

Giant solar plant for Arizona



ABENGOA SOLAR

Abengoa Solar has signed a contract with Arizona Public Service Company (APS) to build, own and operate what would be the largest solar power plant in the world if operating today.

The plant, called the Solana Generating Station and scheduled to go into operation by 2011, is located 70 miles southwest of Phoenix, near Gila Bend, Arizona, USA. It will sell the electricity

produced to APS over the next 30 years for a total revenue of around \$4 billion.

The plant will have a total capacity of 280 MW, enough to power 70,000 homes. It will use proprietary concentrating solar power (CSP) trough technology developed by Abengoa Solar, and will cover a surface of around 1,900 acres.

The solar trough technology uses trackers with high-precision parabolic mirrors that follow the Sun's path and concentrate its energy, heating a fluid to over 371 °C and using that heat to turn steam turbines. The solar plant will also include a thermal-energy storage system that enables electricity to be produced as required, even after the Sun has set.

Abengoa Solar is now operating the world's first commercial CSP solar tower plant in Spain, and is building three more in the country with a total capacity of 120 MW.

Ersol and Schott to develop thin-film technology

German companies Ersol Thin Film and Schott Solar have agreed to jointly develop so-called micromorphous technology for thin-film solar cells. The two companies will be combining their resources in the area of research and development, and will exchange staff between the two sites. In contrast to the amorphous version, a micromorphous thin-film module has a double-layer structure consisting of an amorphous and a microcrystalline silicon film. The arrangement results in improved exploitation of sunlight, because the two silicon layers convert the whole light spectrum into power. "We believe that this so-called micromorphous tandem cell can achieve up to a 50% increase in the module efficiency, and therefore also in the module yield in comparison with amorphous technology," explains Christian Koitzsch, managing director of technology for Ersol Thin Film.

Q-Cells becomes 'world's largest manufacturer of solar cells'

German company Q-Cells claims it is now the world's largest manufacturer of solar cells, after reporting a 54% increase in production in 2007 to 389.2 MW. In 2007, sales rose by 59% to €858.9 million (\$1,300 million) compared with €539.5 million (\$830 million) for the previous year. Earnings before interest

and taxes grew by 52% to €197.0 million (\$300 million), compared with €129.4 million in 2006 (\$200 million). For fiscal year 2008 as a whole, Q-Cells continues to expect total sales of approximately €1.2 billion (\$1.85 billion).

To allow rapid growth to continue, Q-Cells has decided on further expansion in its production capacity. In its core business, the production of monocrystalline and polycrystalline solar cells based on silicon wafers, Q-Cells has completed the ramp-up of the first two phases of expansion of production line 'V' and is now starting work on the construction of production line 'VI' in Bitterfeld-Wolfen, Germany. The first phase of expansion with a production capacity of 130 MW is to start production in the fourth quarter of 2008. The company has also decided to construct its seventh production line in Malaysia.

Sustainable cell manufacture

A team of scientists from eight universities across the UK is embarking on one of the UK's largest ever research projects into photovoltaic solar energy.

Led by Durham University, the £6.3 million (\$12.5 million) PV-21 programme will focus on making thin-film light-absorbing cells for solar panels from sustainable and affordable materials. The eight universities will work together with nine industrial partners towards a "medium- to long-term goal"

of making solar energy more competitive and sustainable. Principal investigator Ken Durose highlights the price of indium (\$660 per kilogram) as a particular cost barrier. "At present you would need tens of tonnes of very rare and expensive materials for large-scale production of solar cells to produce sizeable amounts of power," he says. "Some of the materials currently used may not be sustainable in 20 years time, which is why we have to conduct research into alternative materials that are cheaper to buy and more sustainable."

Thin-films to eat into silicon's dominance



BCC RESEARCH

The global market for photovoltaics is expected to be worth more than \$16 billion by the end of 2008, according to a market report by BCC Research. This is expected to increase to over \$32.2 billion by 2013, a compound annual growth rate of 14.9%.

According to the report, the energy produced by photovoltaic cells and modules from global shipments reached 2,875.1 MW in 2007. This is projected to grow by 28.6% to reach 3,697.3 MW by the end of 2008, and with a compound annual growth rate of 30% it will reach 13,724.4 MW by 2013.

Silicon technology, which accounted for about 89% of the market in 2007, will continue to dominate in the near future, with shipments of multicrystalline silicon cells growing by 285% by 2013. Recent improvements in this traditional technology and its reliability will keep it in the forefront, and BCC predicts that silicon will still represent 79% of the market in 2013.

That said, thin films, which only have 10% of the market at present, will grow by 45% to account for 19% of the market in 2013. Improvements in efficiencies and the use of these materials on flexible substrates will account for their rapid growth.

New technologies, such as nanostructured thin films and silicon and dye-sensitized solar cells, accounted for just under 0.5% of the market in 2007, but will grow by 34% to reach an energy production of 19.2 MW in 2008, and then exhibit 50% annual growth to achieve 145.7 MW by 2013.