

So far, there has been no PV system installed on Rio de Janeiro's sugarloaf mountain. However, major showcase projects in the MW range are currently under planning for football stadiums and national airports.

Photos(2): EuPD

Brazil's solar sector: Import duties and self-made systems

Today, Brazil could already arrive at grid parity – if modules were produced in the country. Meanwhile, Brazilian home owners are becoming inventive with the installation of solar thermal systems. One popular approach: buying tubes and water collection tanks from the home improvement store.

In the past, Brazil was mostly treated as a market for off-grid systems. But the country could soon turn into an important sales market for grid connected installations. This might have been the impression of the 200 participants during a conference and the accompanying trade show that both took place between March 17th and 19th under Rio de Janeiro's sugarloaf mountain. This year, the fifth edition of Rio World Climate & Energy Event (RIO 9) in Rio de Janeiro was flanked by the Latin America Renewable Energy Fair (LAREF) and attracted a number of 16 exhibitors.



Hans Rauschmayer of Aquecedor Solar de Baixo Custo (ASBC) offers training courses in Rio de Janeiro for the installation of small solar thermal systems with materials found at the home improvement store.

Photos (2): private



On the one hand, the combination of electricity prices around 20 US-ct/kWh and annual global radiation between 1,600 and 2,300 kWh/m² gives rise to the idea that grid parity could become a reality. On the other hand, the rich prospect has a restriction: modules shipped to Brazil are subject to high import duties and taxes in the range of 60 %. In that light, a prerequisite for grid parity would be the development of a domestic module production. However, there are currently no production facilities found inside of Brazil or Latin America that would be able to cover the theoretical demand.

Energosolar, a Hungarian supplier of turn key factories for amorphous thin-film modules, has recognized the potential and took the trade fair in Rio as an opportunity to attract new customers. "Our calculations show that in areas such as Rio de Janeiro or São Paulo with a global radiation of 6 kWh/ m² per day, PV installations with locally manufactured modules can already

be competitive even with governmental incentive schemes missing", says Norbert Nagy, Sales and Marketing Manager at Energosolar. Due to the high temperatures and partly very hazy weather in Brazil, thin-film technologies are particularly well-suited for solar electricity production, says Nagy.

Prior to the conference, an announcement of new details for a planned feed-in tariff had been made public. However, a concrete draft is not yet available – the decision by the House of Representatives is expected by July 2009. So far, the introduction of feed-in tariffs with a validity of 20 to 25 years and the promotion of 1 GW over 10 years has been under discussion. "The incentive will probably look similar to the German Renewable Energy Law (EEG). However, the feed-in tariffs are expected to be significantly lower", says Antonio Granadeiro, CEO of Kyocera Solar do Brazil. In the opinion of Granadeiro, the future Brazilian PV market will be focussed on grid connected rooftop systems. "There will be no market for open space systems in Brazil. Property is simply too expensive and a central energy supply is not really feasible", says Granadeiro.

However, most participants believe that there will be no financing problems for PV

projects. In that respect, Granadeiro is not worried about the future of PV. "The relatively small buying power of the consumers does not pose a problem as the financing of PV systems is possible through the Brazilian development bank Banco Nacional de Desenvolvimento Econômico e Social", says Granadeiro.

Until the introduction of the feed-in tariff, the market for grid connected PV systems will continue to focus on showcase projects. However, the most important PV segment is still the off-grid sector for rural electrification and telecommunication stations. Experts estimate that the market size presently ranges at 1.5 to 2.5 MW per year. Promotion schemes such as the "Luz para todos" programme were introduced with the aim of supplying electricity to approximately 10 million households that are still without access to the public grid. But even though renewable energies and, in particular, micro wind and PV systems, contribute to the electrification of rural regions, most of the electricity production comes from diesel generators. "The fact that diesel generators and their operation is subsidized by the government is a needless hindrance to the implementation of PV", says Stefan Krauter, Professor at Biberach University of Applied Sciences and organizer of the event. In the final statement of the conference, the equal treatment of PV and diesel generators and a rethinking on part of the government were

emphasized. "We would like to see an equal incentive per kWh independent of the type of generator", says Krauter.

Module manufacturers looking for new markets

Four module manufacturers and wholesalers came to the trade show to get an impression of the sales potential on the Brazilian market. "Due to the economic conditions, Brazil is the most attractive market for us among the Latin American countries. We decided to participate in the trade show to get in touch with installers and possibly also to find local distributors", says Shebu Thomas, Vice President for the U.S. business of Indian module manufacturer XL Telecom & Energy Limited. The company specializes on module supply for open space systems and particularly focuses on projects with a total capacity of more than 1 MW each.

For Trina Solar, the trade show meant the first contact with the Brazilian market. "We came to Rio to introduce the brand Trina Solar to Brazil. After exchanging our experience and opinions with the other participants, we now believe that the Brazilian PV market has an enormous growth potential", says Alvaro García-Maltrás, Sales Manager for Spain and Latin America at Trina Solar Limited. The company is meanwhile trying to find local partners to drive the development on the Brazilian market, according to García-Maltrás.

Japan-based wholesaler Copia Energy also hopes to develop new business areas in view of the declining profits on the established markets. "A common way of paying for goods in Brazil is the hire purchase agreement. It should be possible to apply that method also to PV products", states Yukon Kaname Levenson, CEO of Copia Energy.

Module supplier Kyocera Solar do Brasil is currently first on the Brazilian market. The company has been maintaining sales offices in the country for around ten years. Next to the business with telecommunication stations and oil rigs, the company primarily profits from the rural electrification programme "Luz para todos". Kyocera Solar do Brasil has already supplied about 15,000 PV systems with a capacity of 150 W each for the realization of the programme, says Granadeiro.

The German company Valentin Energiesoftware GmbH has been specializing on dynamic simulation programmes for the design and calculation of PV and solar thermal systems. It is not the first time that CEO



Stefan Krauter, organizer of Rio 9 and the Latin America Renewable Energy Fair, was pleased to welcome the participants in Rio de Janeiro for the fifth time.

Gerhard Valentin visits the Brazilian trade show. However, Valentin is this time less interested in the developments on the PV market. "Currently, the solar thermal market is more attractive for us", says Valentin. In Brazil, the broadest application area for solar thermal is found in the hotel sector. After the introduction of new building regulations that affect, for example, the implementation of solar thermal in new buildings in São Paulo, the situation on the market could soon change. The high costs for a standard solar thermal system together with the low buying power of the consumers are still impeding the mass market for solar thermal systems. However, the solar thermal systems offered by non-governmental organization Sociedade do Sol are experiencing a high demand. The installation of the systems does not require a professional installer. "The component parts for the solar thermal system can be found in any home improvement store for sometimes less than € 100", says Hans Rauschmayer who organizes trainings for the installation of these solar thermal systems in Rio de Janeiro. Rauschmayer refers to a "multiplier" effect. "We are hoping that the participants will not stop after completing their home system but will transfer their knowledge to others. We would like to help our customers to become active with the installation of solar thermal systems in their local communities", adds Rauschmayer.

First wind project tender

The Brazilian Wind Energy Association Associação Brasileira de Energia Eólica (ABEEólica) took the conference as an op-

portunity to present current figures on the installed wind capacities and a prognosis on the market development. "The installed wind capacity in Brazil currently ranges at 414.5 MW. But we expect that the market will expand to 900 MW in 2009", says Lauro Fiuza Junior, CEO of ABEEólica. "Our goal is to advance the consolidation and competitiveness of the Brazilian wind sector. Both require the support of a long-term government programme", explains Fiuza Junior. In the past, Brazil has mainly focussed on hydropower. Wind energy will not replace this energy form. But it will make a significant contribution, according to Fiuza Junior.

The first public tender for wind projects will take place in November. A proposal for the regulation of the tender is still under debate. In order to benefit from the former Brazilian renewables incentive Proinfra, wind investment had to include 60 % local content. This quota could now see a revision. One of the reasons is that Brazil's wind industry has been unable to meet the requirement in the past. The wind tender is now expected to promote between 600 to 1,000 MW. Whoever offers the lowest price for a project will be awarded the contract. Considering that the tender takes place for the first time in Brazil, it is difficult to give a reliable price prognosis. However, Gabriel Nebreda Molinero, Head of the department "Latin America and New Markets" of edp renewables, expects that prices will settle down between 90 and 110 US\$/MWh. "We will, of course, participate in the tender but we will realize our projects in Brazil independent of the results", says Nebreda Molinero. The current market price already allows edp renewables to realize its projects in Brazil, continues Nebreda Molinero. The company was able to successfully realize wind projects with a capacity of 14 MW in the country and currently has another 216 MW under planning.

Stefan Hausmann

Further information:

Associação Brasileira de Energia Eólica (ABEEólica): www.abeolica.org.br
 Banco Nacional de Desenvolvimento Econômico e Social: www.bndes.gov.br
 Breyer GmbH Maschinenfabrik: www.breyer-extr.com
 Copia Energy: www.copiaenergy.com
 edp renewables: www.edprenovaveis.com
 Energiosolar: www.energiosolar.com
 Biberach University of Applied Sciences: www.hochschule-biberach.de/
 Kyocera Solar do Brasil Ltda.: www.kyocerasolar.com.br
 Rio World Climate & Energy Event: www.rio9.com
 Sociedade do Sol: www.sociedadedosol.org.br
 Trina Solar: www.trinasolar.com
 Valentin Energiesoftware GmbH: www.valentin.de
 XL Telecom & Energy Limited: www.xlteleenergy.com