



“The CSP markets are making progress”

The world's largest CSP complex is currently being built on an area measuring 30 km² in Morocco's Ouarzazate. Residents of the North African provincial town are still largely unaware of the gigantic project being constructed some 11 km away.

Photos (2): Thomas Isenburg

Under the leadership of the Saudi Arabian project developer ACWA Power, one of the largest solar complexes in the world with 500 MW of total capacity is being developed 200 km south of Marrakesh, and is yet another example of the development of CSP plants in desert regions.

Good infrastructure, together with a favourable climatic and political environment, pose all strengths of the location of the central Moroccan city Ouarzazate for the globally prestigious solar thermal power plant project. The policy instrument that controls the construction of the solar complex is called the Morocco Solar Plan. In addition to 2000 MW of wind power, the plan envisages the construction of solar power plants with a total capacity of 2,000 MW by 2020. The basis for the sun-drenched land's ambitious target is its annual insolation of 2,400 kWh/m². With a 500 MW power plant in Ouarzazate, Morocco wants to supply nearly 1 million households with renewable, climate-friendly power.

German technology for Morocco

The Noor 1 parabolic trough power plant, the first of three such projects, has been under construction since May, last year. A consortium comprising the Spanish companies TSK Electrónica y Electricidad, Acciona, and Sener Ingeniería y Sistemas has been entrusted with realising the project. German companies have scored a success in the international business of supplying the project in its first phase. The large-format reflectors for the parabolic trough

power plant are being supplied by Flabeg FE and are transported by rail and ship from Germany to Morocco. Following a turbulent phase of its business, the company – having manufactured high-quality solar reflectors for 25 years – was acquired in late 2013 by the Saudi company Sun & Life, a subsidiary of ACWA Holding. The company now has 40 employees dedicated to putting their company's year-long experience in the manufacture of solar reflectors to use. By November of this year, the company is expected to complete the fulfilment of the order for 560,000 reflectors. In January of next year, Siemens is expected to deliver a € 17 million turbine, which is also being manufactured in Germany, for generating power from steam. Siemens has been in Morocco for 58 years and employs 220 people there. Currently, order volume is on the order of € 400 million.

Employees of Spanish companies are currently setting up the roughly 6 m high reflectors at the construction site in Ouarzazate. Before they could be installed, concrete and steel work for the € 700 million project had to be completed first. According to studies by the German Aerospace Centre (DLR) and the Fraunhofer Institute, this work can be contracted out to Moroccan companies to create local value. For Noor 1 alone, some 1000 tonnes of steel structures are be-

A question of electricity market integration

S&WE spoke with Abdelkader Amara, the Moroccan Minister of Energy, Water, Mines and the Environment.

S&WE: Mr Minister, what are your thoughts on the construction of the solar power complex in Ouarzazate?

Abdelkader Amara: In Ouarzazate we want to install solar power plants with a total capacity of 500 MW. This complex will then be the largest of its kind in the world. The project offers us the opportunity to evaluate this technology. The subsequent steps will then be easier than the first.

S&WE: Will Morocco ever be in a position to develop this technology itself?

Amara: Yes, I think so. Currently, we are gathering our initial experience. In doing so,

we are one of the leading countries. After all, these are investment volumes on a multi-billion-dollar scale.

S&WE: When will you be able to export power to Europe?

Amara: Our goal is one day to export power to Europe. It's not so much a question of exporting power, but rather the integration of our electricity market into the European one. Then we can bring our electricity there where it is needed. And we can also import green power from Europe. This process depends on the market. That's why we've got to support the use of green energy.

The interview was conducted by Dr. Thomas Isenburg, a science journalist based in Germany.

ing built on the 3000 ha site of the complex. So far, Moroccan companies have managed to complete about 15 % of the work on the new CSP plant.

Moroccans have received funding for the project through the German Agency for International Cooperation (GIZ). Morocco imports up to 95 % of its energy requirements, which is why it is striving to achieve a higher level of energy independence through better use of wind and solar potential, according to GIZ employee Britta Prinz. There is a particularly strong demand for German expertise and technology in Morocco.

Solar power plants are becoming more efficient

Obaid Amrane of the Moroccan Agency for Solar Energy (MASEM), which is responsible for implementing the country's solar plan, announced at a meeting with German industry representatives at the German – African Business Association (AV) that by 2020 the country wants to double its renewable energy production capacity, in order to reduce its dependence on fossil fuels. That makes Morocco one of the most attractive countries for renewable energy investments. With regard to the state of the Noor 1 project, Amrane said, "Noor 1 is 50 % complete. The power plant will begin to supply its first electricity in 2015."

The Moroccan Minister of Energy Abdelkader Amara called for greater German commitment at the German industry's Africa Day event in Hamburg last April. In Hamburg, Amara spelled out the Moroccan position: "The logic of renewable energy says that places with lots of sunshine, water and strict environmental regulations have the greatest advantages when it comes to the goal of reducing carbon emissions to the greatest extent possible." Reducing the

price per kW/h, he said, serves the economic goal of further tenders for power plants in Ouarzazate.

Over the past five years, in particular, solar power plants have become more efficient. After returning from the world's largest CSP conference in Peking, Professor Robert Pitz-Paal of the DLR said that Chinese manufacturers predict a price in the near future of € 0.12/kWh. "Although not at the pace predicted five years ago, CSP markets are making progress. Power generation costs are dropping continually, and countries are beginning to see the value of power storage," Pitz-Paal sums up. Further developments are expected in South Africa as well.

Thomas Isenburg

Employees of Spanish companies set up the parabolic reflectors in parallel rows on a previously levelled area.

