Here, a Turkish carpet factory is getting a 200 kW system, from which it will consume the electricity itself. Installations with a capacity of less than 1 MW no longer require a licence.

Photos (2): Tritec

A great opportunity for photovoltaics

Turkey needs energy – and it needs it urgently. The government is currently attempting to increase the use of renewable energy sources and is trying to create the necessary incentives. The world's solar companies have not failed to notice this.

The Turkish energy market is currently undergoing a transformation and there are positive signs that sustainable energy sources such as photovoltaics will develop increasingly strongly. Up to now, Turkey's primary energy supply has mainly been based on fossil fuels such as coal, gas and oil, of which 71 % must be imported. For years, the Turkish economy has been growing strongly at a rate of around 7 % annually – the energy requirement has been growing at around the same rate. The country is heavily dependent on oil and gas imports, which have a strong negative effect on the growth in the Turkish balance of trade. This could be a great opportunity for photovoltaics. There are few other places where the situation for the generation of solar power is as good as it is in Turkey, despite differences between the regions. With 7.2 hours of sunshine per day and an average solar irradiation of 1,527 kWh/m² annually the conditions are excellent. In the south of the country, where around 2,000 kWh/m² can be generated each year, commercial production and systems for own consumption are equally worthwhile. For many people in Turkey, solar power is a real alternative as the electricity price rises every year, generally by more than 10 %.

Attractive support

This has also been recognized by the government. In order to diversify the country's energy mix it has set a target of increasing electricity generation from renewable energy sources to 30 % by the year 2023. In 2010, the government introduced support for solar power. At first, there was a feed-in tariff only for sys-

tems of up to 500 kW, with support of 13.3 US$-ct, limited to 10 years and dependent on the possession of a valid licence. Since October 2013 feed-in remuneration has been available for systems of up to 1 MW. The validity of the tariff is, however, limited to the year 2015. Furthermore, systems that are not connected to the electricity grid no longer require a licence. The changes in the legislation are also designed to support local manufacture of energy systems. As a result, the feed-in payment increases by a fixed amount per kWh if particular parts and components are made in Turkey (see page 10).

"This means that Turkey has become one of the most promising European markets for photovoltaics", says Hannes Beushausen from the strategy consultants Apricum Group. By 2020 he expects an expansion of four to six GW. The main impetus for the Turkish photovoltaic market, he explains, is the rapidly increasing energy demand from small and medium-sized businesses that wish to become more independent from their electricity suppliers. "The main areas of growth are licensed large-scale plants and commercial roof-mounted systems for own consumption with a nominal capacity of up to 1 megawatt", says Beushausen. "Previously, the total installed PV capacity in Turkey was only around 12 MW. The driving force behind the 100 to 200 MW of new PV capacity that is set to be installed this year is the licence-free projects under 1 MW. Many of these projects involve the use of the roofs of commercial buildings to produce electricity for own consumption. In total, more than 357 MW of licence-free projects have been applied for", explains Yalcin Kiroğlu from the Unlicensed Electricity Generation Association (LI-DER). Mustafa Tiris from the energy company T-Dinamik expects a newly installed PV capacity of at least 500 MW annually in Turkey from 2016.

The team from the Swiss company Tritec has installed several photovoltaic systems in Turkey.

Involvement of foreign companies

The first company to spread itself widely in Turkey was China Sunergy (see page 10). But they are not the only ones to have discovered the Turkish market. The German project developer Domilux Leuchten Herstellung und Vertrieb GmbH recently installed a 728 kW roof-mounted system at Safranbolu in the Turkish province of Karabük. The modules for this project were supplied by ET Solar Energy. And Canadian Solar reports that it has recently signed a module supply contract for a PV project in Kayseri. Canadian Solar will supply modules with a total capacity of 12.6 MW to the Kayseri Organised Industry Zone (KOIZ) and a consortium of companies based there. This is already the second supply contract with KOIZ. "We are very proud of this delivery contract, our largest in Turkey to date. It is a new milestone in this important expanding market and is already the second agreement with this customer: at the end of 2013 we supplied 2.2 MW of PV modules", commented Dr. Shawn Qu, Chairman of Canadian Solar.

Yingli has also started to expand in the Turkish market. As the company reports, through an agreement with Tekno Ray Solar Enerji Sistemleri it will supply solar modules with a capacity of 30 MW to the Turkish company Tekno Ray Solar. The first modules will be used for large solar projects in the south of Turkey. Already last year, the Swiss solar company Tritec realized one 200 kW and one 10 kW roof-mounted system for commercial purposes at the Bosporus.

The final hurdles

So there is a lot happening in Turkey. Nevertheless, the market cannot yet be thought of as simple, adds Hannes Beushausen. He sees the biggest problem with the realization of photovoltaic projects in their financing. "It is still difficult to find a bank in Turkey that is prepared to finance such projects." A further problem is the bureaucracy, which still stands in the way of fast development of the Turkish photovoltaics market, he says. In this context, a lot of time and patience is required as well as local employees or partners with good contacts to the responsible authorities and good knowledge of the legal aspects as well as of the prevailing local conditions. Another limitation is the availability of land for ground-mounted systems as the construction of solar farms is not permitted on agricultural land. Grid connection and grid capacity, lack of experience in the installation of systems as well as quality assurance are further obstacles to the expansion of photovoltaics in Turkey. The political situation is also not the best. In recent times there have often been political unrest and demonstrations in the country. This, however, does not seem to have frightened off the solar companies just yet.

Markus Grunwald

Further information:
Apricum: www.apricum-group.com
Canadian Solar: www.canadiansolar.com
China Sunergy: www.csun-solar.com
LI-DER: www.lisanssizelektrik.org
Tritec: www.tritec-energy.com
Yingli Solar: www. yinglisolar.com

Commercial PV installations are rising in Turkey: the picture shows a 650 kW installation by Istanbul Energy, equipped with SolarEdge technology. SolarEdge commercial systems include a solution with one power optimiser for two panels, a light-weight string inverter and a module-level monitoring system. The power optimisers are designed to eliminate the effects of module-level mismatch. Photo: SolarEdge

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