



Six New High-Performance Solar Plants for France

Siemens has been contracted to build a photovoltaic park by France's Eco Delta Développement (EDD), a developer for renewable energies, for its subsidiary Delta Solar, which is overseeing construction of the park. Siemens will deliver six solar power plants with a combined capacity of 30 MW peak (MWp) in Les Mées, in the province Alpes-de-Haute-Provence. The plants are scheduled to go online in stages starting in the summer of 2011 and will supply eco-friendly power to around 12,000 French households. The project will increase France's current 350-MWp installed solar plant

capacity to as much as 5,400 MWp by 2020.

This is Siemens' first large-scale photovoltaic order from France. The plants will be built on an area extending across 66 hectares on the Puimichel Plateau, which has excellent insolation. As turnkey contractor, Siemens will be responsible for all aspects of construction of the six photovoltaic plants, including civil works, supports, inverters, transformers, grid connection, control system, and structures for the approximately 111,000 solar panels. The order also includes an operation and maintenance (O&M) agreement.

Photo: Siemens

Power Distribution Systems for Shell Worldwide

Siemens has signed a five-year global framework agreement with Shell to be the sole main contractor for integrated power distribution systems used in the company's projects worldwide, including technology for refinery, gas and chemical as well as exploration projects. "This global framework agreement marks a completely new approach within Shell for the provision of our main power distribution scope, and I strongly support and advocate the agreement," says Wim de Wilt, Shell's Global Discipline Head for Electrical.

The agreement covers gas-insulated high-voltage switchgear and gas- or air-insulated medium-voltage switchgear, oil-filled and dry transformers, as well as control systems for energy management and services such as project management, engineering and site supervision.

"We're proud that Shell has opted for our first-class, field-proven technology," says Ralf Christian, CEO of the Power Distribution Division of Siemens Energy. "Since the projects in the oil and gas industry are challenging and expensive, reliability and efficiency are the key factors for success."

German Fast-Cycling Power Plant Sets New Standards

About two years after Siemens began construction of the 847-MW Irsching 5 combined-cycle power plant near Ingolstadt, Germany, the turnkey project was completed and successfully put into operation in March 2010.

“With its high efficiency level and the associated extremely low emissions, along with its short start-up times, this plant sets new standards for this performance class,” says Michael Suess, CEO of the Fossil Power Generation Division of Siemens Energy.

Irsching 5 is a good example of a fast-cycling (FACY) power plant, designed to provide almost instant backup for a decrease in wind energy when needed. Such highly flexible power plants allow energy providers to respond quickly to fluctuations in demand for electricity.

Irsching 5 is equipped with two SGT5-4000F gas turbines and one SST5-



The new Irsching 5 combined-cycle power plant near Ingolstadt, Germany: a quick gust of backup power when the wind doesn't blow.

5000 steam turbine, three hydrogen-cooled generators and electrical systems, as well as the innovative fast-cycling features integrated with the SPPA-T3000 I&C system from Siemens. With this advanced technology, the plant achieves an efficiency level of more than 59.5 percent, minimizing its gas consumption and subsequent CO₂ emissions. Its state-of-the-art

burner technology also keeps nitrogen oxide emissions extremely low (<15 ppm). Irsching 5 is designed for 250 starts annually and reaches its full output in only 30 to 40 minutes. FACY power plants are designed to support the long-term trend of introducing more renewable power, saving time and money and protecting the environment.

Strategic Cooperation on Renewables in Russia

Siemens has signed a partnership agreement for cooperation in the renewable energy sector with the two Russian companies Rostechnologii and RusHydro. Together, they will establish the joint venture “Wind Energy,” in which Siemens will retain the majority stake. The planned joint venture is to set up facilities to produce wind turbine components for the Russian market and will also be responsible for sales and service of Siemens wind

turbines in Russia and other countries. “This strategic partnership will put us out front on the highly promising market for renewable energy in Russia,” states René Umlauf, CEO of the Renewable Energy Division of Siemens. Russia is planning to have a wind power capacity of approximately 5,000 MW installed by 2020. “In the coming five years, we intend to install wind turbines with a total capacity of 250 to 500 MW per year.”

With this joint venture in Russia, Siemens is pushing determinedly ahead with the regionalization of the manufacturing network on important markets. In the current year alone, Siemens will bring three further factories for production of wind turbine components online in the USA and in China. Other production facilities are planned for India and Great Britain.

Portugal Pioneers National Network for Electromobility

This past spring, the Portuguese government signed a Memorandum of Understanding (MoU) to formalize Siemens' participation in its nationwide Program for Electric Mobility (MOBI.E). The goal is to position the country as a pioneer in adopting new models of sustainable mobility.

“We are one of the first countries to have a truly integrated national grid for charging electrical vehicles – not just outlets in certain cities,” says João Dias, National Coordinator of Portugal's Office for Electric Mobility. “It is the technological model that distinguishes us from other countries. Electromobility is a great opportunity for us to reduce emissions and increase energy efficiency by bringing renewable energy sources to the transportation sector.”

The signing ceremony for the MoU took place at the head office of Siemens Portugal and was chaired by Secretary of State for Energy and Innovation Carlos Zorrinho, with the CEO of Siemens Portugal, Carlos Melo Ribeiro, as well as João Dias from the Portuguese government and other representatives of entities associated with the MOBI.E program in attendance. Portugal is aiming for nationwide implementation of the charging system, with 320 charging stations by the end of 2010 and reaching 1,350 charging stations by 2011, 1,300 of which will be for normal charging and 50 for fast charging. A MOBICar will be introduced at the end of this year.

Photos: Siemens

Signing of the Memorandum of Understanding by key members of the Portuguese government and Siemens.



US President Barack Obama talks with workers at the Siemens rotor blade factory in Fort Madison, Iowa, USA.

President Obama Visits Siemens Rotor Blade Factory in the USA

For the first time in the company's 163-year history, a US president has visited a Siemens factory. During a tour of Midwestern states this past spring, President Barack Obama made a stop at the Siemens Wind Turbine Blade Manufacturing operation in Fort Madison, Iowa, USA. The plant, which was opened in mid-2007 and has recently been expanded, has more than 600 employees and is the largest employer in Fort Madison.

As Peter Löscher, President and CEO of Siemens, explained to President Obama, Siemens has been represented in America for more than 100 years. With its workforce of 64,000 people, Siemens is one of the largest international employers in the USA. Said Löscher, “In the last ten years alone, we have invested around 20 billion euros in the country. In our plant in Fort Madison, we are promoting the green technology revolution.” President Obama himself highlighted the Fort Madison plant as a successful example of how clean technology can help revive a local economy.



Cavern Power Plant Connected by GIL

A gas-insulated extra-high-voltage line (GIL) has been successfully installed in the underground Limberg II pumped-storage power plant in Kaprun, Austria. This technology was chosen for reasons of safety as well as economy. As the gas-insulated lines pose no fire risk, no second shaft for ventilation was required, which reduced construction costs. After completion of the final tests, the three-phase GIL system and the connected gas-insulated switchgear were commissioned to link the cavern power plant of VERBUND-Austrian Hydro Power AG with a 380-kV overhead line at an altitude of about 1,600 meters. The project is also a showcase for applications outside of Europe, such as in China's massive hydropower stations.

A view of the GIL shaft of Limberg II, Kaprun, Austria. The shaft gradient is 42 degrees.



Life Support for Transformers

Transformers are crucial components for guaranteeing a reliable supply of power to consumers around the clock. They represent a huge investment for utilities. They are of course designed to last a long time, but since they are in use day and night for decades, wear and tear inevitably takes its toll, and replacement costs are high. Luckily, replacement is not the only option: Siemens has come up with a new service concept for transformers that not only extends their life, but also reduces their impact on the

environment, minimizes planned and unplanned downtime, and preserves the value of transformers in the most effective way, lowering operating costs. Transformer Lifecycle Management (TLM) from Siemens offers seven service modules through representatives worldwide and also includes monitoring of sensitive components, the early detection of any emerging problems, and life extension products. TLM can be applied to transformers of any age, power level, brand or model, ensuring availability and optimizing performance, right up to the very end of their service life. For more information, visit www.siemens.com/energy/tlm.

Transformers of all kinds can be retrofitted and their life cycles extended, increasing their profitability while reducing the environmental footprint.

DEWA Wins Dubai Government Excellence Award with Siemens Gas Turbine Efficiency Solution

For many years, Siemens has been a key player in the United Arab Emirates' massive growth, with an extensive presence in its energy sector. Case in point: The Dubai Electricity and Water Authority (DEWA) in the United Arab Emirates recently received the "Best Technical Project" award from the Dubai Government Excellence Program. DEWA earned the award for the cutting-edge gas turbine technology – specifically, a Siemens solution called "wet compression" – used at its power station in Jebel Ali, the UAE's largest port, located 35 kilometers southwest of the city of Dubai.

Wet compression in the Jebel Ali station's SGT5-2000E (V94.2) gas turbines increases its output by an impressive 18–20 MW per turbine. The increased efficiency is achieved by injecting water into the compressor, which then evaporates, increasing the air mass flow to the compressor. This additionally boosts exhaust thermal energy by approximately 10 MW, and results in additional steam production of up to 6 tons per hour. Besides the benefit of increased output, emissions are reduced, thereby cutting pollution substantially.

Recognition for Siemens Collaboration with University of Lincoln in the UK

Siemens was highly commended at the recent IMechE MX10 Awards in London, UK, for manufacturing excellence in the category "Best Collaboration between Education and Business." Siemens Industrial Turbomachinery in Lincoln, in the east of England, was recognized for its pioneering work in establishing a new school of engineering at the University of Lincoln. The industrial gas turbine manufacturing company specializes in designing, manufacturing and servicing world-class turbines for applications within the oil and gas industries, and has been working with the University of Lincoln on developing the new school for the last two years. The Lincoln business also operates an advanced apprenticeship program and an accredited graduate development program.

Record-Breaking H-Class Gas Turbine Debuts in Florida

After a nearly ten-year development phase, Siemens has begun marketing its new generation of extremely energy-efficient H-Class gas turbines. (In turbine technology, the letter "H" stands for the highest efficiency class available.) The first commercial customer for the H-Class turbines in the USA is a leading utility, Florida Power & Light. By 2013, six of the turbines will be in operation in the state of Florida.

"We look forward to modernizing our Riviera Beach and Cape Canaveral Next Generation Clean Energy Centers in Florida using Siemens' advanced, highly efficient gas turbine because it will extend the benefits of fuel savings and lower emissions to our customers," said FP&L Executive Vice President Tony Rodriguez. "Modernizing the plants with this technology will deliver customer benefits estimated to be be-

tween 850 and 950 million dollars over the life of the projects, while keeping current operating costs in line." Compared to solutions currently installed in combined-cycle power plants, the H-Class gas turbine consumes one-third less natural gas and emits one-third less CO₂ (75 percent below the emissions of coal-fired plants), while generating the same amount of power. CO₂ emissions are 75 percent below those of coal-fired power plants. In addition, it can go from standby to start-up in 5 minutes and reaches full power operation in just 15 minutes. The turbine's ability to switch from full power to half power or vice versa in a matter of minutes enables it to optimally compensate for natural fluctuations in rapidly increasing grid feed-ins from wind and solar energy sources.



Barry Nicholls, Senior VP, Power Systems Sales, Siemens Energy, Inc., and Bill Yeager, VP, Engineering & Construction, FP&L, sign the contract for six SGT6-8000H advanced gas turbine generator packages for the modernization of FP&L's Riviera Beach and Cape Canaveral Next Generation Clean Energy Centers in Florida.

Photos: Siemens



From left to right: Siemens CEO Peter Löscher, German Chancellor Angela Merkel, Sheik Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, and Sheik Diab bin Zayed Al Nahyan, Chairman of Abu Dhabi Water & Electricity Authority (ADWEA), at the contract signing for the Abu Dhabi power grid expansion.

Siemens Wins Contract for Expansion of Abu Dhabi Power Grid

Siemens has received an order worth approximately 150 million euros in May 2010 from the Abu Dhabi Transmission & Dispatch Company (Transco), Abu Dhabi's national electricity grid operator, to be part of a project that will greatly expand the emirate's power distribution network. Siemens and its partner Electromechanical LLC will supply five turnkey transformer substations for Abu Dhabi, including switchgear for the project. The substations, which will supply power to the CO₂-free Masdar City and Abu Dhabi's new airport among other venues, are scheduled to be completed by 2013.

"We're proud that Transco has again opted for field-proven, first-class equipment for the expansion of Abu Dhabi's electricity grid," says Siemens President and CEO Peter Löscher.

CO₂ Capture Readiness Validated for Siemens Steam Power Plant Concept

Siemens recently had its turbine house and power plant concept of steam power plants successfully validated by the TÜV NORD Group, one of the largest technical service providers in Germany, which also operates in over 70 countries in Europe, Asia, Africa, and the Americas. TÜV NORD has developed a catalog of requirements for new steam power plants based on the EU Directive 2009/31/EC. It defines exactly which criteria must be met in order for a new steam power plant project legitimately to be designated as "carbon capture ready" to meet future climate protection requirements. The successful audit applies to the ultra-supercritical coal-fired facilities in the 800- to 900-MW class. Customers will have three major benefits from this pre-engineered and validated concept: 1. It increases the planning security for customers with regard to the approval process for the construction of steam power plants with a CO₂ capture facility. 2. The concept can be realized with minimum upfront investment. 3. It does not compromise the plant's efficiency prior to a possible carbon capture retrofit.



Joint Venture for Huge UK Offshore Wind Farm

Construction will begin in 2011 on the Gwynt y Môr (Welsh for "wind in the sea") wind power plant, with completion expected by 2014. Total investment in the project, which is a joint venture between Siemens, RWE Innogy, and SWM (Munich Municipal Utility), amounts to more than 2 billion euros, including a grid connection to the coast.

The huge wind farm, to be located about 18 kilometers off the coast of Wales in Liverpool Bay, will include a total of 160 Siemens SWT-3.6-107 wind turbines over an area of 79 square kilometers. It will have an installed capacity of 576 MW. Siemens will supply, install, and maintain the turbines and will be responsible for connecting the wind turbines to the

grid, which entails the delivery of two turnkey offshore transformer platforms.

Says RWE Innogy CFO Hans Bünting: "RWE is very open to partnerships for implementing projects in the area of renewables. We are proud that for Gwynt y Môr, we have succeeded in finding strong partners in SWM and Siemens, with whom we have had good business relationships for many years."

The wind farm is expected to generate electricity as early as 2013, from which time it is forecast to generate around 1,950 GWh of electricity annually, enough to supply around 400,000 British households. At the same time, it will reduce CO₂ emissions by 1.7 million tons per year.

Siemens Increases Share in Joint Venture with Shanghai Electric

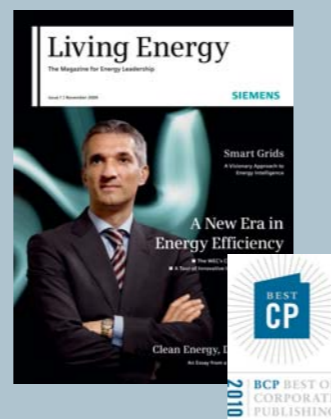
Siemens Energy has announced it will increase its share in Shanghai Electric Power Generation Equipment Co., Ltd. (SEPG) from 33.7 percent to 40 percent. The share increase in the joint venture with Shanghai Electric Group has already been approved by the authorities. The joint venture provides power generation products and solutions for coal-fired and gas-fired power plants as well as for the conventional part of nuclear power plants. Siemens and Shanghai Electric also have set up a new service joint venture for the rapidly growing Chinese steam and gas turbine power plant market.

"This is another important step for Siemens in the huge Chinese energy market," says Wolfgang Dehen, CEO of Siemens' Energy Sector. "Power demand in the fast-growing Chinese economy is expected to rise on average by 4 percent annually over the next two decades. Together with Shanghai Electric, we are committed to promoting sustainable development in China's power industry." Siemens has been one of the first companies to put a major focus on energy efficiency and is committed to applying its extensive power technologies to help Chinese customers improve their energy performance while lowering their environmental impact. By 2030, power generation in China will more than double from 3,400 TWh in 2008 to 8,200 TWh. Coal-fired plants will keep their pole position, but according to Siemens' projections, their share will drop from three-quarters to two-thirds. Renewables-based power generation and nuclear power will be the main winners of the change in the energy mix.

Living Energy Wins BCP Award

The first two issues of *Living Energy* have met with a positive feedback from readers. "I don't normally read many manufacturers' magazines, but I think *Living Energy* is a good one," said a Belgian energy CEO. The editors were delighted to see the journal described as "interesting, well-written and very useful," as a utility manager from Oman put it. The director of an American power company thinks it is an "excellent magazine." The world of

professional publishing agrees: The first issue of *Living Energy* was awarded the prestigious silver medal at the 2010 Best of Corporate Publishing (BCP) contest, the leading competition for corporate communication in Europe, at the end of July at a symposium hosted by the Forum Corporate Publishing, a transnational trade association. It was a remarkable success for a new magazine competing as a first-time entry.



Photos: Siemens