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## Waldpolenz Energy Park: Thin-film photovoltaic on the way to the world's biggest solar electric power park

 

11.09.2008

By the end of 2008, juwi solar GmbH, based in Rhineland-Palatinate state (Germany), is constructing the world's biggest photovoltaic (PV) power station near Leipzig in Eastern Germany. Completed at the end of this year the Waldpolenz Energy Park will comprise 40 megawatts (MW) of production capacity. The power system is being built at a former military air base east of Leipzig in the district of Muldentalkreis in Saxony state on half of the location's 220 hectares in the townships of Brandis and Bennewitz. As "Solar Energy System" of the month Solarserver presents the solar power plant, that was extended up to 24 MW in August 2008.



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"Energiepark Waldpolenz": From 2009 the Solar Power Plant will generate 40 million kWh solar power p.a. . Photo: juwi group.

**550.000 Solar modules in an area of 220 hectares**

Initial contact to the two communities that own the site was made in the summer of 2005. In early 2006 the town council politicians in charge decided in favor of the juwi group's offer so that the licensing procedure could be launched by March 2006. In February 2007 juwi received the building license. "Solar electricity not only protects the environment, it also creates independency from expensive energy imports and jobs. Ground mounted PV installations are a cost-effective market segment and an integral part of that success", says Fred Jung, CEO of the juwi group. In March 2006 the licensing procedure was launched. In February 2007 juwi received the building license. At the end of April 2007 the first of a total of more than 550,000 solar modules was assembled and just four months later the first segment, approx. 6 MW, was connected to the power grid.

By the end of August 2008 some 30,000 posts had been rammed into the ground, more than 9,000 aluminum frames were assembled and nearly 385,000 solar modules mounted and wired. By this time the installation's capacity reached more than 24 MW. After completion the 40-MW solar power station will produce 40 million kilowatt-hours of solar power annually.



Left: 30,000 posts had been rammed into the ground. Right: solar module frames made of aluminum.

### Thin film solar modules made in Frankfurt/Oder

The Solar Power Plant will offset approximately 25,000 tons of carbon dioxide every year. The solar modules predominantly come from Frankfurt (Oder), where in July 2007 the world's biggest and most sophisticated assembly of the manufacturer First Solar officially began operating with more than 400 new jobs created in the region. The First Solar modules applied by juwi are designed for use in grid-connected photovoltaic power plants and adopted in commercial photovoltaic projects by the leading developers.



Left: The first module. Right: Thin-film modules made by First Solar .

The sophisticated CdTe Thin film modules are distinguished by high energy yields under multiple climatic conditions. Cadmium telluride (CdTe) is a natural p-conducting semiconductor and due to its physical and chemical characteristics appropriate for use in thin film solar cells. Based on a high capacity for the absorption of solar radiation layers with just a few microns are sufficient. Further preferences are first-rate performance at low irradiation and an excellent temperature coefficient. The temperature coefficient indicates the efficiency decrease of a solar cell by ambient temperature. Lars Falck, executive manager of juwi solar

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GmbH explicates that thin film modules are superior to modules based on crystalline silicon, by reason of less efficiency losses in case of warming and higher absorption of diffuse light. This may result in a considerable higher yield.

### 35 inverter stations by SMA Solar Technologie AG

A proven cooperation was the reason for choosing the inverter systems. 70 central inverters "Sunny Central 500HE" with a capacity of 500 kWh each will be on duty at Waldpolenz. In each case two inverters are located in one station for a single module field, 35 of these stations will be mounted at all.



Left: Module field and inverter station. Right: SMA inverter "Sunny Central 500HE"

The module field will be connected to the grid step by step. A dedicated electric power transformation substation about five kilometers away feeds in the solar generated electricity to the 110 kV grid. The solar power plant is fitted with state of the art communication and operation technology by SMA. At "Waldpolenz" the PV panels are assembled on so-called module substructure with a tilt angle of about 30 degrees and oriented towards the south. 45 panels are fitted to one substructure that is being underlaid by the steel posts rammed 150 cm into the ground.



Left: solar panels in sunlight. Right: Partial view of module fields

### Solar electricity to reach grid parity

The Waldpolenz Energy Park involves investment of some EUR 130 million (USD 200 million). The project has been financed with equity capital and loans. About 1,000 limited partners participated in the offer handled by SachsenFonds GmbH. The Waldpolenz PV power station is thus a milestone in the development of the juwi group and for photovoltaics as a whole. The PV power station is scheduled to work at least for 20 years, due to the juwi group it will be in operation for anticipated 30 to 40 years. Solar electricity is remunerated between 33,18 and 37,96 Eurocent, depending on the date of implementation of the module field. "With the competitive prices of solar electricity produced at Waldpolenz we are demonstrating that there are no limits for photovoltaics", emphasizes juwi CEO Matthias Willenbacher. The PV industry expects solar PV electricity to become competitive with retail electricity prices within only a few years (grid parity).



Construction progress of the "Waldpolenz" solar park at the end of May 2008.

## Another large-scale PV project in Saxony-Anhalt

A few weeks ago an additional PV project was started by juwi located on a former military airport at Köthen (Saxony-Anhalt). On the 56 hectares areal 175,000 PV panels will be mounted. The anticipated annual yield is 13 million kilowatt hours. "An there are further large-scale projects in our pipeline" says juwi solar manager Lars Falck. "Due to the aggressive decrease of remuneration within the new renewable energy law (EEG) new ground mounted solar parks however will not be profitable from 2010", he emphasizes. The market may move to Countries in the south of Europe and beyond - with negative consequences for climate protection in Germany.



*The juwi group with more than 350 employees and an annual turnover about 400 million Euro ranks among the leading renewable energy companies. Up to now juwi constructed 800 PV systems with an overall capacity of more than 150.000 kWp*

Picture: Construction site at Köthen.

## The world's 10 biggest solar power stations

Fuente Álamo: 26 MW	Murcia, Spain
Brandis: 24 MW (40 MW intended)	Saxony, Germany
Abertura: 23,1 MW	Caceres, Spain
Hoya de Los Vincentes: 23 MW	Murcia, Spain
Trujillo: 20 MW	Cáceres, Spain
Beneixama: 20 MW	Alicante, Spain
SinAn: 19,6 MW	Korea
Nellis: 14 MW	Nevada, USA
Salamanca: 13,8 MW	Spain

Source: [www.pvresources.com](http://www.pvresources.com)

### Further informations:

- [2008 Photovoltaic trends: Innovative thin film technology and large-scale power plants; Gigawatt perspectives in the USA](#)
- [Large photovoltaic power plants: average growth by almost 100 % since 2005](#)

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