

## **Feed-in Tariff Propels Solar Thermal Power in Spain – analysis from Solar-Energy-Market-Research**

*The Spanish market has shown that solar energy especially CSP is heavily dependent on a favorable regulatory environment in terms of feed-in tariffs to compete with conventional power plants. Latest analysis from Solar-Energy-Market-Research.com*

**Dec. 15, 2008** - [PRLog](#) -- CSP (Concentrating Solar Power) or Solar Thermal plants use mirrors to focus the sun rays on pipes carrying heat-absorbing fluid, thereby generating steam which then drives a turbine to generate electricity. What sets this technology apart from Solar PV and wind technology is the storage of energy. Excess energy is stored in insulated tanks filled with molten salt and this heat can be tapped during the night to generate steam. Generation of clean, renewable source of energy in deserts, added with the storage option has made CSP an attractive option for power producers looking to generate electricity on a large scale.

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The United States was the first country to focus on CSP technology with the operation of SEGS I in 1984 in California's Mojave Desert. A total of 9 plants were built in the late 1980s and early 1990s with a total installed capacity of 354 MW. But as oil prices decreased, the Government withdrew tax credits and other subsidies causing the CSP industry to come to a standstill. However, CSP experienced a surge in 2007, after being overshadowed by solar PV technology for a long period due to fresh economic incentives. The United States and Spain are currently the forerunners in the development of Solar Thermal technology. 2007 was crucial for CSP because 64 MW Solar One plant came online in the United States and the PS 10 plant came online in Spain with a capacity of 11 MW. In the year 2007, worldwide installed capacity reached 430 MW with the United States having an installed capacity of 419 MW. It is expected that by 2012, worldwide installed CSP capacity will reach 7,201 MW with the United States and Spain accounting for 92% of this figure. There are around 60 CSP plants under construction or on the drawing board worldwide, with a major chunk of the projects being announced in Spain.

### **CSP Industry in Spain Poised for Expansion**

Spain is the only country after the United States where currently solar thermal plants are in operation. Providing electricity to about 6,000 houses, the 11 MW PS10 CSP plant has been built by the Spanish renewable company, Abengoa. This is the first commercial-scale CSP plant to start operation outside the United States since the 1980s. The plant which is based on the power tower technology has been in operation since 2007 and is located in the province of Seville which receives up to 300 days of sunshine. The Andasol 1 plant which has a capacity of 50 MW is located in the Andalusian deserts was connected to the grid in 2008. The plant is based on the highly popular and proven parabolic trough technology. With a large number of CSP plants under construction or planned, Spain is expected to have nearly 1098 MW of installed capacity by 2010 and 1148 MW by 2012. Around 88% of the CSP plants in Spain are based on the parabolic trough technology.

### **Feed-In Tariff: Growth Driver for CSP Industry in Spain**

Regulatory and economic incentives are the main drivers of growth of this industry in Spain; primarily the attractive Feed-in Tariff (FIT) that Spain has in place for Solar Thermal. Spain was the first country to establish FIT for CSP in 2002 when it introduced the Royal Decree 841. The Decree set up a rate of € 0.12

(\$ 0.125) per kWhr of electricity produced from CSP plants between 100 kW – 50 MW of capacity. But this was not sufficient to cover the risks and the huge capital costs associated with solar thermal projects, thus making them less attractive for the power producers. The rate was subsequently revised to € 0.18 (\$ 0.245) per kWhr by the amended Royal Decree 436. Along with the yearly adaptation to average electricity price increases, the tariff rate was guaranteed for a period of 25 years to the producers of solar thermal power. Apart from this the Royal Decree 436 added a premium to the tariff rate increasing it to € 0.21 (\$ 0.286) per kWhr for the first 200 MW installed solar thermal power in Spain. This FIT rate exhilarated the CSP industry and more than twelve 50 MW CSP projects have been announced which needs to come online by 2010. Apart from the 25 year guarantee, the other important aspect of the Decree that was instrumental in shaping the CSP industry was the allowance to the plants of using 12-15 % natural gas as back-up, which increases the capacity of the plants.

#### Conclusion

The Spanish market has shown that solar energy especially CSP is heavily dependent on favorable regulatory environment in terms of feed-in tariffs to compete with the conventional power plants. As a result of policy initiatives, the industry seems to be gaining growth momentum. However, it would be interesting to see how the CSP industry will develop once the Spanish market reaches the limit of 500 MW and the economic incentives in terms of attractive FIT are removed.

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