

Joubert talks about mixing work with pleasure.

Page 12



Final Word

Junior Isles recounts dreams and hopes from the World Future Energy Summit

Page 16



February 2009 • Volume 1 • No 12 • Published monthly • ISSN 1757-7365

www.teitimes.com

THE ENERGY INDUSTRY TIMES

IN BRIEF

Obama embarks on ambitious journey

Having promised to bring about change in the midst of America's economic crisis, US President Barack Obama is now under pressure to deliver.

Page 4

Emissions trading is "barrier" to CCS

Australian company ZeroGen says the country's emissions trading scheme will pose a "barrier" to the development of CCS.

Page 6

Nuclear deal at crossroads

The US Congress could yet scupper a nuclear deal between the USA and the UAE.

Page 9

Industry Perspective: Investing in China's renewables

Although 2009 paints a dismal picture, macro policy for renewable energy and clean-tech globally continues to be favourable.

Page 14

Technology: Still a role for synchronous condensers

Some argue that rotating synchronous condensers should be much more widely used in Europe.

Page 15

Subscribe

An annual subscription to *The Energy Industry Times* costs £295.

To subscribe, email: subscriptions@teitimes.com or visit: www.teitimes.com

Nuclear fall-out after Russia-Ukraine dispute

The gas dispute between Russia and the Ukraine, which ended last month, has once again made EU countries, particular those from the former eastern bloc, look at alternatives to gas. **Junior Isles**

The dispute over gas supplies from Russia to the EU via the Ukraine put the spotlight firmly on nuclear, as former eastern bloc countries struggled with electricity and heat supplies during the gas shortage.

Slovakia had planned to restart its Jaslovské Bohunice nuclear plant as the country was forced to act in the face of "extraordinary circumstances", according to Slovak Premier Robert Fico. However, the plans were scrapped when gas began flowing

again in late January. Slovakia, which depends entirely on Russian gas, declared a state of emergency in early January and ordered 1000 companies to reduce their consumption levels to ensure enough gas for households, hospital and schools.

Bulgaria, which depends on Russia for 90 per cent of its energy needs, also found itself in similar circumstances. Its economy minister pointed out that the country had the right to try to overcome the gas crisis



Slovak Premier Robert Fico: extraordinary circumstances

by restarting two 440 MW reactors at Kozlodui which were mothballed two years ago.

Both Bulgaria and Slovakia's aging Soviet-style nuclear plants were shutdown as part of a deal to allow them to enter the EU.

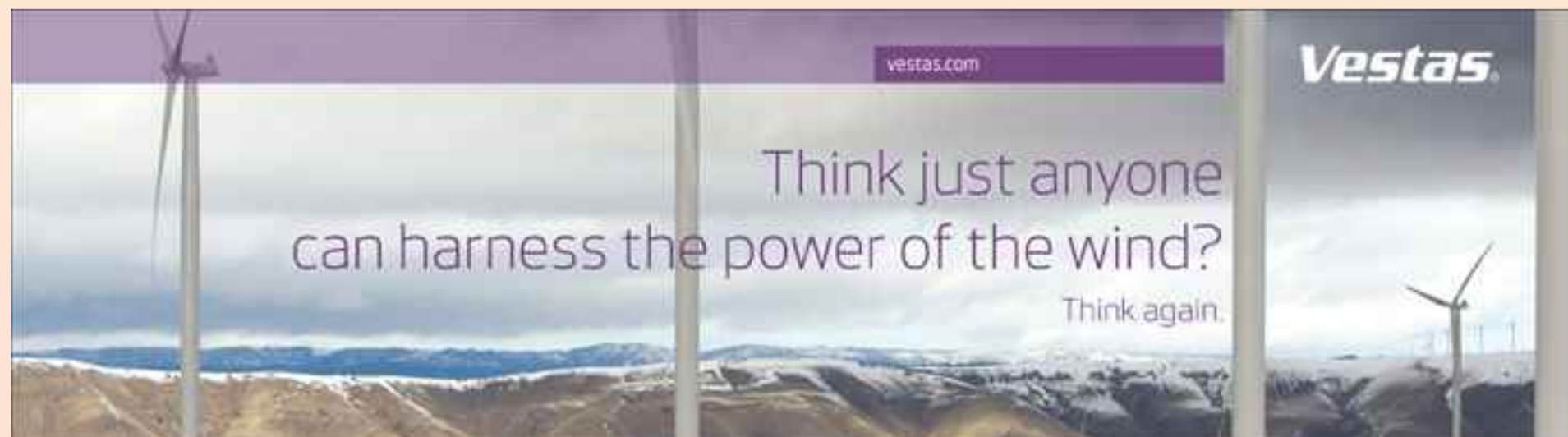
Bulgaria's economy minister Peter Dimitrov said a clause in the country's EU accession treaty allowed their reactors to be restarted in the event of a crisis. He said that businesses were losing €7 million (\$9.2 million) a day

because of the dispute.

Slovakia's decision met with protest from Austria, whose environment minister said the plan was "completely unacceptable" and urged Brussels to take action. The European Commission said it was helping Slovakia deal with energy shortages and warned it would be a "serious violation" if the nuclear plant reopened.

The EU did not specify what action

Continued on page 2



2 | **Headline News***(Continued from page 1)*

it would take and fortunately the dispute ended before it was forced to take any concrete action. However, the situation highlighted the EU's tenuous position and forced many countries to look at alternative forms of energy supply.

Six European countries including EU member states such as Bulgaria, Greece and Romania reported a complete shut-off of Russian gas transmitted via Ukraine. Other countries were also affected.

Austria was forced Austria to switch units at two gas plant sites to run on fuel oil in order to help supply domestic energy demand. Two gas fired units with a combined output of 1000 MW in Simmering in Vienna and in Theiss were forced to run on oil for several days.

Serbia faced increased pollution and grid overloading as it also switched to oil and electricity to meet heating needs.

The gas dispute has led Poland to speed up its plans to build nuclear power plants. Although Warsaw was largely able to make up the shortfall through an increased inflow from pipelines running through Belarus, Poland's prime minister, Donald Tusk said he would speed up construction of the country's first nuclear plants. He now expects them to produce power by 2020.

In mid-January the government gave Poland's largest energy producer, Polska Grupa Energetyczna (PGE) the mandate to build two nuclear plants. PGE plans to build two plants of 3000 MW each at an estimated cost of €15-18 billion.

PGE CEO, Tomasz Zadroga, said it will seek a partner to build and operate the plants. "The stake (we will want to sell) is up for negotiations, but we want to keep the controlling stake," Zadroga told a news conference. PGE will seek to gain external financing for about 80 per cent of investments, he said.

Energy-saving cooperation in 2009

A framework to deepen cooperation on energy-saving measures is to be set up early this year. The new framework, also known as the International Partnership for Energy Efficiency Cooperation (IPEEC), is aimed at facilitating energy-saving measures to address climate change and volatile energy prices.

The decision to set up IPEEC was agreed by Ministers from the G-8, the European Union, Brazil, China, India, Mexico and South Korea, who said in a joint statement that IPEEC would "commence its operations as early as possible in 2009".

The statement said a dedicated secretariat for the new framework will be hosted at the International Energy Agency in Paris.

A Japanese official said major energy consuming economies may agree on when to launch the IPEEC secretariat as early as May, when there will be a G-8 energy ministers' meeting in Italy.

Advertise

in
The Energy Industry Times
by calling the hotline today:
+44 208 123 1685
or enquire:
paul.miosga@teitimes.com

Strong energy and climate progress urged in crunch year

- UK calls for international response
- IRENA brings together 70 countries

Ed Miliband:
2009 will be a crucial year when it comes to negotiating

Junior Isles

UK Energy and Climate Change Secretary Ed Miliband said 2008 was an historic year for confronting the twin challenges of developing a low-carbon economy and combating climate change but cautioned that 2009 would be a crunch year for the industry.

"We have seen significant progress during 2008 in our goals of developing secure, affordable and clean energy, and tackling the threat of global warming. However 2009 will be a crucial year when it comes to negotiating a meaningful, binding climate change deal in Copenhagen."

Miliband's comments echoed British prime minister, Gordon Brown, who said that energy producers and consumers needed to work together to solve the crisis facing global energy markets.

"We will need a new partnership between oil-producing and oil-consuming countries," Brown told

an international energy conference in London in mid-December.

"Because as with the global financial crisis, this global crisis in our energy markets cannot be solved by one nation or one continent alone, but demands a truly international response," Brown continued.

The international community made an important advance at the end of January when it held the inaugural conference of the International Renewable Energy Agency (IRENA) in Bonn, Germany.

A total of 75 nations from both developing and industrialized countries, signed the statute of the agency, which is set up to expand the use of and promote research and development of renewable energy sources.

IRENA will work out international criteria for the assessment of power generation efficiency for renewable energy sources, which are becoming important in the fight against global warming and for energy security.

The new agency will also aim to facilitate renewable energy technology transfers to developing countries and to promote studies on financial mechanisms for the development and diffusion of renewable energy sources.

Unlike the International Energy Agency and the International Atomic Energy Agency, the new body will be the first international organization dedicated to renewable energy.

The agency began its work almost immediately after the conference. At the first session of the Preparatory Commission, the signatories adopted criteria and procedures for selecting IRENA's interim Director-General and its interim headquarters and invited the members to put forward candidatures by 30th April 2009. They also created the institutional framework that will allow IRENA to embark on the first elements of its working programme. The next session is planned for June 2009, where decisions will be taken on the

agency's interim Director-General and interim headquarters.

The main work of IRENA will be to advise its members on creating the right frameworks, building capacity, and improving financing and the transfer of technology and know-how for renewable energies. The agency said it will cooperate closely with other international organisations and institutions active in the field of renewable energy.

The founding member states include a number of European countries, Australia, South Korea, China and India. Notable omissions, however, include the US and the UK.

Japan was also reluctant to join the new body saying that its mission could overlap with that of existing international organizations and could entail fresh financial burdens. Many Japanese environmental groups are worried that Japan could lag behind in the pursuit of renewable energy sources if it does not join the new body.



Behind schedule:
Olkiluoto 3 1600 MW nuclear power plant, Finland

Finland considers new reactor proposal

Finland is planning a sixth nuclear unit despite delays at Okiluoto.

A Finnish energy company is moving ahead with plans for a new nuclear power plant in the country that it says will secure power supplies and stabilise electricity prices.

Fennovoima, a consortium of E.ON Nordic, together with several Finnish energy and industrial companies, has submitted an application to the Finnish government for a decision-in-principle on the construction of a new nuclear plant.

The news was announced in January just as Finnish utility TVO confirmed that operation of the Olkiluoto 3 nuclear

power plant would be delayed until June 2012.

The Fennovoima team is planning to construct a 1500-2500 MW nuclear power plant in Finland and has proposed three alternative sites. The final site will be selected after the decision-in-principle is ratified by the Finnish parliament.

The consortium is aiming to start operating the plant by 2020.

At the Olkiluoto 3 site, TVO said that it is "extremely disappointed" that the Areva-Siemens consortium that is building the plant has not been able to

complete the plant on time or mitigate delays. The plant was originally scheduled to start operating in 2009.

TVO's comments came just a few weeks after it emerged that the Areva-Siemens consortium was taking TVO to arbitration over the delays and cost overruns at Olkiluoto 3. Areva and Siemens, which are building the plant on a turnkey basis, claim that delays in document handling and approval on the part of TVO were a major factor in the cost overruns and project delays.

TVO refutes the claims of Siemens and Areva.

US outlook negative but stable

According to ratings agency, Fitch Ratings, the fundamental outlook for US electric utilities turned negative in 2008 and is expected to continue under pressure in 2009 and beyond. The agency said the outlook reflects a more challenging capital market environment, cyclical downturn and high non-discretionary capital requirements targeting infrastructure, environmental and renewable construction projects.

The 2009 fundamental outlook for the sector is expected to be challenged in the future by a significantly higher cost-of-capital compared to the levels experienced through mid-2008.

The outlook for competitive generating companies is negative in 2009 but stable in the longer term. The negative outlook for the sector in 2009 is driven by capital market constraints and recessionary pressures, combined with declining power prices, potentially rising environmental costs and counterparty credit and liquidity concerns.

Post-2009, Fitch expects that a stable outlook more appropriately reflects the potential for improving spark and dark spreads as industry reserve margins continue to tighten over time.

Fitch anticipates material capital expenditure reductions from the generators in 2009 and 2010.



ENERGY
ENVIRONMENT
ECONOMY

WIND POWER THAT WORKS, EVEN WITHOUT WIND.

We complement alternative energy sources so that you'll never be without power. This is just one example of how Wärtsilä solutions are good both for business and nature on land and at sea. Read more about what we can do for you and the environment at wartsila.com.

WARTSILA.COM



Obama embarks on ambitious journey

US president Barack Obama has put energy at the heart of his plan to kick-start the economy, writes Siân Crampsie.

Having made a promise to bring about change in the midst of America's economic crisis, president Barack Obama is now under pressure to deliver.

The 44th president of the USA has made energy the centrepiece of his economic recovery package, and has urged lawmakers to pass his proposed Recovery and Reinvestment Plan by mid-February.

The \$900 billion package of tax cuts and investments aims to create or save over 3 million jobs by 2010 – 450 000 of which will be energy-related. It was passed by the House of Representatives at the end of January and was expected to be passed by the Senate in early February.

Obama has already outlined policies to create a "new energy economy" in the country, and like other world

leaders, believes that investment in renewable and advanced energy technologies will not only achieve environmental goals but also kick-start the economy at the same time.

His policies are also being scrutinized around the world, particularly as nations gear up for the UN's crucial climate conference, scheduled for December. The USA's position at this meeting is seen as crucial to securing a global agreement on reducing emissions.

Central to the Recovery and Reinvestment plan is a pledge to double the production of alternative energy in the next three years, as well as a massive energy efficiency programme covering federal buildings and the domestic sector. The plans have been welcomed by environmental and renewable energy groups, but are also seen as

ambitious.

"In the process, we will put Americans to work in new jobs that pay well and can't be outsourced – jobs building solar panels and wind turbines; constructing fuel-efficient cars and buildings; and developing the new energy technologies that will lead to even more jobs, more savings, and a cleaner, safer planet in the bargain," said Obama.

Overall, Obama's energy plan aims to invest \$150 billion in the next ten years in clean energy technologies and to set targets for renewable energy. There are also plans for a nationwide greenhouse gas trading programme and an effective energy efficiency programme.

"President Obama is fulfilling his campaign promise to create a clean energy economy with incredible speed and determination of purpose,"



Barack Obama: focused on energy

said Kateri Callahan, president of the Alliance to Save Energy. "He is moving full-steam-ahead on energy efficiency, not despite but because of the fragile state of the economy."

Fulfilling energy efficiency goals will depend on the removal of a number of key barriers, according to the Electric Power Research Institute (EPRI), which said recently that energy efficiency programmes could reduce the rate of growth for electricity consumption by 22 per cent over the next two decades. Common barriers to energy efficiency include consumer attitudes, resistance to new technology and funding issues.

Obama also wants to ensure that ten per cent of electricity in the USA is sourced from renewables by 2012, and 25 per cent by 2025. This will not only help the job creation effort,

but is also a key pillar to plans to reduce greenhouse gas emissions by 80 per cent by 2050.

Such targets will require the US Congress to pass a renewable energy portfolio, which would require an increasing percentage of power generation from sources such as wind and solar. It would also require substantial investment in the nation's electricity grid.

The American Wind Energy Association (AWEA) has welcomed Obama's policies on renewable energy, which it believes will provide a platform for continued growth in the industry into 2009.

"The policies would signal a welcome shift for renewable energy technologies, whose deployment has been hampered by the absence of long-term policy stability," said AWEA in a recent statement.

Illinois sets clean coal benchmarks

■ New drive for clean coal
■ Taylorville, Edwardsport progress

The US state of Illinois is planning to be at the heart of the USA's drive to develop and deploy clean coal technology through a new law governing coal gasification and carbon capture and storage (CCS) projects.

The Clean Coal Portfolio Standard Act – described by Illinois state lawmakers as "groundbreaking legislation" – is designed to give certainty to utilities and investors in new coal plant by providing a clear definition of clean coal. It is thought that the legislation could be replicated across the country in order to push forward the development of clean coal technology.

The new law requires that clean coal facilities capture at least 50 per cent of their total carbon dioxide (CO₂) emissions and have overall emissions similar to those of natural gas fired combined cycle power plants.

Plants that meet these standards will benefit from a guaranteed customer base as electric utilities and other electricity retailers in Illinois will be required to purchase at least five per cent of their sales from clean coal facilities.

The legislation comes as US president Barack Obama embarks on

the implementation of a new energy strategy, a key part of which is the development of clean coal and CCS technology. Over 80 CCS research and demonstration projects are now underway in the US, according to the American Coalition for Clean Coal Electricity (ACCCE).

The new law is also good news for Tenaska's Taylorville IGCC plant, a proposed 500-525 MW facility that is likely to become the first operational coal plant in the US to capture CO₂ emissions. The plant is currently in the design stage but could come on-line in 2014, when it will use hybrid IGCC technology to convert coal into substitute natural gas (SNG).

The SNG will be used to generate electricity in a combined cycle power island.

It is estimated that the project will cost in the region of \$3.5 billion, although concerns over rising construction costs had thrown the future of the plant in doubt. The new legislation should secure the project, however, according to Tenaska vice president Bart Ford. "This legislation is a powerful step forward in the development of clean coal electricity generation in the US," Ford said. "We

now have the momentum that we and the state need to get this vital project built and operational."

The law could also help to revive the coal industry in Illinois, home to the second largest coal reserves in the US. Crucially, it increases the required CO₂ capture level to 70 per cent for facilities scheduled to enter commercial operation after 2015, and to 90 per cent for those starting up after 2017.

A number of other clean coal projects have also made significant progress in the US in the last few weeks. Mississippi Power has filed for a certificate of public convenience and necessity to build a 582 MW IGCC power plant in Kemper County, while in Indiana the Utility Regulatory Commission has approved Duke Energy's revised cost estimate for its Edwardsport IGCC plant.

Duke now believes the project will cost \$2.35 billion to construct, an increase of \$365 million. It said that international demand for materials and rising labour costs were the main drivers for the cost increase.

Duke has also won approval for a \$17 million study into the potential for adding CCS to the Edwardsport facility.

Canadian partnership pioneering CCS

TransAlta Corporation has emphasised the importance of government and industry partnerships to the development and implementation of carbon capture and storage (CCS) technology.

The Canadian firm has announced the participation of TransCanada Pipelines Limited in Project Pioneer, the country's first fully integrated CCS plant. It is seeking further partners to develop the project and also said that it is planning to apply for government funding this year.

When complete, Project Pioneer will be one of the largest CCS facilities in the world and the first to have an integrated underground storage system. It will pilot Alstom's proprietary chilled ammonia process and will be designed to capture one megatonne (Mt) of carbon dioxide from an existing coal plant in the Wabamun area west of Edmonton, Alberta.

"Carbon capture and storage provides Alberta and Canada a leadership opportunity to use new technology to reduce CO₂ emissions," said Steve Snyder, president and CEO of TransAlta. "New carbon capture technologies like chilled ammonia show tremendous promise but are not commercially viable at this time.

"Government and industry partnerships are a critical catalyst required to accelerate their implementation, and provide a sustainable competitive edge for Canada and Canadian companies. Canada has the potential to lead the world in real CO₂ reductions through CCS."

TransCanada will bring expertise in the design and construction of pipeline infrastructure to Project Pioneer, which will demonstrate the use of CO₂ for enhanced oil recovery (EOR) as well as permanent geological storage. TransAlta also wants other companies to join the project in order to bring in expertise across the full spectrum of process plant operations and reservoir knowledge for underground storage and EOR.

Project Pioneer is expected to deliver at least 20 per cent of the government of Alberta's 2015 target of 5 Mt in annual CO₂ reductions. TransAlta is submitting detailed funding proposals to both the Alberta government's CCS initiative and the Federal government's eco-Energy Technology Initiative.

If TransAlta receives funding commitments during 2009, construction of Project Pioneer will begin in early 2009 and operations will start in 2012, said TransAlta.

Asia News

Vietnam invests despite slowdown



Bui Xuan Khu: deputy minister of Industry and Trade

Vietnam is still poised to make huge investments in its power sector in 2009 despite having more electricity than it needs for the first time.

Bui Xuan Khu, deputy minister of Industry and Trade said that the global economic downturn, especially in Japan, the United States and Europe – Vietnam's key trading partners – had hurt Vietnam's export manufacturers leading to a fall in the country's electricity demand.

"At present we have redundant power supply, demand is expected to grow only 6-7 per cent while generation capacity would rise 14-15 per cent," said Khu.

Last year power demand, led by industry, jumped around 16 per cent while supply only rose 12 per cent, forcing the government to import electricity from China and rotate power outages in both Hanoi and Ho Chi Minh City.

Soaring demand has seen Electricity of Vietnam (EVN) plan to invest some \$3 billion a year to build 33 200 MW of new generation capacity by 2015.

So far there has not been any delay in EVN power projects.

The electricity industry plans to grow by 13 per cent this year to ensure sufficient power for economic development, said Pham Le Thanh, General Director of EVN.

EVN reported that it is to invest almost 50 trillion VND in electricity generation sources during 2009. It revealed that it has raised 44.39 trillion VND so far and is actively seeking the remaining 5.6 trillion VND.

To make up the shortfall, the national group said that it would make full use of official development assistance (ODA) and preferential credit sources, seek commercial loans, and ensure the smooth progress of an approved plan to issue 4 trillion VND worth of bonds.

With the planned investment, EVN will strive this year to put into operation nine electricity plants with a combined capacity of 2696 MW and commence construction of four thermal power plants capable of producing 3800 MW.

The Ministry of Trade and Industry has asked EVN to focus investment on building new power plants to increase the total installed capacity of all EVN-owned power plants to 18 809 MW.

EVN also plans to buy electricity from other build-operate-transfer (BOT) plants and IPP projects. At the end of December, the government said it aimed to grant an investment licence to US developer AES Corp to build a 1200 MW coal fired power plant in northern Vietnam at an estimated cost of \$1.4 billion. AES would form a joint venture with state-owned coal producer Vinacomin to operate the plant.

PLN makes progress in spite of losses

- Net losses to reduce in 2009
- Bidding on 2000 MW plant

Indonesia's state-owned utility PT Perusahaan Listrik Negara (PLN) is continuing to add new capacity even though it faces losses in 2009.

PLN has said it will put 15 new power plants with a total capacity of 2257 MW into operation in 2009.

PLN president Fahmi Mochtar said three of the plants, with a total capacity of 1245 MW, are under the Crash Programme launched in 2007. Under the programme, PLN is building a number of coal fired power plants with a total capacity of 10 000 MW to be completed in 2010.

Looking ahead to its second 10 000 MW programme, PLN said it would open bidding this month (February) for a 2000 MW coal fired power plant to be located in Pematang, Central Java. The second programme is

scheduled to be completed by 2014.

Several foreign companies, including Siemens, Marubeni, Areva, and China's Huadian, have expressed interest in the bid for the project, which is estimated to cost around \$2.57 billion.

PLN director for planning and technology Bambang Praptono said the project would be the largest power plant in Indonesia when completed.

PLN will open the bidding process for other power plant projects this month, including 18 plants with a capacity of 7000 MW in Java and 65 smaller plants with a capacity of just over 4000 MW outside Java.

Indonesia's energy sector received a boost in late December, when it signed deals with China covering cooperation on eight energy and mining projects worth Rp35 trillion (\$3.13 billion).

The eight projects include one oil and gas project, one bio-diesel development project, two coal mining projects and four power plant projects.

Four cooperation agreements on power projects are also included, two of them including commitments from the Exim Bank of China to finance two coal fired power plants initiated by PLN. The two power plants are located in Pelabuhan Ratu (1050 MW), West Java, and Pacitan (630 MW), East Java. Both plants are expected to be in operation by 2010.

Notably, PLN announced that it is set to secure 1320 MW from the Tanjung Jati B expansion from early 2012. Construction of the plant, to be built by Japan's Sumitomo Corporation, is finally scheduled to start later this year following the agreement of financing to build the new Units 1 and 2.

PLN is confident about getting cheap supply after Sumitomo received \$2.2 billion in loans from a consortium of Japanese banks to finance

construction of the plant.

Currently, Indonesia's installed power generating capacity totals 29 000 MW, with PLN accounting for 25 000 MW and IPPs the remainder.

Electricity and Energy Utilization director general Jack Purwono said the government, through PLN, would invest \$7.54 billion in the electricity sector this year mostly for power generating plants.

Meanwhile, PLN said it hopes to reduce net losses from an estimated Rp6.57 trillion last year to Rp5.43 trillion, despite a falling income this year. Mochtar said the company would suffer lower losses this year on smaller operating costs that were down to around Rp154.19 trillion, from Rp165.78 trillion.

PLN said its operating profit in 2008 was hit by the high price of fuel for power plants, particularly oil and coal, in 2008. "In 2009 we expect our operating profit to reach around Rp1.5 trillion," he said.

No. 1 in Modern Energy 

Think just anyone can harness the power of the wind?

Think again.

It takes a company like Vestas with over 30 years experience in taking the raw power of the wind and converting it into clean, CO₂ free modern energy. From the most sophisticated site evaluation technology to actually delivering the power to the grid, Vestas has an unparalleled track record.

Our sole focus is the wind and we're always pushing the boundaries to further develop and put to use the power of this natural and limitless resource. By 2020, we predict that 10% of the world's electrical needs will come from wind power. And at Vestas we're striving to make that number even higher.





vestas.com

Vestas develops the technology that turns wind into modern energy.

ETS barrier to CCS

Questions surround whether the environmental framework in Australia will be effective in promoting clean coal investment.

Australian company ZeroGen has written to the federal government saying the country's emissions trading scheme will pose a "barrier" to the development of carbon capture and storage (CCS).

The company is hoping to build a demonstration integrated gasification (IGCC) power project with CCS near Rockhampton in central Queensland by 2012.

The letter said the scheme is too soft, so the incentive to invest in CCS is not strong enough.

"Australia's 5 per cent carbon reduction target accompanied by a weak carbon price will be nowhere near sufficient to generate the scale of investment needed to make clean coal technologies economically viable," the

letter said.

Under the government's plan for emissions trading, due to start next year, a coal fired power plant using CCS will not have to pay for emissions buried underground. But it will have to pay for emissions that go into the air.

The company, however, said its demonstration plant is high-risk and expensive, so it should not have to buy permits at all.

Federal opposition leader Malcolm Turnbull has backed ZeroGen's concerns and has called on the government to do more to help the company.

A spokesman for federal Energy Minister Martin Ferguson said ZeroGen could apply for \$500 million

in government funding for CCS but did not comment further on ZeroGen's concerns.

Last year, Queensland Premier Anna Bligh provided \$100 million for ZeroGen's feasibility study.

In January, the first trade in Australian Emissions Units (AEU) since the government released its blueprint for a carbon trading scheme provided an indication of the future cost of polluting in Australia.

Newedge senior energy trader Donovan Marsh said his firm handled a transaction of 10 000 AEU's expiring on June 20, 2012 at A\$22.25 (\$15.14) each, helping to establish a price for carbon trading in Australia ahead of the start-up of the government's scheme.



Backing ZeroGen: opposition leader Malcolm Turnbull

The price of the Newedge trade was close to current pricing of Carbon Emission Reduction (CER) units on the European Climate Exchange. Calendar 2012 CERs were last quoted at €1.24 or A\$22.01 (\$15.14) a tonne, Marsh said.

In January, Masdar, Abu Dhabi's multi-faceted future energy initiative, signed an MOU to become a founding member of the Australian Government's flagship Global Carbon Capture and Storage Institute (GCCSI). Earlier in the month, Nick Otter was appointed as head of the GCCSI.

Aid for hard-hit Chinese power companies

China's State-owned Assets Supervision and Administration Commission will inject more than 10 billion yuan (\$1.5 billion) of capital into the country's five leading power producers and two power grid corporations.

The capital injection is mainly to make up for the losses experienced in 2008 as a result of natural disasters, coal price hikes and caps on electricity price, according to *China Business*.

The five power giants to receive the capital include China Huaneng Group, China Datang Corp., China Guodian Corp., China Huadian Corp. and China Power Investment Corp. The two power grids are State Grid Corp. and China Southern Grid Co. The capital will be injected directly into the parent companies rather than the listed units of the power groups.

China's power producers are expected to record a 50 per cent to 60 per cent drop in net profit – or possibly losses – compared with the previous year due to soaring coal prices, according to statements to the Shanghai and Shenzhen stock exchange markets.

As coal prices continue to fall, however, the whole power industry is expected to reverse the slump this year.

Thailand and Japan slowdown

Both Thailand and Japan have reported a slowdown in electricity demand.

Thailand experienced a lower than expected economic growth from 4.5 per cent to 2 per cent this year. Consequently, according to the statement from the Energy Ministry, the power generating plans of Electricity Generating Authority of Thailand (Egat) and independent power producers (IPPs) will be delayed.

However, as power reserve margins must be sustained at 15-20 per cent of installed capacity, the authorities will buy more power from small power producers (SPPs). It will also review the deals to buy power from neighbouring countries.

Under the plan, during 2009-2021, Egat would account for 15 769 MW, IPPs would provide 7600 MW, SPPs 1985.5 MW and overseas power projects 5037 MW.

Meanwhile, Japan's 10 utilities generated 4.9 per cent less electricity in December than a year earlier as industrial sector demand remained weak amid the economic slowdown.

The utilities generated 82.89 TWh of electricity in December, marking a fifth straight month of year-on-year decline, the Federation of Electric Power Companies of Japan said.

All the utilities except Okinawa Electric Power Co reported a decline in power generation. Tokyo Electric Power Co (TEPCO), Japan's top utility, saw a 4.6 per cent fall.

The 7th International Exhibition on Electric Power Equipment and Technology

The 6th International Exhibition on Electrical Engineering, Electrical Equipment & Contractors' Supplies

July 8 - 10, 2009

Shanghai International Exhibition Centre (INTEX), Shanghai, PR China

The Most Established Power & Electrical Expo in China. Don't Miss it.

Unique highlights of EP Shanghai 2009

- Continuous participation by leading global suppliers - 3M, ABB, Siemens, Hyosung, Yuanda, Toshiba, Japan AE, Hitachi, Aрева, Hyundai, Rittal, Daihen, Schriewindt, MR CHINA, Ormazabal and Formosa, etc.
- International pavilions from USA, Germany, Russia and Taiwan.
- Concurrent activities - China International Power Generation Technology Conference, Energy Saving & Green Power Symposium, Power T&D Symposium

Sponsor
China Electricity Council

Organizer
China Electricity Council International

Overseas Organizer
Adsale Exhibition Services Ltd.

Co-Organizers
East China Grid Company Ltd.
Shanghai Municipal Electric Power Company
Shanghai Electric Power Co., Ltd.

株式会社アズエス
Adsale Exhibition Services Ltd.

Enquiries :
Hong Kong : (852) 2811 8807 Shanghai : (86 21) 9187 9708
Beijing : (86 10) 6440 3071 Singapore : (65) 6235 7990
Email : power@adsale.com.hk

Business Matching
Visitor Per-registration
www.2456.com/EP

Asia News

South Korea looks to nuclear

South Korea is focusing on nuclear to meet its future long-term power electricity demand.

The country plans to build a total of 31 new nuclear reactors and conventional thermal power plants to meet the steady rise in domestic energy consumption, according to the government.

A government blueprint calls for 12 new nuclear reactors, seven coal fired and 11 gas fired thermal power plants to be constructed in the next 14 years. It also outlines the building of one oil fired power unit and provisions for clean, reusable energy generation. Around won37 trillion (\$28.3 billion) will be spent, starting in 2009, to increase the country's installed capacity by 32.37 GW to over 100 GW in 2022.

The 12 nuclear reactors, which include eight already under construction, will increase the percentage of nuclear power to 48 per cent of total capacity from 33 per cent at present. The country currently has 20 nuclear reactors.

South Korea also said that it plans to work with Japan to study nuclear fusion using its nuclear fusion research facility.

South Korea completed the Korea Superconducting Tokamak Advanced Research (KSTAR) reactor in 2007 and started generating plasma in June last year. Preparations are underway to begin scientific experiments this year.

India nukes may still get tax breaks

Nuclear power plants that come into operation in India after 2010 may still receive a ten-year tax holiday if a recommendation by the Atomic Energy Commission (AEC) is accepted by the government.

The AEC has sought tax relief on income from power generation businesses to be extended to companies that start nuclear power generation before March 31, 2020. Under the current provision in the Income-Tax Act, income arising from power generation is exempt from tax for 10 years if the units begin operation between April 1, 1993 and March 31, 2010.

A senior government official was reported to have said: "None of the units that will be set up for generation of nuclear power will be able to start power generation before March 31, 2010 and hence won't be able to claim tax exemption under the current norms." He said the tax exemption was crucial to increasing nuclear capacity to 20 000 MW by 2020.

The income-tax holiday will make investments in nuclear power generation business more attractive for private sector players. Domestic and foreign companies are exploring ways to benefit from nuclear commerce in India.

With India signing nuclear deals with more countries, it may be able to increase its nuclear capacity to 60 000 MW by 2030.

France's Areva signed the first foreign uranium supply agreement with India since the re-opening of nuclear businesses between India and the rest of the world.

SGCC advances UHV grid

The State Grid Corp. of China (SGCC) plans to start building three more ultra-high voltage (UHV) power lines this year. The plan would bring the number of China's UHV lines to six.

UHV, defined as a voltage of 1000 kV or above (AC), or 800 kV (DC), is designed to deliver large quantities of power over long distances with power losses less than traditional lines.

The announcement follows last month's successful completion of a 168-hour trial operation of a 1000 kV AC transmission line in the Jindongnan-Nanyang-Jinmen Project. The 640 km line, linking the southeastern part of Shanxi Province with Jingmen City of Hubei Province in central China, started its commercial run on January 16.

The project was domestically

developed, designed and constructed with Chinese intellectual property rights, confirming China's expertise in core UHV transmission technologies as well as its domestic manufacturing capability. The building of two other UHVDC lines is still underway.

Mr. Shu Yinbiao, executive vice president of SGCC said: "Looking forward, SGCC is ready and willing to share UHV technology with the international community and make a contribution to the UHV international standards."

In December 2007, SGCC became the first Chinese company to participate in the operation of a national power grid outside of China. A consortium composed of SGCC and two Philippine companies, Monte Oro Grid Resources Corp. and Calaca High Power Corp.,



Xiangjiaba hydropower plant

spent \$3.95 billion in securing a 25-year license to run the Philippines power grid, and co-founded an operation entity. SGCC, which holds a 40 per cent stake in the operating entity, recently began operating the grid.

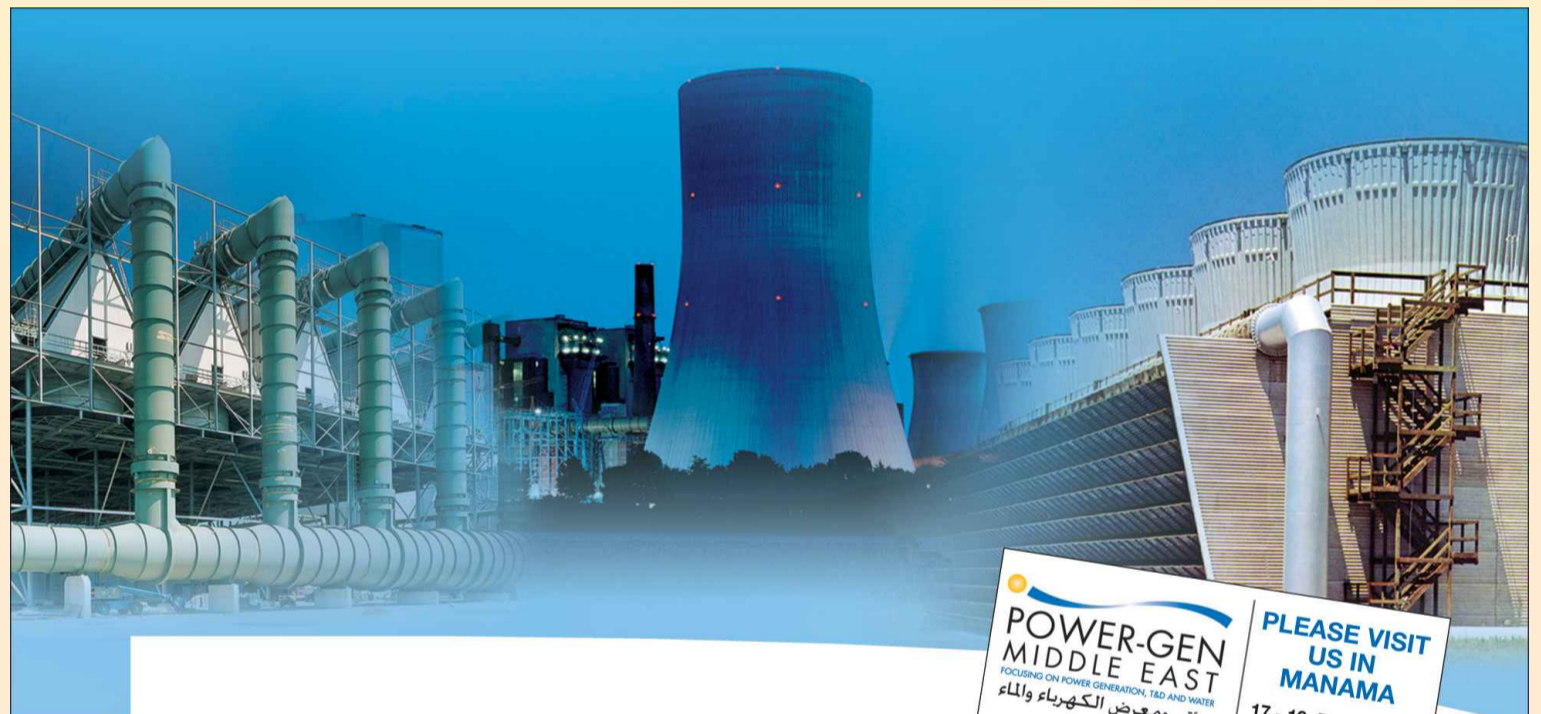
At the end of December 2008, ABB successfully tested a UHV transformer to be used on the world's longest power transmission link in China. ABB developed the 800 kV transformer for the UHVDC transmission corridor from the Xiangjiaba hydropower plant in western China to Shanghai, 2000 km to the east. The link will have a transmission capacity of 6400 MW.

Philippines ramps up privatization

San Miguel Corp., the biggest food and beverage conglomerate in Southeast Asia, is planning to add more power utilities into its fold having notified the government its intent to bid for the 620 MW combined cycle power plant in Limay, Bataan.

The government, through the Power Sector Assets and Liabilities Management Corp. (PSALM), has lined up the Bataan power plant and other generating assets of the National Power Corp. (Napocor) for privatization this year.

PSALM recently started the bidding process for the 55 MW Naga turbine-based power plant located in the Cebu I Power Plant Complex. The complex houses a number of thermal and diesel power plants with a total capacity of 203.80 MW owned by Napocor. The deadline for submission of bids is April 22.



/ Comprehensive Competence in Cooling /

More than 110 years of product competence, the innovative force of our international teams of experts as well as on-going research and development are the basis of our global strategy. Customers benefit from: complete solutions and services from one single source – quick, flexible and efficient.

We are the right partner if you require **wet, dry or combined wet-dry cooling systems**. Combining the Balcke-Duerr, Hamon Dry Cooling and Marley capabilities in our group we can offer you a wider range of dry cooling systems. You can count on us, benefit and take advantage from our product and service competencies.

SPX Cooling Technologies GmbH, Ratingen, Germany, phone: +49 (0) 21 02 16 69-0, infode@cts.spx.com

SPX Cooling Technologies Belgium, S.A./N.V., Brussels, phone: +32 (0) 2 761 6111, infobe@cts.spx.com

www.spx.com, www.spxcooling.com

SPX
COOLING TECHNOLOGIES

Offshore economics on poor foundations

Development of offshore wind projects has always presented technical challenges, but it is the economic challenges that are now posing problems, writes Siân Crampsie.

Governments around Europe are likely to face increasing pressure from renewable energy developers to give greater financial support for offshore wind power projects.

Offshore wind capacity is set to increase nearly 30-fold by 2015, according to the European Wind Energy Association, but a variety of factors – including the economics of offshore projects and supply chain issues – are threatening development of projects.

An official from Abu Dhabi-based Masdar, a partner in the UK's flagship London Array offshore wind farm, was quoted recently as saying that the company was reviewing the economic viability of the project. E.On, one of Masdar's partners in the 1000 MW project, also thinks that the economics of it are "on a knife edge", according to the *Financial Times*.

Other companies concerned about the economics of offshore wind power include the UK's Centrica, which

wants to build up to 1500 MW of offshore wind capacity but is now reviewing its plans. BP is planning to spend \$8 billion in the alternative energy market to 2013 but said last year that little of this will be spent in the UK.

Centrica estimates that each MW of offshore wind capacity costs around £3 million to build – roughly twice that of onshore wind projects. There were 1486 MW of installed offshore capacity in the world at the end of 2007 and EWEA expects this to rise to nearly 31 GW by 2015.

The UK has incentivised the construction of offshore wind power by allocating electricity generated from such schemes more Renewable Obligation Certificates (ROCs) than other forms of renewable energy. E.On, however, thinks that even more financial support is needed.

"The problems that we are experiencing with London Array are the same for all offshore wind project

developers," said a spokesman. "The economics have always been tricky and will continue to be so. We need the government to help with the London Array."

Speaking on the sidelines of the World Future Energy Summit, Dr Frank Mastiaux, CEO of E.On Climate and Renewables added: "With regards to wind, we are still on a learning curve. Renewables have to end up in a competitive and reliable position. We can still do a lot more to drive down lifecycle costs."

The difficult economics of offshore wind are in part being caused by high steel prices and a shortage of supply in turbines. Other areas of the supply chain such as the availability of jack-up barges are also causing problems.

E.On, which is developing London Array in partnership with Dong Energy and Masdar, also believes that the planning process should be streamlined, pointing to the fact that a planning inquiry for an onshore



substation has delayed London Array by a whole year. Grid connection is also an issue, said the company.

"Some sort of support that recognises that the economics are tricky is needed, for example a move to two ROCs for offshore wind," said the E.On spokesman. "At the moment offshore projects get 1.5 ROCs [per MWh] and onshore wind 1 ROC."

"We need the sums to add up. If they don't then we need to find a way of making it work."

The London Array partners are currently going through the tendering process for the project, which forms part of the UK government's plans to develop over 30 GW of offshore wind by 2020.

The UK's offshore wind sector received a boost, however, with news that the Energy Technologies Institute (ETI) is funding three projects focussed on designing cutting-edge offshore wind turbine technology. The ETI – a partnership between the government

and a number of private sector partners – believes that the projects have the potential to deliver cheaper renewable electricity generation from 2020 onwards.

Dr David Clarke, the ETI's Chief Executive Officer said: "The projects announced will demonstrate new technologies which can deliver significant cost savings compared to current renewable energy sources."

The projects will receive funding totalling around £20 million. They include: a feasibility assessment of a vertical-axis wind turbine; a project to deliver a concept design and feasibility study for a new offshore-specific wind farm and seeks to overcome the issues facing today's systems including turbine reliability and accessing equipment for maintenance; and a project to design and determine the feasibility and potential of an integrated solution for a 5 MW floating offshore wind turbine for deepwater deployments between 30 and 300 m.

Utilities muscle in on nuclear plans

- EDF ploughs ahead with BE integration
- Competition for sites heats up

EDF looks set to face competition in the race to construct the UK's first new nuclear power plant in almost 20 years after the creation last month of two new joint ventures by major industry players.

German heavyweights E.On and RWE are joining forces to construct and operate new nuclear power plants in the UK, as are Scottish and Southern Energy (SSE) and Iberdrola-owned Scottish Power. Their plans will be seen as good news by the UK government, which is keen to see more than one player in the country's new nuclear landscape.

Both joint ventures say that they will not be tied to any particular equipment vendor. They will both seek sites for development through the auctions being run by the Nuclear Decommissioning Authority (NDA).

EDF, which recently completed the purchase of British Energy, is seen as the frontrunner in the UK's nuclear renaissance due to British Energy's ownership of key sites. It is planning the construction of four EPR-based reactors, the first of which could be operational by 2017.

The UK subsidiaries of RWE and E.On said that they want to build at least 6 GW of new capacity under

their 50:50 joint venture. SSE and Scottish Power have not released details of their plans, but said that they may consider adding more partners to their venture.

The NDA has initiated the sale of three sites around the UK and plans to announce the winning bidders by the end of March. The government also recently launched a public consultation on three nuclear reactor designs submitted for 'Justification' under EU rules.

Dr Paul Golby, CEO of E.On UK, said: "The UK has to replace a third of its generating capacity in the next 15 years in a way that ensures security of supply, reduces carbon emissions and keeps energy as affordable as possible."

"The only way we can achieve this is to have a diverse energy mix. New nuclear power, alongside cleaner fossil fuels, renewables and energy efficiency, will be vital going forward."

The creation of joint ventures indicates the scale of the task that the companies are undertaking, according to an RWE npower spokesperson. "A joint venture approach will allow us to pool our expertise and resources and deliver the efficiencies that are



Dr Paul Golby: The UK has to replace a third of its generating capacity

demand by projects of this scale," said RWE npower.

E.On and RWE have stakes in 20 nuclear power stations around the world, and also jointly own three nuclear reactors in Germany. In the UK, both companies operate around 10 GW of generating capacity and supply around ten per cent of the country's electricity.

Other companies planning to participate in the UK's nuclear revival include French engineering firm Areva, Rolls-Royce and British construction firm Balfour Beatty.

The takeover of British Energy by French state-owned utility EDF became official in January following regulatory clearance by Europe's

competition authorities. EDF is swiftly implementing its integration plans, which will see British Energy brought into EDF's existing UK business, EDF Energy, and the implementation of a new management team.

The UK government announced in early 2008 that it wanted to see the construction of new nuclear power plants in order to secure low-carbon baseload capacity for the future. It is expecting all costs relating to the new fleet to be borne by the private sector.

The UK currently has 19 operating reactors at ten power stations, which provide approximately 20 per cent of electricity in the UK. These are all due to be closed between 2008 and 2035.

Oxycoal UK gains partner

Efforts in Europe to develop clean coal technology using an oxyfuel process have received a boost through the addition of Vattenfall to a major industrial partnership.

The Swedish state-owned utility said it has agreed to join Oxycoal UK, bringing both its expertise and SEK4 million of financing to the partnership. The project is led by Doosan Babcock and is aimed at developing a competitive oxyfuel technology suitable for full-scale plant application.

Vattenfall is aiming to make carbon capture and storage (CCS) technology commercially viable by 2010. It inaugurated an oxyfuel pilot plant at Schwarze Pumpe in Germany in late 2008, and is also planning CCS demonstration projects in Denmark and Germany.

"Vattenfall has been working with development of CCS technology since 2001, and it is of great interest for us to become part of the Oxycoal UK project, one of the most advanced projects in Europe alongside with our own Schwarze Pumpe pilot plant," said Göran Lindgren, Vattenfall's CCS project manager.

The oxyfuel process involves burning coal in a mixture of high purity oxygen and recycled gas to produce a gas from which carbon dioxide can be separated. The Oxycoal UK project also involves several industrial sponsors and university partners.

Nuclear deal at crossroads

A nuclear cooperation agreement between the USA and the UAE may yet fall foul of continued fears over Iran's nuclear ambitions, writes Siân Crampsie.

A nuclear deal between the USA and the United Arab Emirates (UAE) could yet be scuppered by the US Congress amid fears that it could fuel nuclear proliferation in the region.

The two countries have signed a so-called '123 Agreement', which is designed to promote the peaceful use of nuclear technology in the UAE as well as nuclear trade with the USA. It is the first such agreement that the USA has signed with a Middle East nation.

For the UAE, the cooperation agreement is a key part of its plans to develop a civilian nuclear energy programme. It also has implications for the development of nuclear energy programmes by other Gulf states.

However the deal – signed under the Bush administration – must first be ratified by the US Congress.

If the agreement comes into force, it will open the way for US firms to trade nuclear technology and services with the UAE as it develops its first nuclear power plants. The country has pledged to forego the development of uranium enrichment and nuclear fuel reprocessing technology, both of which

could lead to the development of nuclear weapons.

The UAE has inked similar cooperation deals with Japan and France, and says that it will work closely with the IAEA to ensure that its nuclear programme remains peaceful.

But in spite of the UAE's assurances and commitments, some in the US remain nervous about the impact of Iran's nuclear programme on the region. It is also unclear whether the new Obama administration will support the agreement.

Iran insists that its nuclear programme is aimed only at the development of civil nuclear power plant. However, its determination to pursue an enrichment programme has raised fears among the US and its allies that it is seeking nuclear weapons.

Objections to the deal by Congress are likely to centre on the possibility of the UAE reneging on its non-proliferation commitments if it emerges that Iran does have, or is developing a nuclear weapon. There are also concerns about the flow of financing and sensitive technologies from the

UAE to Iran.

Several other Gulf nations, including Saudi Arabia, Oman and Kuwait are pursuing civilian nuclear energy programmes alongside the UAE and are also likely to seek the support of the US.

The latest 123 Agreement was championed by the Bush administration as a model for promoting peaceful nuclear energy while guarding against weapons proliferation. "The UAE's expressed commitment not to pursue enrichment and reprocessing capabilities represents a marked contrast to Iran, which has failed to comply with its international obligations and seeks indigenous nuclear capabilities unnecessary for civil nuclear power, but critical for the development of nuclear weapons," reads a statement from the Bush-led administration.

While President Obama is planning a proactive and open foreign policy, in particular with Arab states, he has also pledged "tough and direct" diplomacy with Iran on its nuclear programme and a strengthening of the Nuclear Non-Proliferation Treaty.



Iran, Pakistan plan power cooperation

A recent agreement between Pakistan and Iran will pave the way for the construction of new power generation and transmission capacity in the latter's territory.

The Pakistan government has announced that Iran's private sector will construct a 1000 MW gas fired power plant in eastern Iran with associated transmission lines. Electricity from the new plant will be exported to Pakistan in order to help the country overcome its power shortages.

Plans for the project, which will include a 50 km transmission line in Iran and a 70 km line in Pakistan, came after bilateral talks between Iran's minister of energy Parviz Pattah and Pakistan's minister for water and power Raja Pervez Ashraf.

Iran is also seeking to rapidly increase its generating capacity to meet rapidly rising electricity demand. Local reports indicate that the government is planning the construction of 7000 MW of new capacity by March 2010.

Electricity demand in the country is growing at 6-8 per cent per year.

New legislation introduced into Congress in December may also require president Obama to certify that the UAE has taken measures to cut off the flow of financing and sensitive technologies to Iran before the 123 Agreement is approved.

Like many of its neighbours in the Gulf, the UAE is pursuing the development of nuclear energy to help overcome rapidly rising energy demand and preserve reserves of indigenous fossil fuels. It has already signed up US firms CH2M Hill and Thorium Power to oversee development of its programme and has also established a nuclear regulatory body.

It launched the bidding for construction of its first nuclear plant in mid-2008, with up to nine groups reported to be competing.

French companies Total, Suez and Areva announced in 2008 that they were planning to propose the construction of a nuclear power plant in the UAE. Their proposal includes two 1600 MW EPRs as well as fuel cycle products and services.

The UAE could have its first reactor on-line by 2017.

Abu Dhabi pledges renewable energy target

■ \$6-8 billion renewable industry forecast

■ GE to be Masdar City tenant

A targeted initiative in Abu Dhabi will create a renewable energy market worth up to \$8 billion by 2020 in the emirate, but it may have to compete with Egypt to become the Middle East's leader in the field.

The oil-rich emirate has announced plans to generate seven per cent of its electricity from renewable sources by 2020. Much of this would come from solar power, according to Masdar chief executive Dr. Sultan Al Jaber.

Meanwhile Egypt's minister of electricity and energy Dr. Hassan Younes has said that by 2020, wind energy will account for 20 per cent of the country's energy needs.

Both officials were speaking at the recent World Future Energy Summit in Abu Dhabi, which is aiming to capitalise on the recent growth and momentum of the renewable energy industry through its multi-billion-dollar Masdar initiative.

The government of Abu Dhabi said that it will soon publish a comprehensive energy policy detailing its goal that renewable energy will account for at least seven

per cent of the emirate's total power generating capacity. Masdar estimates that this commitment will create a renewable energy market valued at \$6-8 billion.

The new policy is yet another facet of Abu Dhabi's green energy initiatives, which range from investment in renewable energy technologies and joint ventures to the construction of solar manufacturing plants and the planning of Masdar City, a \$22 billion 'ecopolis' designed to showcase its newfound expertise to the world.

"Masdar will be at the forefront of the research, development and deployment of solutions that will enable governments around the world, including our own, to meet the targets they are setting for the adoption of renewable energy," said Dr. Al Jaber, speaking at the summit.

Much of the seven per cent target will be met through the Masdar initiative, a wide-ranging and comprehensive programme of investment and R&D that aims to drive the economic diversification of

Abu Dhabi. As well as constructing new renewable energy capacity, Masdar aims to make the emirate a major exporter of renewable and energy efficient technologies.

Abu Dhabi expects electricity demand to reach 20 GW by 2020. It does not see the recent global economic downturn as an obstacle to investment in renewables, but rather believes that recent commitments calling for increased deployment of green energy technologies will continue to drive growth.

"Looking at recent local and international commitments, it is our view that the world has reached a tipping point in the acceptance of renewable energy," said Dr. Al Jaber. "We have a long, challenging journey ahead of us, but we are heading in the right direction and the progress we are making is irreversible."

The Masdar City project has so far procured \$300 million of equipment and services. Masdar recently announced that US-based First Solar had been chosen to supply 5 MW of thin film solar panels for one of the

city's power plants.

GE is also lending its support to Masdar, with the two companies announcing at the summit that the US firm will be an anchor partner in Masdar City with development of the world's first Ecomagination Centre. In addition to showcasing GE products, the new 4000 m² centre will support the development of energy efficient products in the region and will raise awareness of energy conservation among the Masdar City community.

The two companies' agreement will also provide a framework for Masdar and GE to collaborate on R&D projects in the clean tech field.

"This is truly a landmark partnership in the development of Masdar City because it will allow us to jointly develop, deploy, scale and market innovative solutions in renewable energy and sustainability," said Dr. Sultan Al Jaber. "We are excited that GE will be an anchor tenant at Masdar City, as we aim to build the world's Silicon Valley for clean technology."

Bosnia loses €3.5 billion investment

Lack of political support and concerns over transparency are threatening a major investment programme in the energy sector of Bosnia and Herzegovina.

The government of the Federation of Bosnia and Herzegovina, one of two governing entities that makes up Bosnia, has called off deals worth around €3.5 billion with strategic partners because they have not been approved by parliament. There are now fears that the region will face power shortages in years to come without the investment.

The proposed package involves the construction of four coal fired power plants with a combined total capacity of 2000 MW and four 200 MW hydropower plants.

The deals have not been approved by parliament because the two biggest Muslim parties could not reach agreement on them. The deals have also been criticized because of alleged lack of transparency in the selection of some of the strategic partners.



Pulling the plug: Bosnia and Herzegovina government calls off multi-billion deals

Siemens exits Areva nuclear partnership

■ New partnerships an option for Siemens

■ France may assess Areva's future

Siân Crampsie

Siemens will now consider forming new partnerships with companies as part of its nuclear power market strategy following its decision to part company with Areva.

The German engineering firm has decided to sell its minority stake in nuclear engineering company Areva NP to the majority shareholder, Areva. It has cited its lack of entrepreneurial influence in the partnership as the main reason behind its decision.

The sale of its 34 per cent in Areva NP will enable Siemens to pursue its own strategy in nuclear power, which it believes will remain "an essential part of the sustainable energy mix". It also leaves a question mark over the future of Areva, which is known to need a cash injection in order to finance investment needs.

A Siemens spokesman told *TEIT* that the creation of partnerships with other companies could strengthen its position in the market. "We want to continue our commitment to the nuclear market and are carefully evaluating the options available," said the spokesman. "We

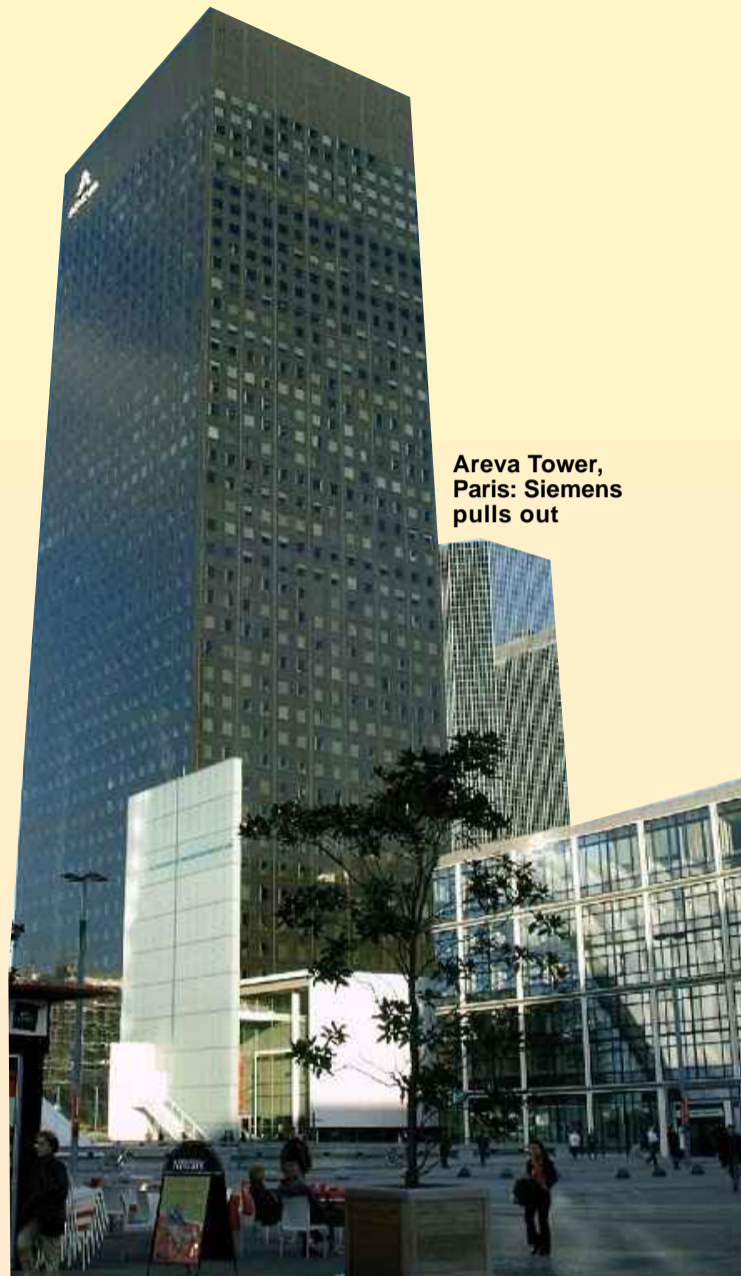
could engage more strongly in the market with other partners."

The sale of shares is being made under the terms of a put agreement between the two companies, and will be complete within three years. Siemens said that the presence of a call option in the agreement – under which Areva could buy Siemens out of the partnership – added to its decision to sell.

"In business, Siemens seeks a leadership role rather than just a financial stake. We had good cooperation with Areva but were not satisfied with the minority role," said the spokesman. "Areva's call option also meant that we had no security in the partnership and so we decided to terminate the shareholders agreement at the earliest possible opportunity."

Siemens' exit from Areva NP could allow the French government to reach a decision on the future of Areva. Possible options include a merger with Alstom, partial privatization or a capital increase with French or foreign partners.

The transaction is subject to the approval of antitrust authorities. The



Areva Tower, Paris: Siemens pulls out

two companies are negotiating the valuation of Siemens' shares and some media reports indicate that the sale could be wrapped up within months, rather than years.

Siemens said that up to €1000 billion could be invested globally in the construction of around 400 new nuclear

power plants by 2030. The main drivers behind the market are increased urbanization and climate change, according to the German firm, which is hoping to maintain its working relationship with Areva by continuing to supply the conventional island and I&C systems to its nuclear projects.

Vattenfall restructures for green growth

Vattenfall is to spearhead the development of its low carbon strategy through the creation of a new business group.

The Swedish utility is to add a third, pan-European business group to its two current business groups, covering wind, nuclear and engineering in all countries. The move will enable it to meet its aggressive climate and growth ambitions, according to CEO, Lars G. Josefsson.

The new business group will also be responsible for European business development, with a focus on biomass and the efficient use of energy. Trading operations will also be placed in the new sector.

Vattenfall, which previously operated two, geographically-based business groups, has also said that the sale of its German high voltage grid assets is on-track in spite of the financial crisis. The company is expecting to receive definitive offers for Vattenfall Europe Transmission GmbH, which operates one of Germany's four grid control areas, in February.

It is aiming to make a decision on the sale by the end of the second quarter of 2009. *Reuters* recently reported that Vattenfall's German grid had attracted offers of more than €1 billion.

Vattenfall announced in 2008 that it has set a target of being climate neutral by 2050.

Statkraft celebrates swap

Statkraft has become Europe's largest generator of renewable energy through the completion of an asset swap with Germany's E.On.

The Norwegian energy firm has completed the swap of its 44.6 per cent stake in E.On Sverige and a Swedish hydropower plant in return for 40 hydropower plants and five district heating plants in Sweden, two gas-fired power plants and 11 hydropower plants in Germany, one hydropower plant in the UK, and a 4.17 per cent shareholding in E.On.

The deal has boosted Statkraft's generating capacity by 2500 MW and has also made the company one of the four largest electricity producers in Sweden. It said that the addition of flexible power generation capacity to its portfolio will strengthen its position as a significant player in northern Europe, and will also provide a solid platform for future growth in these core markets.



Essent backs RWE deal

■ RWE to be leading Benelux player
■ Deal requires shareholder approval

RWE is to fulfil its ambition to own assets in Holland through the acquisition of Dutch utility Essent for €9.3 billion.

The German utility said that the deal will strengthen its position in Europe's liberalized energy market and that it will use Essent as a springboard for growth in the Netherlands and Belgium. The two companies are a good fit for each other due to their



Grossmann: sees a perfect fit

geographical proximity and overall strategies, according to RWE CEO Juergen Grossmann.

The deal gives Essent the backing of a large and financially strong partner and secures its future following its failed attempt to merge with Dutch rival Nuon. Essent will become RWE's operating company in the Netherlands and Belgium, said RWE.

"We are determined to foster and strengthen the Essent brand," said Grossmann. "Essent... will continue as an independent entity responsible for the execution of the Group's strategy in [the Netherlands and Belgium]."

The Netherlands' liberalized market has been a target for RWE, which plans to make investments in the country in all parts of the value chain. RWE already supplies gas and electricity to 340 000 households and more than 50 000 businesses in the country through its subsidiary, RWE Energy Nederland.

The company is also planning the construction of a 1560 MW, carbon capture-ready biomass and coal-fired power plant in Eemshaven. Essent's experience with co-firing will be of substantial benefit to this project, which is due to be commissioned in 2012.

The deal is the largest ever made by RWE and one of the largest since the onset of the credit crisis.

Other areas of mutual interest include the renewable energy sector, where RWE wants to increase its operating capacity to 4500 MW by 2012. Essent operates 6200 MW of generating capacity in Holland, including gas, renewable, coal and nuclear plants.

Both companies' efforts in the area of carbon capture and storage are also complementary, while RWE will also gain Essent's leading energy trading operation.

"Essent's track record in the renewables and trading business, its customer service activities including branding and its expertise in the gas sector make it a perfect match for our company," said Grossmann. "Jointly, we will strengthen our position as one

of the leading energy companies in Europe."

He continued: "Combined with power station modernization efforts in Europe, the development of its renewables business, and research into carbon capture and storage technology, RWE will reduce its average CO₂ intensity through this acquisition, which is good news for climate protection."

Essent's CO₂ intensity per kWh is estimated to be about 40 per cent below that of RWE's.

Through this transaction, RWE will gain 5.3 million customers, of which around 250 000 are based in Belgium and 1 million in Germany. Across Europe, RWE will supply electricity to over 22.5 million and gas to approximately 12.5 million customers, and have an installed capacity of around 51 GW.

The €9.3 billion enterprise value includes over €1 billion of debt. RWE said the deal will be funded by a new €9 billion credit facility and existing cash balances, and is expected to generate synergies of €100 million/year by 2014.

Tenders, Bids & Contracts

Americas

Ormat secures Costa Rica contract

Costa Rica's Banco Centroamericano de Integración Económica (BCIE) has awarded Ormat Technologies a \$65 million contract to supply a new geothermal power plant in Las Pailas geothermal field.

Under the contract, Ormat will supply the equipment and supervise installation, start-up and testing of the new plant, which is expected to start operations in 2010. The plant will be operated by ICE, Costa Rica's national power and telecoms company.

Costa Rica currently operates a total of 162.5 MW of geothermal capacity from the large Miravalles geothermal field.

Emerson to automate Dry Fork

Basin Electric Power Cooperative has awarded Emerson Process Management a contract to supply the automation equipment for a new coal-fired power plant being constructed in the state of Wyoming, USA.

The 385 MW Dry Fork power plant will be equipped with Emerson's PlantWeb digital automation solution, which includes a plant control system, predictive maintenance software and combustion optimization technology.

Jirau orders Alstom equipment

The developers of the 3.3 GW Jirau hydropower project in Brazil have placed an order with an Alstom-led consortium for the supply of major equipment for the plant.

Under a €300 million contract, the consortium will design, manufacture and supply a total of 28 bulb-type generating units, each with a capacity of 75 MW, as well as 28 speed governors, monitoring systems, busbars and surge/neutral devices. It will also supervise installation and commissioning.

The consortium includes Alstom Hydro, Voith Siemens and Andritz VA Tech. Alstom will undertake approximately 48 per cent of the contract.

Jirau is located on the Madeira River and is part of the Brazilian government's plans to boost generating capacity through major infrastructure projects. Its developer is a consortium comprising GDF Suez, Chesf, Eletrosul and Camargo Correa.

In 2008 Alstom won a contract to supply equipment to the 3.1 GW Santo Antonio hydropower plant, which is also located on the Madeira River.

Asia Pacific

Suzlon boosts Gujarat wind capacity

Suzlon Energy has signed a memorandum of understanding with the government of Gujarat to develop up to 1500 MW of wind capacity in the Kutch-Saurashtra region of the state.

Under the agreement, Suzlon Gujarat Wind Park will act as developer of the projects, which will help to boost renewable energy capacity in line with the state government's policies.

India-based Suzlon is the world's fifth-largest wind turbine manufacturer.

Companies bid for GSPC's wind project

As many as 10 companies have bid for Gujarat State Petroleum Corporation's (GSPC) proposed 200 MW wind power project. Bidders include Suzlon, Danish company Vestas, French companies – Theolia,

Globalwind, Abellon – and German company Enarcon. The winning bidder will commission and develop the project and operate it for 10 years.

B&W to refurbish Suralaya

Marubeni Corporation has awarded Babcock & Wilcox Power Generation Group (B&WPGG) a contract to refurbish two boilers at the Suralaya steam power plant on Java Island, Indonesia.

Under the contract B&WPGG will redesign and supply superheater and reheater surface, low NO_x combustion systems, pulverizer performance enhancements and other boiler upgrade equipment at Units 1 and 2 of the plant. Marubeni is the prime contractor for the rehabilitation project.

The 3400 MW Suralaya plant is owned by Indonesia's government-run utility PLN. The coal-fired plant is being overhauled to extend its life and improve its efficiency.

Units 1 and 2 at Suralaya are equipped with radiant tower-type boilers and have a capacity of 400 MW each. They were originally supplied by B&W in the early 1980s.

The upgrades will increase the capacity of each unit to 440 MW.

BHEL orders Siemens components

Siemens Energy has received a contract from its Indian licensee Bharat Heavy Electricals Ltd. (BHEL) to supply components for an advanced coal-fired power plant being constructed in the state of Bihar, India.

Siemens' scope of supply includes one steam turbine, components for a second turbine, one water-cooled generator as well as the electrical and I&C equipment for the turbine-generators. The equipment will be installed at the Barh II power plant located 75 km southwest of Patna.

BHEL is constructing the Barh II plant for Indian state-owned utility National Thermal Power Corporation. The plant will have an installed capacity of 2 x 660 MW.

The contract is the first that Siemens has received via BHEL for turbines for supercritical steam conditions in India. The turbines will operate at a temperature of 565°C and a pressure of over 240 bar.

Suzlon wins Sri Lanka order

Senok Wind Power has placed an order with India's Suzlon Energy for the supply of wind turbines for a 10 MW project in Sri Lanka.

The project, located in the Kalpitiya region of Sri Lanka, will consist of eight of Suzlon's S64 1.25 MW wind turbines. Supply of the equipment will start in fiscal 2009, with project completion slated for 2010.

Europe

UK appoints advisors for offshore tenders

The UK's energy regulator has appointed a consortium led by Ernst & Young to run tenders worth billions of pounds for linking offshore wind farms to the mainland grid.

Ofgem said that the Ernst & Young consortium would act as financial advisors in the tenders, which are a key part of the UK's plans to increase renewable generating capacity.

The UK is expecting a boom in the construction of offshore wind farms, all of which will need to be connected to the national grid. Ofgem said it will ensure that the networks are delivered on time and at a fair cost to consumers.

Torresol embarks on CSP project

Torresol Energy, a joint venture between Masdar of the UAE and Spain's Sener, is to start construction of its first solar thermal power plant after securing a €71 million financing deal.

The company is to build the 17 MWe plant in Fuentes de Andalucía, and expects it to start operating in 2011. The plant will be the world's first commercial-scale solar thermal plant to use central tower and salt receiver technology.

"The construction of Gemasolar represents a gigantic step forwards in Torresol's technological development," said Torresol Chairman Enrique Sendagorta "This strategic alliance brings the best of Abu Dhabi and Spain together to help drive forward the large scale deployment of renewable energy projects. The response of the financial markets is further proof that the industry will continue to advance."

Torresol said that the project will pave the way for construction of further projects using this type of technology, which is a better alternative to cylindrical-parabolic type commercial solar thermal plants that are currently being developed.

The new plant will be built by a consortium of Sener and AMSA, a subsidiary of ACSCobra.

Gamesa wins contract for Sicilian wind project

Spanish wind turbine manufacturer Gamesa has signed a contract with Alerion Parco Eolico Licodia Eubea for the supply of 26 wind turbines for installation at a project in Sicily, Italy.

Under the contract, Gamesa will supply 26 of its G5X 850 kW turbines as well as undertake their installation and start-up at the Licodia Eubea wind farm located in the Sicilian region of Catania. The agreement also includes an operation and maintenance contract.

ABB upgrades Forsmark

Swiss engineering group ABB is to expand the output and lifespan of Sweden's Forsmark nuclear power plant under a \$45 million contract with Vattenfall.

ABB will provide the electrical package needed to increase gross output at Forsmark Unit 3 from 1200 MW to 1360 MW. The project is due to be completed by 2014, and involves electrical system studies, design, engineering, installation and commissioning.

ABB's Sweden-based centre of competence for nuclear power plants will execute the projects. The contract also includes supply of three generator step-up transformers, two auxiliary transformers and an excitation transformer.

International

Atomstroyexport revises Turkey bid

Russian nuclear energy firm Atomstroyexport has revised its bid to construct Turkey's first nuclear power plant after its initial bid offered to sell power at three times the current rate.

Details of the new bid have not been disclosed, but Atomstroyexport's initial bid put the price of electricity from the proposed plant at \$0.2116/kWh, according to Turkish power utility Tetas. Average wholesale power prices in Turkey are currently around \$0.079/kWh.

Atomstroyexport was awarded the contract to construct the nuclear power plant after no other bidders took part in the international tender for the project. It will develop the plant with Turkish partner Park Teknik and Russia's Inter Rao.

Atomstroyexport is to build the nuclear power station on Turkey's southern, Mediterranean coast. It will have a capacity of 3000 - 5000 MW.

Romania places major wind order

Wind energy project developer Monsson Alma SRL has placed an order with Vestas Wind Systems for 67 wind turbine units for use at two wind parks in Romania.

Under the contract, Vestas will deliver, install and commission the V90-3.0 MW turbines at two projects in the Constanta region. It also includes a long-term service agreement.

The order is the first large contract that Vestas has received for Romania. The turbines will be installed at the SC Ewind SRL and SC Wind Power Park SRL projects.

Albania gives go-ahead for hydro

Two European firms are to build three new hydropower plants on the river Devol after the Albanian government gave its approval to the scheme.

Austria's EVN and Norway's Statkraft are to invest €950 million in the hydro scheme, which will have a total capacity of 340 MW and which will help Albania overcome power shortages.

Alstom to boost Turkey's hydro capacity

An Alstom Hydro-led consortium has signed a contract with Enerjisa Enerji Uretim AS to supply equipment for three new hydropower plants being constructed in southern Turkey.

Under a contract valued at around €100 million, Alstom and its partner GES will design, supply, install and supervise commissioning of the turbines, generators and balance of plant equipment for the plants, which are located on the Seyhan and Goksu rivers in Adana province. When completed, the plants will have a total combined capacity of 417 MW.

The three new hydro plants – Kavsakbendi, Köprü and Menge – will begin commercial operation between 2010 and 2011. Alstom's share of the contract is worth over €70 million.

Siemens wins major Iraq contract

The Iraqi Ministry of Electricity has placed an order with Siemens Energy for the supply of key components to help the country expand its power system. The order is one of the largest ever booked in the Middle East by the German firm.

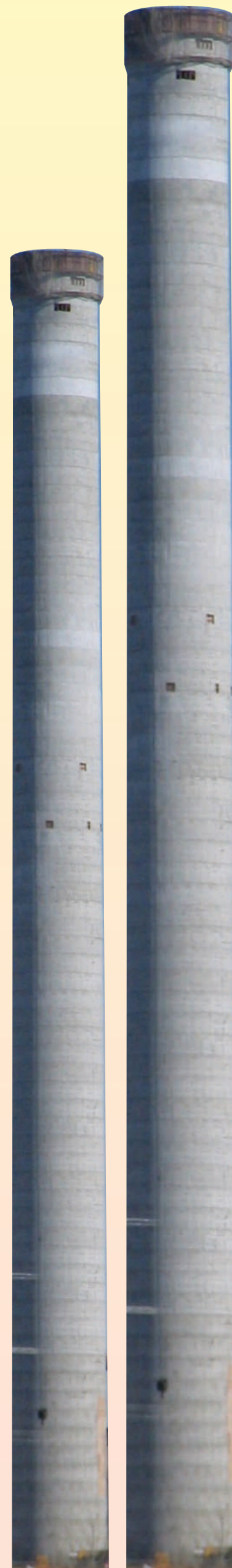
Siemens is to supply a total of 16 gas turbines with a total capacity of 3150 MW, as well as high voltage switchgear, transformers, electrical balance of plant and control systems. The equipment will be installed at new power plants located at Rumaila-Basra, Taza-Kirkuk, Dibis-Kirkuk, Baiji and Sadder-Baghdad.

The plants will be able to operate on either natural gas or oil, and will go on-line in 2010 and 2011.

SEC signs substation deal

The Saudi Electricity Company (SEC) has signed a SR444 million (\$118 million) deal with Alfanar Construction for construction of a new 380 kV substation.

The new substation will distribute electricity to new facilities in the west of Makkah, which lies 70 km to the east of Jeddah. It will be linked to several other substations, including the Aziziah South and Shoaibah substations, as well as to Makkah's 380 kV overhead transmission lines. The project is scheduled to be completed within 29 months.



All in a day's work

Philippe Joubert, Alstom's executive vice president and president of the Power Systems Sector, is one who can mix 'work' with pleasure. He explains to *TEI Times* why he feels he has never worked in his life.

Being in the office late on a Saturday afternoon while making time for what some might consider to be 'work' is not a chore for Philippe Joubert. "Speaking to you is not work," he assures. Some executives might prefer to spend their Saturday afternoon out on the greens but not Mr Joubert. "I don't play golf," he laughs.

If Joubert is not a golfer then what does he enjoy doing outside of work? "Obviously I have a lot of other interests in life but to me the question is not really relevant. In my life, I've never really had the impression that I've been working. I enjoy what I am doing."

Joubert does not believe in the idea of clocking off at six on Friday to become a husband and father at the weekend, before returning to work as a CEO on Monday morning. He explains: "I just enjoy life and all its different aspects – family, friends and work. At this level, you cannot have a clear separation between what is work and what is not."

Yet Joubert does enjoy other things outside Alstom. With his hectic travel schedule, staying at home is one of them – taking time to listen to music and indulge in literature. "I like playing sports, listening to jazz, classical and Brazilian music." As a Brazilian this is not surprising but did he mean the sounds of the classic samba beats of a Rio carnival? "If you ask this question, you have certainly never been. This is not 'music'; this is a lot of fun!" he joked. It was perhaps best not to pursue this line of conversation any further.

Clearly Joubert is a man that enjoys life and the value of human relationships. "I am really interested in achieving tough targets with a group of high-level people. This is why Alstom is such an interesting environment. It is always challenging. But what is most important, is that we can really change the lives of people. When you put electricity or mass transit systems into a city, you change the day-to-day life of people."

Joubert lives according to three values: faith, discipline and joy. He says: "Firstly, you must believe in what you do. In an organization of a certain size or even as an individual, discipline is the basis for quality. You need rules in order to progress. And, you need to enjoy. There is no need to be sad to be serious."

Joubert learned the joy of life when arriving in Brazil as a 20-year old. The experience changed his outlook. "I arrived in Rio from Europe in the late 70s. And although the people had many problems, they were still happy."

This influenced his career path. He says: "When I have a choice to make, I always choose the more challenging path. General de Gaulle once said: 'Always choose the difficult path; it is the least crowded.' This means that in a business, you go where it is difficult. This is where you can really make a difference. As a business, it's what differentiates you."

Joubert's first step into the world of business was as a credit analyst in Brazilian bank, BFB, part of Credit Lyonnaise. He then went to work on Wall Street in the US for two years, where he was promoted to commercial vice-president of Credit Lyonnais USA. But his love for Brazil remained strong. He seized the opportunity to return to the country in 1986 when he joined GEC Alsthom Mecanica Pesada as finance director. Since this time he



Joubert lives according to three values: faith, discipline and joy

has been with Alstom. However, he returned to Paris in 2000 to manage the company's transmission and distribution business, which was later sold in 2003.

His biggest challenge came in 2004 when he stepped into his current position as head of Alstom Power. He recalls: "At the time, we were in pretty bad shape. Nobody wanted the job; we were losing €1 billion a year at the time. It was a big, global challenge but we managed to turn it around."

According to Joubert, turning around Alstom's power business meant making three key changes: moving the sales force closer to its customers;

biggest increase in the installed base being in Asia. Asia will represent 60 per cent of the world market in the next 10 years, and Asia means coal."

Alstom has developed what it calls its 'clean power' strategy to address the issue. This three-point strategy will see the company work on its portfolio, increase plant efficiency and develop carbon capture and storage (CCS).

At the regional level, Asia will bring other challenges. "In addition to answering the needs of the region, we also have to figure out how to compete against newcomers from China and India – companies like Dongfang and

difficult years. We have to defend our cash and reduce spending. But we will not cut R&D. We will also retain our core programme of deployment in Asia and the US."

Looking to the longer term future, Joubert sees Alstom's broad technology portfolio as the main differentiator between it and its competitors. "We have the widest offering and want to maintain this position. We are a technology company and want to continue to develop and own technologies. The two main things are to focus on efficiency and the environment. Since coal is a must, efficiency and CCS will be important. After this, wind and nuclear are very interesting."

With the need for grid optimization he also sees storage, and in particular pumped storage, as important for the future. "We will also be working in the area of smart grids in the coming months and years," he adds.

Naturally optimistic, Joubert sees a bright future. "Unlike four years ago, we are now in a very good situation. We have zero debts, strong shareholders and are in two growing markets – transport and power. As a financially sound company with good technology, we are well positioned to take advantage of the situation, even if it will be more difficult in the coming two years."

Joubert says that his targets for the next 24 months are to execute the order backlog correctly, create cash and exceed market expectations in terms of profits and order volumes. "We also want to improve our presence and position in Asia and be a leader in the number one issue – tackling CO₂. We are increasing our R&D so we can be a leader in the CO₂ capture business. And finally, since we have 25 per cent of the world's generating capacity, we will focus on the installed base so our plants can be more efficient."

Some would say that Joubert has plenty on his plate, but no doubt he sees it as all in a day's work.

When I have a choice to make, I always choose the more challenging path. In business, this means you go where it's difficult.

strengthening its project management by allocating more resources and training; and moving the cost-base from Europe closer to Asia. "Essentially we moved the company to where the market is. This year will be the first time we will have more people in Asia than Europe."

Investment in research and development has also been increased and the company's organizational structure has been simplified. Not forgetting the people, Joubert adds: "We really worked on the people, improving their strengths and motivation. It was also a case of choosing the right people. We had to employ managers who were more focussed on results than processes."

Although the major challenges within the company are now in the past, the challenges of the industry still remain. "The number one challenge," says Joubert, "is the environment." He believes that fossil fuels will have to be used for many years to come and the industry therefore has to ensure that fossil fuel-based power generation is clean.

Asia, according to Joubert, will therefore provide challenges. "Electricity use will increase, with the

Harbin."

The financial crisis will also bring its share of worries. "In addition to Asia, Russia was a good market before the crisis but now I think Russia will be set back by 2-3 years."

Joubert recognises two or three main points with regards to the crisis, firstly noting that there will be a fall or slowdown in new orders. "The market will definitely see a global drop. Russia and central Asia are very slow now and the US has slowed down." But for Alstom, this does not present an immediate problem. "We have an order backlog, which will see us through one or two difficult years without too many consequences," he says.

The second point he notes is the financing of the entire sector and whether customers are able to finance what they have bought. "At the moment we have seen no danger in the backlog. We are in a long-term business and customers will not just stop programmes of several hundreds of megawatts. There is a risk on financing but most customers have secured the financing for these programmes," explains Joubert.

"The third point," stresses Joubert, "is to prepare for these one or two

Oil

Crude prices struggle as agencies forecast low demand

■ IEA report says oil demand will fall to 85.3 million b/d in 2009

■ Several months until OPEC's actions impact crude prices

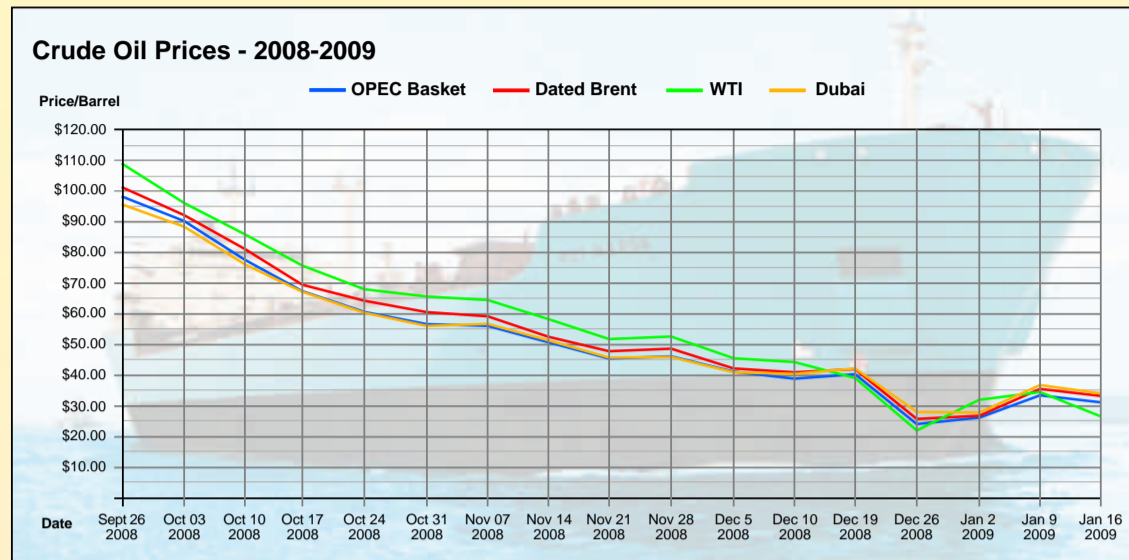
By David Gregory

Crude oil prices struggled throughout the first half of January to work their way back toward \$50/b, but fundamentals show that supplies are plentiful – a sign that production cuts implemented by OPEC at the start of the year have yet to make an impression on a volatile market.

At the same time, the main forecasters – the International Energy Agency (IEA), the Energy Information Administration (EIA) of the US Department of Energy, and OPEC – have all forecasted lower

demand for 2009.

OPEC crude oil production is estimated to average around 26 million b/d during January as the groups members move towards meeting their new year production target of 24.845 million b/d. OPEC leader Saudi Arabia said during January that it intends to reduce its output by a further 300 000 b/d below its new 8.065 million b/d target, and OPEC said that compliance with the cut among members has been good. However, officials from the group said they would consider cuts during the next OPEC meeting in March, if



the situation warrants.

According to analysts, it may take several months before OPEC's actions begin to impact crude prices and demand is unlikely to return until later this year. The price of West Texas Intermediate (WTI) crude registered a low of \$33/b on Nymex in mid-December and rose to the mid-\$40/b range by the middle of January. But OPEC members are looking for prices to stabilize in the \$70-80/b range where oil revenues would be sufficient not to have adverse effects on the domestic economies of some members. Other members, whose economies are already under strain, need prices nearer \$100/b but this is now considered unrealistic for the next few years as the global economy struggles.

Several banks and institutions tracking the market forecast a price average for 2009 of around \$50/b. Removing oil from the market will be OPEC's main goal during the year with a view towards bringing the

market back into balance but this will depend on OPEC's ability to actually implement the production cuts it intends. Several OPEC members have in the past not adhered to their output quotas, and questions about that factor remain.

Meanwhile, crude oil inventories continue to build in the US, the world's largest crude consumer. In mid-January, the EIA reported that crude oil imports into the US were averaging around 9.9 million b/d, and that over the previous four-week period, imports were down by 92 000 b/d compared to a year ago.

Many analyst say demand for crude oil is not expected to happen until the market sees a return of the US consumer, and that will entirely depend on economic conditions within the US.

The EIA, in its recently released *Short-Term Energy Outlook* said total petroleum product consumption in the US fell by 1.2 million b/d in 2008, compared to the 2007 average

and added that "the declining global economic downturn points to declining oil consumption in 2009." It forecast world demand for this year at 85.10 million b/d.

The Paris-based IEA said in its latest *Oil Market Report* that oil demand would fall to 85.3 million b/d in 2009 and cited the worsening economic outlook in both the OECD and non-OECD countries, especially Asia and Latin America. The fall in demand growth in China, which has been a key player in driving demand, is seen as significant and reflects the decline in demand for its manufactured goods, particularly in the US.

OPEC's latest report is a little more optimistic, forecasting demand for 2009 slightly higher at 85.66 million b/d.

Even if the global economy begins to pick up by the end of year, demand for crude oil is expected to take some time longer to return to the levels seen in 2007 and 2008.

Gas

Russia-Ukraine dispute leaves EU questioning supply reliability

The Russia-Ukraine gas dispute that prevented Russian gas from reaching 20 European countries came to an end late last month after a series of protracted negotiations between Moscow and Kiev. But the ramifications of the crisis may leave a lasting impression on the EU.

By Mark Goetz

Having lost access to Russian gas for more than two weeks, with some eastern European Union members losing a huge percentage of their energy supplies during a period of severe winter weather, the EU is faced with the challenge of developing a single energy policy and implementing it.

European Commission President, Jose Manuel Barroso, who expressed disappointment in the manner in which both Moscow and Kiev conducted themselves during the acrimonious negotiations, has called for the EU to act now to avoid a repetition of the crisis. One step he identified was to invest €5 billion in connecting the energy grids among EU members.

Barroso told the *EU Observer*: "I was very disappointed by the way the leadership in those countries negotiates. It is the first time I saw agreements systematically not respected. Gas coming from Russia is not secure. Gas

coming through Ukraine is not secure. This is an objective fact."

The question now is: what does the EU do about it?

Russia and Ukraine, on 19 January, signed two contracts designed to keep Russian gas flowing to Ukraine and the EU for the next decade. The deal was negotiated by Russian gas monopoly Gazprom and Ukrainian state-owned Naftogaz Ukrainy and overseen by the Prime Ministers of both countries, Vladimir Putin and Yulia Tymoshenko.

The gas sales agreement calls for Ukraine to pay \$360 per 1000 m³ for the first quarter of 2009, 20 per cent off the European price on which Russia had insisted and twice the \$179.50 m³ per 1000 m³ Kiev paid last year. As gas prices come down in line with crude oil prices, Ukraine is expected to pay an average of \$250 per 1000 m³ over the course of 2009. European customers are expected to average \$280 per 1000 m³ this year. As of 2010, Ukraine is to pay the same price as

European customers.

Under a gas transit agreement, Russia will continue to pay at the 2008 rate of \$1.70 per 1000 m³ per 100 km. This is to increase to \$2.50 per 1000 m³ per 100 km in 2010. During the course of 2009, Russia expects to ship around 120 billion m³ to Europe via Ukraine (about 25 per cent of European gas imports) and deliver to Ukraine some 40 billion m³ of natural gas, most of which is of Turkmenistan origin.

Still unresolved between Moscow and Kiev is the question concerning \$650 million that Russia claims is owed to Swiss-based gas trader RosUkrEnerg (RUE), 50 per cent of which is owned by Gazprom. Another apparent result of the agreement is that RUE will no longer be used as an intermediary in Russia-Ukraine gas deals. Ms. Tymoshenko has for some time insisted that the use of RUE is unnecessary and that it exploits Ukraine.

The EU's dependence on Russian gas supplies has concerned Brussels for

some time. A similar three-day mini-crisis between Russia and Ukraine in January 2006 was a warning of a possible future crisis. However, the EU has done little to address its growing reliance on Russian gas.

Russia, meanwhile, has moved quickly to secure its position in the EU market by dealing with EU members separately. It has signed bilateral agreements with several EU states, including Austria, Hungary, Bulgaria and Greece. In an effort to bypass Poland, it has entered an agreement with Germany for the construction of the Nord Stream gas pipeline, which will ship natural gas through an underwater pipeline in the Baltic Sea.

With Italy, Russia plans to construct the South Stream pipeline, a 900 km gas pipeline across the Black Sea from southern Russia to Bulgaria, from where it would travel through the Balkans and Eastern Europe to Austria via one branch and to northern Italy through another. Italy's Eni and Gazprom have

already collaborated on the Blue Stream gas pipeline, which crosses the Black Sea from Russia to Turkey.

Russia's military invasion of Georgia last August prompted the EU to call for more investment in what is being called the 'southern' or 'fourth' corridor – the other three being Russia, Norway and North Africa.

In late January, a gathering of the six partners for the Nabucco Gas Pipeline project and other interested parties was to be held in Budapest to discuss moving the gas pipeline forward, including a discussion of an intergovernmental agreement. Nabucco is proposed to carry 31 billion m³/year of gas from Caspian and Middle Eastern sources across Turkey and the Balkans into Central Europe.

If the Nabucco project could secure supplies from Azerbaijan, Egypt, Iraq, Iran, and especially Turkmenistan, the project would be feasible and might come into operation in 2013 but numerous obstacles remain.

Investing in China's renewables and clean-tech sector during the financial crisis

As global economies slow down and commodity and energy prices consequently collapse, 2009 paints a dismal picture. However, macro policy for renewable energy and clean-tech globally, specifically in China, continues to be favourable.

Dr K.K. Chan

The renewable energy and clean-tech sector in China over the next couple of years will be driven by several broad macro themes. First amongst these are the global financial crisis, its impact on China and the domestic financial markets and the policy responses of both the PRC government domestically and the governments of the world's major economies.

Going into 2009, the financial crisis and its impact on the global banking system shows little sign of abating. Governments worldwide continue to step-up financial intervention and shoring up of the banking system at the same time as announcing major fiscal stimulus packages to cushion the economic slowdown. Credit markets continue to be extremely stressed and may take some time to thaw. As global economies slow down, perhaps contracting as a whole in 2009, commodity and energy prices consequently collapse because of demand destruction. Global equity markets continue to search for a bottom as investors become more realistic in terms of corporate earnings. Clearly, we have a pretty dismal picture going into 2009.

However, macro policy for renewable energy and clean-tech globally and specifically in China continues to be favourable. Many analysts and commentators question if collapsing energy prices will slow investment in the sector and even change policy direction. It is believed that policy direction not only remains intact but in fact, the new Obama administration in the US may well give the sector a major boost globally.

Climate change and environmental issues are fundamental and long-term – it would be a major setback for any government to step back from these initiatives now. Recently, the World Economic Forum suggested clean energy investments need to more than triple to US\$515 billion a year to stop planet-warming emissions.

The private equity (PE) sector as a whole continues to develop and be liberalized in China. As part of its continuing financial markets development, China continues to liberalize and incentivise the sector to play an important part in the financial market and to a certain extent the entire economy. Domestic players are springing up daily and many provincial governments offer significant tax and other incentives for the sector across China including Beijing, Shanghai, Tianjin, Suzhou and many others. Still in its infancy in China, much of the expertise in the PE sector is imported. The most important element in the development of the PE sector going forward is the creation and development of a wide and deep base of domestic corporate and institutional limited partnerships (LPs) in China.

What does this all mean for PE in the renewable energy and clean-tech sector in China? The first consequence of the global financial crisis is clearly lack of credit and financing as banks pull back. Whilst not as evident and severe in China as it is in the US, UK and Europe, the impact is still being felt by companies and projects everywhere. The banking system is global and there is nowhere to hide.



K. K. Chan: private equity players with good track records and the ability to procure bank financing appear to be staring at a 'once-in-a-long-while' investment opportunity

Marginal projects will find it difficult to procure financing and developers without balance sheets will find it tough-going everywhere.

As a consequence of this and of falling asset prices globally, valuations in the PE sector (not just in renewable energy and clean-tech but across the board) are collapsing rapidly. Buyers with financial capability also have the ability to wait as sellers queue up to sell and seek financing. Well-funded PE players with good track records and the ability to procure bank financing appear to be staring at a 'once-in-a-long-while' investment

governments globally as they lower interest rates to almost zero, pump liquidity and capital into the banking system and engage in major fiscal stimulus programmes worldwide. In China, the renewable energy and clean-tech and environmental issues continue to be front and centre despite the global crisis and collapsing energy prices. Our view is that macro policy in the PRC will continue to be extremely favourable for the sector as a whole. As valuations collapse, we see the next couple of years as presenting enormous opportunities to invest in this sector. Technological progress and macro

Well-funded private equity players with in-depth specialist knowledge of the sector will be able to separate the wheat from the chaff

opportunity. The ability to invest in RMB (the local currency) will become more and more important as the domestic LP sector grows. The PE sector will have a critical role to play in providing financing to the best prospects, ensuring that development continues in the sector.

Much of the renewable energy and clean-tech sector in China is driven by domestic players. As global players slow down their expansion as a result of the financial crisis, domestic players grab higher market share. Infrastructure plays by major state-owned-entities (SOEs) continue apace. Small domestic entrepreneurs face a severe financing crunch. Well-funded PE players with in depth specialist knowledge of the sector will be able to separate the wheat from the chaff. Nevertheless, the sector continues to face increasing competition as general PE players gravitate towards the renewable energy and clean-tech sector as investment opportunities abate in almost every other sector. However, these players face a very steep learning curve in order to be able to sieve out the real investment opportunities.

So where does that leave us? Whilst this is a once-in-a-lifetime financial crisis, it has also provoked a once-in-a-lifetime policy response from

policy will continue to be the value drivers in this market segment as it has in recent years. Infrastructure demand will be driven by the major fiscal stimulus being put in place by the Chinese Government and there will be more to come. Basic infrastructure demand such as water infrastructure and waste treatment continues to be a priority throughout China, particularly in second- and third-tier cities. The next couple of years will provide better investment opportunities yet and may well be less risky as valuations fall.

Climate Change Capital, as one of the leading players globally in the low-carbon economy, aims to play its part in developing and investing in the renewable energy and clean-tech sector in China. We aim to lead the PE sector forward by bringing innovative products and services to the market.

Dr Ka Keung Chan is Managing Director and Head of Investments Greater China, Climate Change Capital. Prior to CCC, Dr Chan was Managing Director of Renewable Energy for CLP Holdings, where he was responsible for the development and operation of renewable energy projects in Asia Pacific and led all CLP's project financing, corporate restructuring and acquisitions in China.

Still a role for synchronous condensers

Rotating synchronous condensers can provide an easy and relatively cheap way to provide power factor correction, voltage support or spinning reserve. Some argue that it should be a feature that is much more widely used in Europe.

Junior Isles.

In Europe and the UK especially, rotating synchronous condensers were often used for power factor correction and voltage support until around 1980 when their popularity declined. Yet some argue that this proven technology should play a much bigger role in Europe's power systems.

Nicholas Bellamy, Applications manager at SSS Gears Ltd explained: "Whilst they are still used worldwide in markets like the US, Australia and the Middle East, the fall in popularity in the UK and Europe came when grids were separated from the generating companies. When the grids were nationalised, the utility had an overall interest in both the grid and the generating unit. They had a vested interest in the design of the turbo-machine and all of its operating modes. Now they are separated, it's easier for the grid operators to use static solutions."

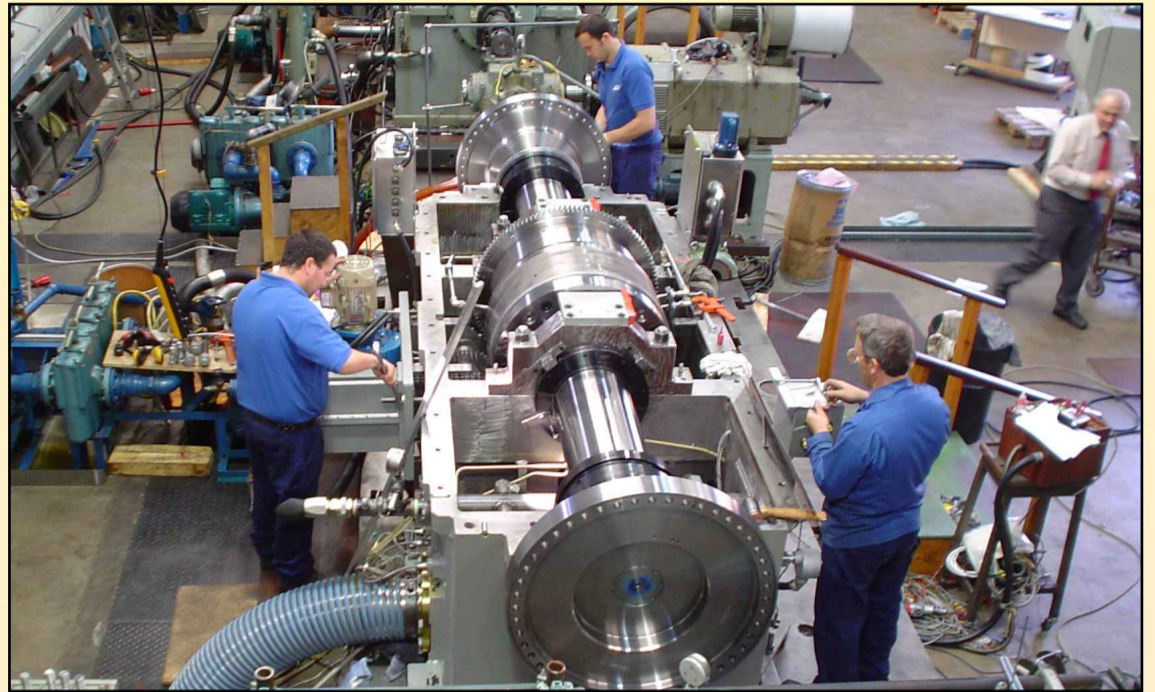
Today, power factor correction is typically achieved through fixed capacitors, switched capacitors and static VAR compensators. Fixed capacitors are primarily used to correct a relatively constant, low power factor. Switched capacitors are used if there are changes in the plant power factor correction requirements. However, this system adds the capacitors in steps, which can develop over-voltages. In addition to the abrupt system changes, switched capacitors cause voltage transients on the electrical system during these switching steps.

Static VAR compensation is a newer technology, where a power rectifier bridge directs VARs from a capacitor bank into the network, or dissipates the reactive power across a set of inductors as necessary to maintain a pre-set system power factor. The system has a fast response and is infinitely variable but is expensive.

Synchronous condensers can provide a low cost alternative for many applications, including power factor correction and voltage support. Furthermore, a nearby generating unit may have already installed a synchronous generator capable of correcting the local VAR requirement. "So why buy additional static systems when an infinitely adjustable solution already exists?" asked Bellamy.

A rotating synchronous condenser normally comprises a synchronous self-shifting (SSS) clutch installed between a turbo-machine and generator to essentially create a synchronous motor that is not attached to any driven equipment. It is started and connected to the grid and operates at full leading power factor and feeds reactive power (VARs) into the network as required to support system voltage or maintain power factor at a specified level. The installation and operation are identical to electric motors.

Certainly the demand for power



A rotating synchronous condenser comprises a synchronous self-shifting (SSS) clutch installed between a turbo-machine and generator

support has not disappeared. Including a synchronous condenser can provide a source of revenue in certain markets. "There are cases in the UK where generating companies have SSS clutches that can spin the generator, without burning fuel, to correct power factor and make good returns. The Frame 9E gas turbine at Indian Queens is a good example. Further capability exists at Coolkeeragh in Northern Ireland and Cowes on the Isle of Wight" said Bellamy.

In the US, where there is no single

operational flexibility. Bellamy said: "They can do more than just meet megawatt demands. They can provide an alternative source of income when the plant would be otherwise redundant. It's beneficial for both the end user and the grid."

One other possible reason for the fall in popularity of synchronous condensers, is the reduction in the number of turbine packagers over the last two decades. In the 70s and 80s, companies like John Brown Engineering, Nuovo Pignone and Fiat

expensive. But when you consider all the conditions and benefits and disadvantages, the clutch generator solution is the most efficient solution overall."

The opportunity for gencos to provide spinning reserve as a service in the US is also another driver.

In this application, payback periods can be short. Bellamy cited an example in the US where a synchronous condenser installed on a peaking unit for spinning reserve had a payback time of just 10 months. Great River Energy (GRE), a generation and transmission company headquartered in Minnesota was required by the Independent System Operator (ISO) to keep 50 MW of its total 2500 MW capacity on standby for 18 hours a day. GRE installed SSS clutches between two Pratt & Whitney turbines and the associated generator. Here, the clutches disconnect the turbines from the generator. Electricity keeps the generator spinning and synchronized to the grid while the turbines remain idle. This drastically reduces the unit's spinning reserve power consumption and thus allows GRE to keep the units running at all times. When the ISO calls for power, the turbines are fired up and take over driving the generator.

Whether the technology sees a revival in the UK depends on whether the contracts between the National grid company and the gencos are revised. The short-term contracts (typically 3-6 months) that National Grid has with the gencos for reactive power, makes it difficult for gencos to see a business case for installing synchronous condensers. If longer-term contracts could be issued, the situation could change. According to de Arcangelis, Ofgem is now in discussions with National Grid to see if multi-year contracts can be issued.

The case for the more widespread use of synchronous condensers is strong. They allow gencos to utilise an asset that would be kept for standby and without any production of emissions since there is no fuel consumption.

Bellamy concluded: "It's true that there is no such thing as a free lunch. But synchronous condensing is a relatively cheap, good quality lunch."

The inclusion of a synchronous condenser in a non-base load plant gives the operator much greater operational flexibility

grid, the grid operators offer greater incentives to the gencos. The state of New Jersey was a recent example where the grid owner requested that the bidders for a new peaking power project included a synchronous condenser to provide grid support. Conectiv Energy is building a new power plant located in Cumberland, New Jersey scheduled for completion later this year.

The project will produce a nominal 100 MW of electricity using a GE LMS100 gas turbine with synchronous compensating/spinning reserve capability. Cumberland is located in the RPM region labelled "East Mid-Atlantic Area Council" (East MAAC), a region that has seen the addition of wind power.

The inclusion of a synchronous condenser in a non-base load plant gives the operator much greater

were all involved in turbine packaging. Since packagers do not manufacture the turbine, some argue they were focused on offering customised solutions and therefore promoted the synchronous condensing feature to add value relative to OEMs. Some argue that although today's gas turbine manufacturers can provide the solution, they may not have the same interest in actively promoting it to the same extent as the packagers.

Although not suitable for every situation, synchronous condensers could be a useful feature of power plants built for peaking, emergency or standby operation.

According to Gianluca de Arcangelis director, Transmission Technology (Europe) Ltd, a number of plant owners' consultants have commented that every gas turbine package should feature synchronous condensers. "Their thinking is that anything can happen during the 30 year life of a gas turbine. The synchronous condenser can provide a cushion for the investment. If the GT is not operating for any reason, maybe because of market conditions or high fuel price, you can still utilize it to produce MVARs. Nevertheless, owner consultants do not actively promote the feature."

Bellamy says that when considering the cost of all the available technologies, adding a SSS clutch is a "middle of the road solution" in terms of capital cost. "It's not the cheapest but it is by no means the most

Comparison of voltage control equipment

Equipment type	Response speed	Voltage support ability	Costs (\$)	
			Capital (per kVAR)	Operating
Synchronous condenser	Fast	Excellent	30-35	High
Capacitor	Slow	Poor	8-10	Very low
Static Var compensator	Fast	Poor	45-50	Moderate
Static compensator	Fast	Fair	50-55	Moderate

Source: FERC Staff report



Junior Isles

Keep on dreaming

Unlike many, I am honest enough to publicly admit that I have been known to have the odd nap in a conference. Not intentionally. But the combination of international travel, lunch and a dark auditorium can take its toll on the best of us.

The secret is to be awake when it counts, or at least have a recording device to fill in for the bouts of unconsciousness. At last month's *World Future Energy Summit* in Abu Dhabi there was plenty to keep the clutches of slumber at bay, most of the time.

The fact that the conference was held in Abu Dhabi was interesting from two aspects – firstly, the United Arab Emirates is in the list of top 10 countries that will be affected by climate change and second, it shows vision from a region which is dominated by oil and gas but is willing to show leadership in the battle against climate change.

Dr Sultan Ahmed Al Jaber, CEO of Masdar, Abu Dhabi Future Energy Company, opened the conference by stressing that “renewable energy makes absolute sense even in these difficult times” and announced that the UAE would produce at least 7 per cent of its electricity generation from renewables by 2020. “The world has reached a tipping point in the acceptance of renewable energy. It is a long challenging road but we are ready to be at the forefront in providing renewable solutions.”

The line-up of speakers following Dr Sultan included some serious heavyweights from government and industry around the world. Speeches were therefore riddled with sound-bites and colourful rhetoric. With talk of “plotting a peaceful revolution that will provide us with sustainable solutions” Prince Willem-Alexander of the Netherlands, Prince of Orange continued in a similar vein.

The general theme was that we could not delay action on combating climate change regardless of today's, or future, economic conditions. Climate change should be seen as an opportunity that has to be seized without delay.

In recognition of this, the international community recently

announced the formation of the International Renewable Energy Agency (IRENA). Unlike the International Energy Agency (IEA), IRENA will be totally dedicated to the promotion of renewables. Just two per cent of the IEA's budget – around \$0.5 billion a year – is devoted to renewables. IRENA's budget is expected to be 50 times that of the IEA.

In 2008 the market volume for green technologies was worth €1400 billion and will more than double to €3100 billion in 2020. Mathias Machnig, Germany's state secretary said that in 2020, the sector will be worth €500 billion in Germany. “In Germany, renewables will be bigger than the car

public awareness of the importance of environmental economics had increased but the global financial crisis had left its mark on project finance. “Liquidity is getting scarce and the pool of potential financing partners is changing fast.” However, he added that funding for “promising” projects would continue to be available.” Frank Mastiaux, CEO of E.On Climate & Renewables also noted that renewables would be affected by the crisis – as would other technologies – but maintained that “the fundamentals of the business are strong and it is growing in importance”.

To tackle climate change, Steve Fludder, vice president of Ecoimagination, GE's sustainable

opportunity to handle the near-term threat of the financial crisis with the longer-term challenge of combating climate change.

So far, what has been done in the US with regards to green policies has been “woefully short” according to Dr Dan Arvizu, director of the US DOE's National Renewable Energy Laboratory. He said: “Now there is a sense of urgency with the new government, which has promised to invest \$150 billion in clean energy over the next 10 years. This is a 10-fold increase and will see the installed capacity of renewables reach 50 GW in the next three years.

“Obama will build a new economy based on renewables, and a new ‘green team’ will lead us. The opportunity to make change is here. Now it's a matter of will and we must seize the moment.”

The UK's former prime minister and a master of colourful rhetoric, had the honour of making the final closing keynote speech. He congratulated Masdar for sending out a “clarion call” and said that the summit comes at “remarkable time” with the historical inauguration of US president Barack Obama – “an American of African origin, a Christian with a Muslim heritage. Something the world had doubted it would ever see”.

Speaking of “hope, expectation and possibilities”, Blair went on to say that the UN faces a “Herculean task in reaching an agreement on climate change at the end of the year...”

At this point, the events of the week began to weigh heavy on the eyelids. Early in the conference, Takamori Yoshikawa, Japan's senior vice minister of Economy, Trade and Industry said: “Ensuring a stable and constant supply of energy has been a challenge since our ancestors built the first fire in a cave.” He went on to say that sources that do not emit CO₂ are “dream energy sources”.

We all have dreams – from Barack Obama to Martin Luther King to Takamori Yoshikawa. As the rhetoric continued, I drifted off to images of a self-sustaining fire in my own personal cave – and hoped my recording device would fill in the gaps.

The UN faces a Herculean task in reaching an agreement on climate change at the end of the year

industry. This shows the possibilities for investment. We are standing at the beginning of the third industrial revolution. That is what is required to meet the joint goals of meeting energy demands and reducing CO₂ production.”

But revolutions are never easy to pull off and many issues will have to be addressed in order to ensure that this one is a success. A key issue is the economics and finance surrounding climate change. Lord Stern, a professor of economics and former adviser to the UK government on the economics of climate change and development, said: “The need to cut emissions by half by 2050 will cost \$2000 billion. As an upper estimate, that will be about 2 per cent of GDP but in my view it could be less than that. But first, we have to have a price for greenhouse gases. Not having a price for GHG emissions is the biggest market failure the world has ever seen.”

The real discussions took place on the sidelines of the conference in the press briefings, where key elements of the economics of carbon reduction were addressed. Johannes Schmidt, CEO Equity and Project Finance at Siemens Financial Services noted that

business strategy, said that we must find a way of decoupling carbon from economic growth.

This is perhaps easier said than done on a global scale. The absence of China and India from the conference was notable. Henry Derwent, CEO of the International Emissions Trading Association, pointed out that while the likes of China and India will be the most affected by climate change, their first priority is feeding their people. “Their position is: ‘show us the benefits to the economy’. We have to find a way of making it in their economic interest. The CDM is a good way of turning the price of carbon into technology and financial benefits in these countries.”

Pointing out the merits of market-based mechanisms, Derwent noted that unless there is a price signal such as an oil shock, people generally do not react. Commenting on Europe he said: “I hope people do not assume the emissions trading scheme is not working and throw it out too soon. Governments should not pick [technology] winners.”

Although challenged by the financial crisis, many see green technology as being the long-term future. The US government now sees it as an

GLOBAL
WARMING
WORLD
CONFERENCE

