



Solar-Reports:

- ▶ [Intersolar on its way to becoming the Solar World Fair](#)
- ▶ [Building integrated Photovoltaics \(BIPV\): Solar electric power systems conquer large roofs and façades](#)
- ▶ [Solar thermal in Europe: expanding markets, state-of-the-art technical solutions](#)
- ▶ [Photovoltaic investments outside Germany? Looking into the southern EU states](#)
- ▶ [Solar power from the desert rather than desert in Germany](#)
- ▶ [New Study: Renewable Energy can replace abandoned Nuclear Energy in Germany](#)
- ▶ [BBC Interview with Dr. Knies \(TREC\): The energy source of the future is solar](#)
- ▶ [Photovoltaic industry achieves record profits, discussion over high module prices continues](#)
- ▶ [Chinese solar modules penetrating the German market](#)
- ▶ [Solar Roof Tile Exhibition shows developments in photovoltaic roofing](#)
- ▶ [Intersolar 2006: Solar technology and demand at an all-time high](#)
- ▶ [New Photovoltaic Factories and Capacities in Germany](#)
- ▶ [Renewable Energy in Australia](#)
- ▶ [Cooling with Solar Heat: Growing Interest in Solar Air Conditioning](#)

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- ▶ [Solar News](#)
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- ▶ [Solar Links](#)
- ▶ [Solar Energy System of the Month](#)
- ▶ [Your Suggestion](#)

Intersolar on its way to becoming the Solar World Fair

by Rolf Hug
10.07.2007

With record exhibitor and visitor numbers, the international solar fair Intersolar 2007 ended on 23.06. and demonstrated its vision of becoming the leading fair for the global solar industry. After eight years in Freiburg, Intersolar will be moving to Munich where a surface area of 50 000 m² will provide its 800 exhibitors with ample space to make an international statement in presenting their achievements in the field of solar thermics and photovoltaics as well as solar construction. The Solar Report reflects on an extremely successful trade fair and its most important trends, as well as the solar thermal conference "estec 2007" and the photovoltaics industry forum in the run-up to Intersolar.

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Solar technology fair of international standard: 638 exhibitors displayed state-of-the-art technology in the field of solar electricity and heat production in Freiburg. Photos: Solar Promotion GmbH



Intensive talks with international clients

Europe's largest solar specialist fair with its 30 000 visitors this year exceeded not only the expectations of the organiser... exhibitors too are looking back on the most successful Intersolar thus far, for example Conergy and SolarWorld. "The response to the presentation of our new products was tremendous," says Frank Henn, Distribution Manager of SolarWorld AG. "We had intensive discussions with many of our international clients and entered into business with them. Of particular significance were the successful negotiations with clients from strategic growth markets," says Henn. SolarWorld AG, for example, concluded a deal with a client from Maghreb for 2007 on the supply of SolarWorld modules of 500 Kilowatt.

Immense potential in Mediterranean countries, great interest from new EU states

"All products exhibited were met with unexpected demands. As a group we managed to secure orders of over 50 million euro in the fields of photovoltaics, solar thermics and thermal pumps," Katrin Krohn reports who is responsible for Conergy sales in Germany. The trend towards globalisation noticed by fair management was confirmed by Conergy: about 50 percent of all clients were from abroad. "Particularly the Mediterranean countries have displayed immense potential at Intersolar. But also new EU member states such as Bulgaria, Slovenia and Rumania showed great interest in photovoltaics. We were also able to care for an astonishing number of potential clients from the USA," Conergy Sales Manager Christian Langen emphasises.



"Solar Boulevard" at the Intersolar 2007. Photo: Solar Promotion GmbH

estec 2007: European solar thermal market grows by 47 %

With over 500 delegates from over 60 countries – and thus almost double the number of attendants as at the previous conference in 2005 – the solar thermal conference estec2007 was a meeting point of solar experts from around the world in the two days preceding Intersolar. The speakers included numerous high-profile representatives from the EU Parliament and the EU Commission, as well as the Indian Minister for Renewable Energy, Shri Vilas Muttemwar. The centre of political discussions revolved around the future EU Directive for renewable energy that is to include heating as well as cooling. The draft is to be completed by the end of 2007. From 2010 national legislation is to regulate heating and cooling with renewable energy. For two days solar thermal experts exchanged their ideas on market developments in the various countries, informed each other in numerous meetings about the technical and economic potential of solar thermics and showed that solar thermics can make a significant contribution to ensuring climatically friendly, safe and

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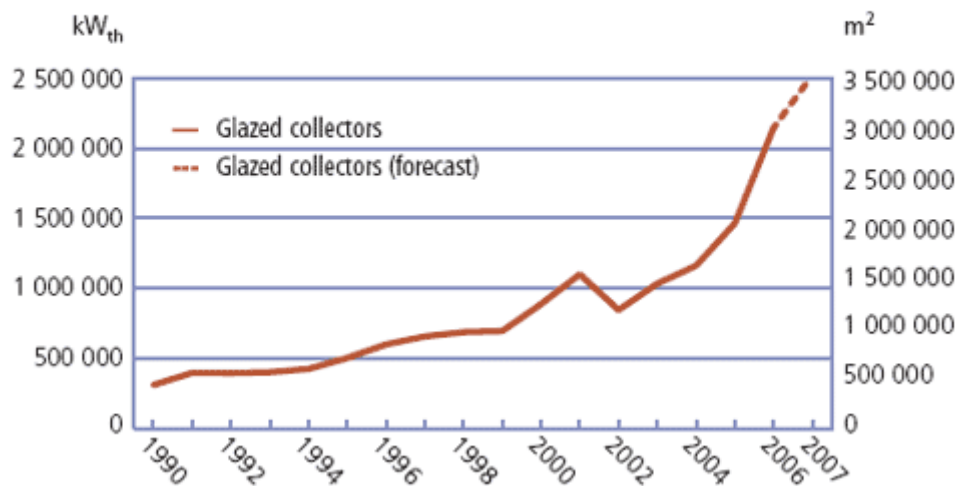


estec2007: over 500 delegates and high-profile speakers. From left: ESTIF President Gerhard Rabensteiner, Mechtild Rothe, Vice-President of the EU Parliament, and Shri Vilas Muttemwar (Indian Minister for Renewable Energy). Photos: Solar Promotion GmbH; Solarserver (rh)

At the estec2007 the European solar thermal sector could look back on significant growth: according to figures of the industrial association ESTIF, the European solar thermal market grew by 47 % in the EU 27 plus Switzerland in 2006. 2,1 gigawatt solar thermal output were newly installed, which corresponds to a collector surface of about three million square metres. A total of 13.6 GWth has now been installed and generates heat that corresponds with the energy value of over 800 000 t of oil.

For 2007 ESTIF is expecting a somewhat more moderate growth: up by 27 %, which will lead to an installed overall output of 2.68 GWth by the end of the year. France impressed in 2006 with a spectacular market growth of 81 %, followed by Spain (+ 64%), Germany (+ 58%) and Italy (+ 46%).

Solar Thermal Market in EU27+CH



Solar thermal market volume of the EU-27 plus Switzerland doubled since 2000. Graph: ESTIF

Germany: slow start into the solar thermal year 2007; heating law to improve framework conditions

Sunny perspectives were slightly clouded by first figures of the German and Austrian sector associations that are anticipating a stagnation or even a decrease for the first months of the current year. Reasons for the decline of the heating market in Germany may be the extraordinarily mild winter and the effects of an increase in value-added tax, BDH and BSW Solar speculate. Also the decrease of grants for the market incentives programme and the temporarily moderate oil price may have influenced this stagnation. To what extent the alarming climate reports of the United Nations and the ambitious EU targets will have an

influence on demand remains to be seen. Solar thermal manufacturers and fitters in Germany thus no longer want to wait for the announced law that is to promote heating and cooling with renewable energy, as announced by the German Minister of Environmental Affairs Gabriel. This law is part of the coalition agreement of the CDU/CSU and the SPD parties. "The German government intends increasing the share of renewable energy in the heating sector to 14 percent by 2020. This is to be achieved by the market incentive programme and the planned heating law. The core element of the act is the binding directive for the utilisation of renewable energy in new buildings and in old buildings when heating systems are replaced. Furthermore, the principles of the market incentive programme and the amount of its grants are to be stipulated in the act. The details are currently being drafted," Gabriel said in June 2007.

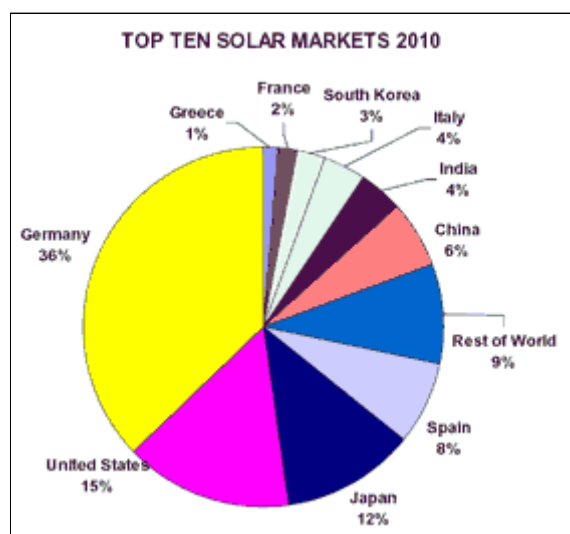
The sun rises in Eastern Europe

Detailed market studies on Bulgaria, Poland, Rumania, the Slovak Republic and Slovenia show the current share of renewable energy of the overall energy consumption to be between 2.5 % (Poland) and 11 % (Slovenia). In all these countries ambitious plans exist for the expansion of the solar sector: Slovenia, for example, plans to have installed 10 000 m² of collector surface by 2010 and Bulgaria is even aiming for 3m m² by 2015.

At the close of the estec2007, ESTIF President Gerhard Rabensteiner and the Vice-President of the European Parliament, Mechtild Rothe, emphasised the importance of binding action plans of the individual states with which the "20/20" EU targets can be implemented and controlled.

Industry forum indicates PV trends: worldwide markets, large-scale thin-layer, concentrator systems for the south

With over 200 solar experts from 27 countries the 3. PV Industry Forum in the run-up to the Intersolar exceeded its claim of enabling information exchange on an international level. "This international participation shows the immense worldwide demand for information and discussion regarding instruments of market introduction and technology in the field of photovoltaics," says Gerhard Stryi-Hipp, Managing Director of the Bundesverband Solarwirtschaft e.V. (BSW-Solar). One of the main topics of the congress held in English were the growing international markets, e.g. in Spain and California. Paula Mints, Director of the US company Navigant Consulting, presented the ten most important solar power markets of the year 2010.



According to prognoses of the renowned US consulting company, these Top 10 markets will make up 91 % of worldwide demand, according to an estimated PV output of 8.345 megawatt peak.

Navigant forecast for the photovoltaics world market 2010: Germany will remain the solar power champion with a market share of 36 %, followed by the USA (15 %) and Japan (12 %). Spain takes up place 4 with 8 % market share, then China (6 %) and India (4 %). Italy, France and Greece together achieve 7 %. Data and graph: Navigant Consulting

USA: the more Schwarzenegger, the more solar power

Navigant is forecasting a market volume of 1.243 MWp in the USA by 2010, of which 609 MWp will be allocated to California. However, Paula Mints warned against too high

expectations from the American market, "So far the extensive incentive programme for photovoltaics in California is still the exception. We need more Schwarzeneggers in other American states in order to utilise the existing potential sustainably," said Mints in an interview with the Euro Press Service.

In Europe Navigant Consulting is expecting an average annual photovoltaics growth from 2006 to 2010 of 44 % – with the main areas of growth being Germany, Spain and Italy – and a market volume of about 4 500 MWp, of which Germany will constitute just over 3 000 MWp, Spain about 1 000 MWp and Italy about 500 MWp.

According to Mints, huge potentials are still lying untapped in Asia. The overall Asian market can be expected to grow from the current 200 MWp (mainly Japan) to over 2 200 MWp, of which 80 % will be located in Japan, China and South Korea, and India will have a share of about 10 %.



As the eleventh top market in the foreseeable future Mints mentioned developing and fast-developing countries, in which 2 billion people still have no access to electricity. If the solvable problems regarding financing and maintenance of stand-alone solar power systems are actually solved, solar electrification can make a significant contribution to the fight against poverty, Paula Mints emphasises.

Photo: Solar Promotion GmbH

Strategies and implementation of rural electrification thus also were at the centre of speeches on the topic of "Productive applications in rural electrification" during the afternoon session. "The goal of project initiators should be the strong involvement of industry partners, in order to ensure the continuous market development in the respective countries," Rafael Wiese from the "Office for Rural Electrification" at the Bundesverband Solarwirtschaft (BSW-Solar) e.V. explains.

Innovative technologies with reduced silicon demand

During the morning session experts provided information on silicon-saving technologies, elucidating these with numerous practical examples from the industry. Two of the main topics were thin-layer photovoltaics and concentrating PV systems.

Industrial large-scale production of thin-layer photovoltaics

Dr Michael Powalla from the Zentrum für Sonnenenergie- und Wasserstoff-Forschung (ZSW) in Baden-Württemberg, Germany, reported on the rapid growth of production capacities for thin-layer modules and the technical advances. Thin-layer technology is characterised by reduced material consumption which can be utilised as an enormous potential for the reduction of costs. Modules of cadmium telluride (CdTe), copper indium diselenide (CIS) and thin-layer silicon are not new, but their industrial large-scale production has only just begun.

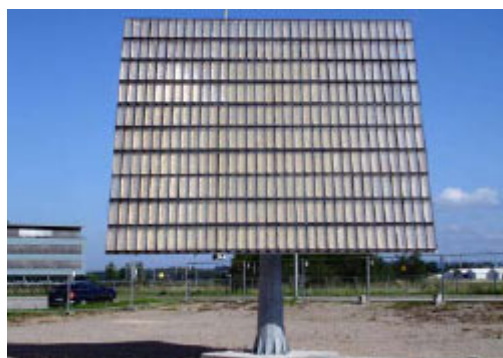


Left: Production in the company Würth Solar CISfab in Schwäbisch-Hall. Right: Gescher-Estern Entsorgungsgesellschaft Westmünsterland (EGW): 1.4 MWp-CdTe-System with 23 430 thin-layer modules of First Solar. Sources: Würth Solar; Reinecke + Pohl Sun Energy AG

Whereas the worldwide production capacity for all thin-layer variants amounted to 193 MWp at the end of 2006, experts from research and development expect this figure to rise to 5 gigawatt, which corresponds to about ten times the overall installed solar cell manufacturing capacity (silicon and thin-layer) in Germany in 2006. Regarding the degree of efficiency, ZSW expects significant increases by 2010: from the current 6 – 7 % in amorphous and microcrystalline silicon to about 10 %, for CdTe modules from the current 7 – 9 % to about 12 %, and for CIS modules even 14 % are to be achieved (currently 9 – 11 %).

Concentrator photovoltaics for cheaper solar power in the south

Great interest was aroused in Freiburg by a technology that is truly not new: concentrator photovoltaics or, as an abbreviation, CPV. In 1976 already Sandia Laboratories in the USA realised a 1 kW CPV system, A.W. Bett from the Fraunhofer Institut für Solare Energiesysteme (ISE) reports. But now, with lucrative feed-in tariffs for solar power, CPV is becoming economically viable in southern European countries. CPV systems generally require fairly costly tracking systems, but the cost-effective optical systems (e.g. Fresnel lenses) can focus sunlight up to 1000 x. In combination with the so-called III-V solar cells (efficiency of up to 40 %) new market opportunities arise, because strategic locations in Spain could then allow for solar power costs of 16 cent per kilowatt hour, Bett emphasises.



Sandia PV concentrator from the year 1976 (left), Concentrix CPV system with two-axis tracking. Sources: Sandia Labs, Concentrix Solar GmbH

Examples of this technology are the systems by Concentrix Solar (production in the megawatt range is planned from 2007 onward), Isofoton (Spain, 5 MW announced for 2007), as well as SolFocus and Pyron Solar in the USA. CPV is manufactured in a broad range of system layouts and particularly for the III-V-based highly concentrated systems market opportunities are good – no wonder that numerous companies are now entering this new market.

High-Solar-Tech for the global market

Solar modules are becoming better and bigger. Solar cells are becoming thinner and more efficient. At the Intersolar, international photovoltaics manufacturers presented the entire range and advances of solar power technology, from wafer technology to solar power plants. A current example are the new high-performance solar modules by Conergy AG from its production plant in Frankfurt (Oder). Serial production of this module type will be coming off the conveyors from summer 2007 onward and will be available under the name of "Conergy PowerPlus".

New thin-layer solar factories are increasing production capacities

The trend towards industrial thin-layer photovoltaics production was shown by numerous module manufacturers, among them Oerlikon Solar: at the Intersolar 2007 this company for the first time presented a lamination system TCO 1200 that is ready to be marketed.



"TCO" stands for "Transparent Conductive Oxide". These transparent layers function as electrodes as well as "light catchers" in thin-layer silicon modules and are thus core components.

"We are now in the position to supply turn-key factories for the production of thin-layer silicon modules," says Detlev Koch, Manager of Oerlikon Solar. One of the first factories of this new, industrial type is manufacturing at ersol Thin Film in Erfurt.

Photo: Oerlikon Solar

The extent to which inverter technology has developed and is in global demand, is proven by SMA Technologie AG. "The new generation was developed as a so-called world device and can be adapted to country-specific requirements with two simple switches," explains the Head of Sales and Marketing Urban. With a peak efficiency of 97 % and with an active cooling system "OptiCool" the top product of SMA, Sunny Boy 5000TL, is to increase its market presence, not only in Germany and southern Europe, but also in the USA.

Follow the sun: huge trackers for the south

On their way to the trade halls, visitors of Intersolar were given an impression of the solar power stations that will be providing electricity in Spain and other Mediterranean countries: half a dozen tracked PV systems (Solar Tracker) could be admired in the open-air area, including the largest two-axis PV tracking system of the world. Or the "SunCarrier" by Würzburger a+f GmbH, a tracker which the manufacturer claims to be so massive "that its operator will still be able to sleep with wind of gale force 11".

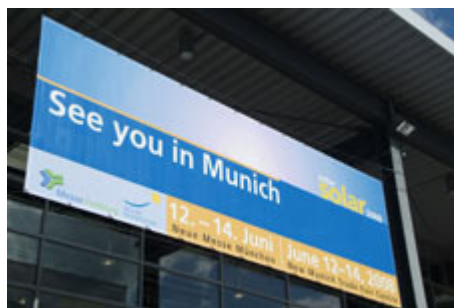
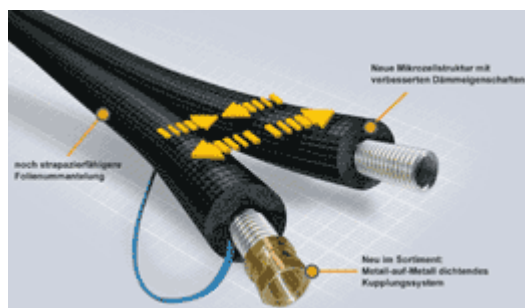


"Tracker Parade" at the Intersolar 2007. Photos: Solarsserver (rh)

Solar heating and cooling becoming very trendy

But not only in the field of photovoltaics new trends were visible. Solar thermal manufacturers are offering newly developed, attractive solutions: for heating with solar energy and, increasingly, also for cooling. More and more solar heating systems are combined with heat pumps to achieve a high degree of utilisation of renewable energy sources, for example Solvis or Consolar.

That solar heating systems can also be continuously improved in their detail, was shown by Armacell, manufacturer of specialty foams and worldwide market leader for flexible technical insulation. At the Intersolar, Armacell presented a new pipe system for solar systems. "Armaflex DuoSolar" will in future be offered with a new high-temperature insulation material with micro-cell structure and will be even more energy-efficient than its pre-decessor: with a thermal conductivity of $0.038 \text{ W}/(\text{m}\cdot\text{K})$ (0°C) the new insulation material effectively reduces heat losses through the pipes from the solar collector to the heat storage unit.



New pipe system for solar heating systems; Intersolar 2008 in Munich. Graph: Armacell, Photo: Solar Promotion GmbH

"See you in Munich"

Since the first Intersolar in July 2000 hardly more than half a decade has passed, but these years have definitely turned out to be the "seven good years" for solar power. Four times the number of exhibitors and three times the number of visitors were present at Intersolar 2007 in comparison to the start in Freiburg. This illustrates the enormous growth in interest for solar alternatives. In the exhibition halls large solar companies – of which an increasing number of producers are from all around the globe – also presented their products in complex stands, some even on two levels.

The fact that far over one dozen Chinese exhibitors were present at Intersolar is a clear indication of the future: the solar market is becoming a global market and the solar industry is well on track to becoming the leading industry of the 21. century. The change of location to Munich will provide the industrial fair Intersolar growth opportunities so that it can cater for the international market. With over 50 000 m² of exhibition area at the reknown trade centre, Munich will be the focus point of the solar world from 12 - 14 June 2008.

For further information visit: www.intersolar.de

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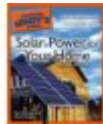
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