

# CENTROflash

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## New “ready-made solar plant” for private houses – Our contribution towards grid parity

While other integrated systems generally tend to be put together on a case-by-case basis in order to use the largest possible roof area, this new system is particularly suitable for homeowners whose priority is more on acquiring a slim, clearly structured system. Working with such a “ready-made solar plant” minimises the planning work and simplifies installation. Especially smaller firms of fitters or those that focus on traditional tasks should now find it easier to branch out into photovoltaics.

With the cost of solar modules already having been cut by more than 30 % since 2008, CENTROSOLAR is now also helping to slash installation costs by supplying this intelligent modular system and providing technical support for fitters. That marks another step towards grid parity – in other words, cost equality compared with conventionally generated power. It will be launched first in Germany. France, Italy, Spain, Belgium, the Netherlands, Greece and other countries in which CENTROSOLAR Group AG has its own subsidiaries will then follow.

## Our right to grow

The politicians have told us that photovoltaics has no right to unfettered growth funded by state subsidies. In other words, solar power has to become competitive with conventionally generated power. Cost equality will be achieved. Because scarcely any other industry is as successful at cutting the unit costs of its products as the PV sector. CENTROSOLAR is one of the cost leaders for module manufacturing in Europe. The lower the cost of the modules, the more attention will have to be paid to costs in the areas of logistics and installation. Here, too, CENTROSOLAR is among the leading players in boosting efficiency by providing extensive technical support



– for instance with the new “ready-made solar plant”. But we believe being competitive involves more than simply cutting costs. We produce durable, high-quality products. Quality genuinely matters. That is why our manufacturing operations are based in Germany rather than in low-wage countries. We are nevertheless still keeping pace with the international competition in terms of costs, and in fact the bulk of our sales are now outside Germany. The key to higher quality at lower cost is “continuous improvement”. That is the principle on which we stake our claim of the “right to grow”.

*Alexander Linnemann*



## Small but perfectly formed – The new integrated system from Centrosolar AG

The new “CENPAC” integrated system from CENTROSOLAR comprises 16 or 24 quality modules with an output of 210 to 220 Wp respectively, a converter and a matching mounting system for on-roof installation. “CENPAC” is so compact that all the components fit on one euro-pallet. The output is maximised by the module cover made from highly light-transmissible, patented anti-reflective solar glass supplied by Centrosolar Glas GmbH & Co. KG and the optimally coordinated other components in the package.

The system is finished entirely in black, to match the modular structure of virtually all roof types and surfaces.



**Tim Schoppe**  
“CENPAC”  
Productmanager

“At the moment, every PV system shipped is a unique specimen that has to be configured and built specifically for each application. Our aim was to develop an integrated system that fits adaptably on virtually any roof but always uses the same pre-assembled standard components. The result is “CENPAC”, a hitherto unique integrated PV system for our industry. It is not just cheaper; it also enables less experienced fitters to offer a high-grade, highly efficient integrated PV solution that does not involve a great deal of planning work.”

## New Centrosolar AG director – Ralf Klein takes charge of international business



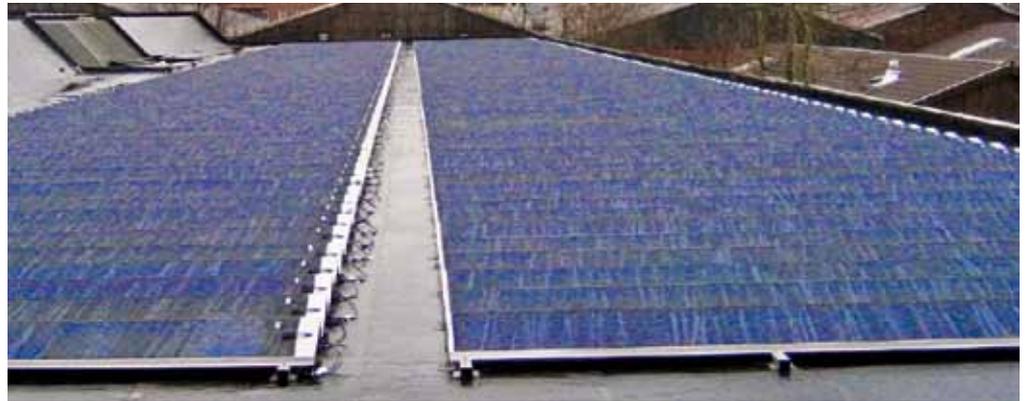
*“Photovoltaics is one of the booming sectors with immense potential for growth. CENTROSOLAR is already very well placed in Europe and the USA. I’m particularly attracted by the prospect of building on that international success.”*

Centrosolar AG created a fourth directorship on its Management Board in April. Ralf Klein is the new International Sales Director and takes charge of the company’s international business. This newly created post underscores CENTROSOLAR’s ambitions to expand its international business even further. Ralf Klein is an industrial engineering graduate with many years of international sales experience. He worked for the Bosch Group for many years, including taking charge of Bosch Rexroth Pneumatics business in Italy for five years and then heading International Sales at the company’s head offices.

Latterly, 40-year-old Klein was a member of the management of Sick AG in Waldkirch, a leading European supplier of sensing technology, where he headed Corporate Sales & Marketing. Ralf Klein is married with two children. In creating the new post of International Sales Director, CENTROSOLAR Group AG is aiming to step up its export business, which already accounts for over 50 percent of its revenue. With the establishment of the new Benelux branch at the end of 2009, CENTROSOLAR now has its own sales offices in six other European countries outside Germany, and also in the USA. Along with the creation of the new directorship, responsibility for the European subsidiaries is being transferred from CENTROSOLAR Group AG to Centrosolar AG. This paves the way for further international expansion.

## Pilot project with TF Multi Professional thin-film modules erected on stands

The new TF Multi Professional is the first module in the thin-film category where the cells are erected on stands using a top hat rail system. The first 440 such modules were installed and commissioned in a pilot plant on the roof of a multi-storey car park at the headquarters of the Employers' Liability Insurance Association for Health and Welfare (BGW) in Hamburg-Wandsbek. Thanks to its low weight of 6 kg/m<sup>2</sup>, the system is particularly suitable for roofs with low load reserves, such as the car park's roof.



*CENTROSOLAR PV system on the roof of the BGW headquarters in Hamburg*

## Powerstocc Excellent – New Centrosolar PV converter with integrated data logger

The new three-phase Powerstocc Excellent converter from CENTROSOLAR is available in six different performance categories ranging from 3 to 10 kW. It features an integrated data logger and a large input voltage range with several MPP trackers. This makes the Powerstocc Excellent outstandingly flexible for plant planning purposes.

A symmetrical three-phase supply is possible from the 3.8 kW performance category upwards and guarantees an uncomplicated approval process. The device also has improved mains monitoring to analyse and filter mains-end malfunctions better. This can help to increase the annual yield particularly when used in rural areas.



## Live wire for Berlin – Largest municipal photovoltaic system equipped with CENTROSOLAR modules

Berlin's largest municipal solar energy system is to be found on the roof of the Max-Schmeling-Halle convention centre in the Prenzlauer Berg district and is a joint venture between several subsidiaries of CENTROSOLAR Group AG. It was planned by the project engineers Centroplan, and Centrosolar AG supplied the made-in-Germany modules, which were manufactured at Centrosolar Sonnenstromfabrik in Wismar. A total of 1,064 polycrystalline high-performance modules of the type S-Class Professional, covering an area of 1,749 square metres, were erected on the roof of

the hall. The total output of the solar plant is 250 kWp. With an average amount of sunshine, the annual yield is projected as 220 megawatt hours, equivalent to the electricity consumption of around 100 homes. The plant is being operated by the Berlin Energy Agency. The system on the Max-Schmeling-Halle is not the only project realised by CENTROSOLAR in partnership with the Berlin Energy Agency. A solar system projected to generate 80 MWh of power each year is currently being installed on a residential building in Berlin-Lichtenberg.



*Michael Geißler, Managing Director of the Berlin Energy Agency, and Klaus Wowereit, governing mayor of Berlin, officially start up the solar plant*

**Integrated Systems**



High-profile guest at the inauguration of Sonnenstromfabrik's fourth production line



**Sonnenstromfabrik opens 4<sup>th</sup> production line – Over 1 million PV modules “Made in Wismar” already sold**

The fourth production line at Centrosolar Sonnenstromfabrik in Wismar was officially started up at an opening ceremony by Reinhard Bütikofer, Deputy Floor Leader of the Greens in the European Parliament. With a capacity of 45 MWp, the new production line produces an extra 1,000 solar modules a day. Meanwhile the plant, which operates three shifts, has turned out the module displaying the serial number 1,000,000. The bulk of its output consists of crystalline PV modules for solar plants on private houses, which are produced there in a highly automated process. The commissioning of the additional line means the company has increased its production capacity from previously 110 MWp to a present

155 MWp. This makes Centrosolar Sonnenstromfabrik GmbH one of the largest and probably most efficient solar module manufacturing plants in Europe. The steady rise in sales volume and export ratios over the past few years demonstrates that the crystalline solar modules made in Wismar are now widely acknowledged to represent good value for money. In parallel with the capacity growth, all processes along the entire supply chain at Wismar, from development, through purchasing and production, to logistics, are being optimised to reassert its cost leadership. Despite the increased capacity, production output remains virtually sold out for the next few months.



Solar plant installed by Centroplan on the REWE “Green Building” in Berlin with a total output of 164 kWp.

**Centroplan supplies REWE – Winner of the German Sustainability Award 2009**

In the course of the second half of 2009, Centroplan GmbH installed photovoltaic systems on a number of roofs owned by the retail group REWE. The locations of the roof systems on REWE retail outlets range from Dortmund to the “Green Building” supermarket of the future in Berlin, which achieves an entirely neutral CO<sup>2</sup> footprint. Thanks to its sustainable future strategy, REWE is among the top 3 prize winners of the German Sustainability Award 2009. The company bases its far-reaching sustainability strategy on the pillars “Green Products”, “Energy, Climate and Environment”,

“Employees” and “Social Involvement”. The “Energy, Climate and Environment” area includes installing renewable and therefore environmentally friendly energy systems on company buildings and retail outlets. For example, solar power is generated by two different types of plant on the roof of the “Green Building”. Glass-integrated photovoltaic modules are installed on the canopy, and the main roof additionally supports a 1,600 m<sup>2</sup> solar plant comprising 805 modules. All the plants were planned by Centroplan, the joint venture of CENTROSOLAR and Pohlen Bedachungen.

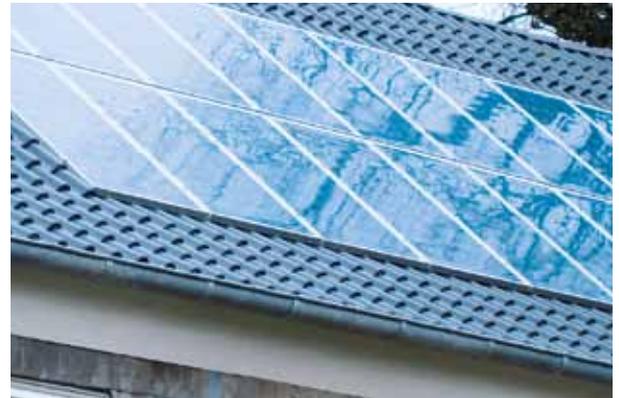


- 1 REWE Halle, 245 kWp
- 2 REWE Rostock, 244 kWp
- 3 REWE Dortmund, 206 kWp
- 4 REWE Großbeeren, 909 kWp

## Renusol develops “invisible” PV mounting system for in-roof integration – IntraSole CL falls within highest feed-in tariff category in France

In the shape of the new IntraSole CL, Renusol has now developed an especially elegant system for integrating laminates and thin-film modules into buildings; apart from the seal, it is not visible from the outside. This “invisibility” of the mounting system comes in response to the new feed-in tariffs in the French export market. From 2011, that country will make a distinction between solar systems on buildings in building-integrated plants, plants with simplified build-

ing integration, and other plants. IntraSole is designed to qualify for the highest feed-in tariff category of “building-integrated plants”, which can earn 58 ct/kWh. With IntraSole, the solar modules are simply clicked into longitudinal members with the aid of fully height-adjustable rotation anchors and integrated completely flush with the roof. The few visible system components are made from black anodised aluminium.



## Second roller coating line nearing commissioning – Further increase in capacity for the new anti-reflective coat

Our Fürth-based solar glass specialist Centrosolar Glas GmbH & Co. KG had already increased its annual capacity to 6 million m<sup>2</sup> at the end of 2009. Its continuing huge success with anti-reflective coated solar glass has now necessitated a further increase in capacity. Nanocoated anti-reflective solar glass can boost the annual output of a solar module fitted with it by between 4 and 7 %. That is why many high-profile manufacturers in Europe, the USA and Asia want to use anti-reflective solar glass in

their high-performance modules. Since the end of last year, the team in Fürth has also acquired a command of a new, particularly simple and therefore effective nanocoating process. The new patented anti-reflective coating from Centrosolar Glas can now also be applied on one side only, and across the entire surface, making the production process even more efficient. The new technique has already gone into production on one line. There are now plans to install a second roller coating line.



## Demand for anti-reflective coatings from an entirely different quarter

Cologne Cathedral is probably one of those projects that will never really be finished. While construction work was completed in the mid-19<sup>th</sup> century, almost 650 years after it started, it has been the subject of a constant renovation process ever since. That includes gradually applying anti-reflective coatings from Fürth to the cathedral's mediaeval stained glass. This protective glass preserves the windows, which occupy an important place in art history, by protecting them against further weathering. One construction phase currently involves fitting a solar glass cover to three new ca-

thedral windows. Cologne Cathedral is therefore a prime example of technical rather than commercial interest in showcasing additional applications unrelated to covers for solar modules. Centrosolar Glas' R&D department is continually exploring and optimising new applications for anti-reflective glass. These include panes for such diverse applications as street lights, flat-screen monitors, greenhouses or – as in this example – church windows. The present-day application for solar modules was in fact identified 8 years ago as a result of precisely such market investigations.



*The Abraham window in Cologne Cathedral will soon be protected by anti-reflective special glass made in Fürth.*

Group News



**North America: new subsidiary in Canada – Extra sales teams in other US states**

Since the start of March, CENTROSOLAR has enjoyed a presence not just in the USA, but throughout North America. CENTROSOLAR Group AG and Centrosolar America have together established a subsidiary in Canada. Centrosolar Canada Inc. has its place of incorporation in the Canadian city of Toronto and, like the US company, will sell entire integrated solar systems primarily for private houses, but also individual modules and components. Centrosolar Canada Inc. is now set to emulate

the achievements of Centrosolar America, whose sales figures have risen by 40 % each month in 2010. One of the keys to success is the policy of supporting smaller trade businesses such as electricians and fitters by giving them special training, to ease their entry into solar business. As well as its branches in Pleasanton, California and Scottsdale, Arizona, the US subsidiary now also has sales teams at the ready in New Jersey, Florida and New Mexico, and at further locations in Southern and Northern California.

*New: twice a month, US solar engineers can now obtain further training at the "CentroSchool", which is held at various locations throughout the USA.*



**BENELUX – Partnership with Nefit sealed**

CENTROSOLAR opened its own international branch in the Netherlands at the end of 2009. The new office is based in Tiel, south of Utrecht. All Benelux countries are served from there. It is already handling the first few projects during the restructuring of the entire supply chain, whether via wholesalers or for direct sales. The CENTROSOLAR integrated systems on sale there are suitable for flat or sloping roofs and are available in six different versions

with outputs ranging from 570 Wp to 3,800 Wp. Managing Director Michiel van Schalkwijk recently signed a partnership agreement with the Dutch-Belgian building services company Nefit, which supplies around 2,500 fitters/dealers in the Netherlands. In view of the attractive subsidies available in the Netherlands, both Nefit and CENTROSOLAR anticipate that the sales volume will ultimately run into megawatts.

*M. van Schalkwijk, Managing Director of Centrosolar Benelux B.V, at the signing of the agreement with A. Drenth, Director of Nefit*



**France – Company record: sloping-roof system with 1680 modules**

Centrosolar France has set a new company record with the large-scale plant installed near Aubenas, in the South of France. A total of 1680 modules were erected in the Southern French village of Lavilledieu, in the Ardèche department – never before has Centrosolar France installed so many modules in a single sloping-roof system.

*Large-roof solar energy system in Lavilledieu comprising 1680 modules, total output ??? kWp*

## Italy – Flexible thin-film systems also suitable for arched roofs

So that solar plants can also be fitted to arched roofs, Centrosolar Italia is now offering flexible thin-film laminates alongside the frame-mounted standard modules, so that they can be optimally matched to the more complex curved roof shape. The flexible modules used, embedded in plastic, are particularly durable and light. They are therefore suitable for solar plants on lightweight-construction halls of the type commonly encountered in agriculture or industry. The first Centrosolar Italia reference projects for such systems have already been connected to the grid.



*Centrosolar Italia thin-film solar plant on an arched roof in Pergine Valsugna, Alto Adige (502 kWp).*

*Centrosolar Italia solar plant on the roof of a waste sorting station in Monte Crocetta, near Vicenza (20 kW), constructed in collaboration with DSF Technologies.*

## Greece – First reference project for a grid-connected integrated system compliant with the new legislation

In mid-2009 Greece introduced new photovoltaic feed-in tariffs that gave the local solar industry a boost. The payment for larger-scale solar plants of more than 100 kWp is 40 ct/kWh on the mainland and 45 ct/kWh on the islands. It is fixed for 20 years and will be adjusted annually in line with the inflation rate. The first Centrosolar reference project in

Greece was connected to the grid in February 2010. The open-site system is located around 60 km from Thessaloniki in Northern Greece and was erected by the dealer Neda SA. It has an output of 99 kWp and is equipped with 432 Centrosolar S-Class Professional solar modules, each with an output of 230 Wp.



*Greece currently offers one of the highest feed-in tariffs in Europe, with a maximum of 50 ct/kWh (for solar plants up to 100 kWp on the islands).*

## Spain – Industry discovers PV technology for own roofs

In a country where tourists flock to soak up the sun on the beach, our subsidiary Centrosolar Fotovoltaico España S.L. is helping roof owners to install their own solar power plants: PV roof systems in Spain have enjoyed particularly high subsidies since mid-2008 under the new Royal Decree (similar to Germany's Renewable Energies Act). For Centrosolar, this means that demand is now focused on our

core area of the small to large roof systems that this act targets. Spanish industry has now also discovered that it can use its factory roofs as an additional source of income. Centrosolar recently completed a large-scale roof project in Barcelona for the customer ?. The plant comprises ? modules of the ? brand and has a total capacity of kWp. Other references on industrial roofs and of course on private houses are being processed.





*CENTROSOLAR products now reach their customers even faster: thanks to SAP, logistics processes between production and sales are optimised in line with requirements.*

## Blanket roll-out of SAP throughout group Efficiency advantages in logistics, sales and controlling

Since the start of this year, the subsidiaries of CENTROSOLAR Group AG at six German and five international locations have been linked up by a uniform SAP system. This makes handling the business processes between each entity much more efficient. It particularly benefits the organisation of shipments between the production plants in Fürth and Wismar (Centrosolar Glas GmbH & Co. KG and Centrosolar Sonnenstromfabrik GmbH) and the sales companies. To optimise the supply processes further, two distri-

bution centres and a logistics centre have been set up close to the Wismar Sonnenstromfabrik; other transshipment points in France and Italy are to follow. The subsidiaries' ability to supply their customers capably and reliably has consequently been greatly optimised. SAP also boosts the efficiency of controlling processes, because the system simplifies company-wide reporting and the rapid compilation of financial statements to both national and international financial reporting standards.

## CENTROSOLAR Annual General Meeting elects new Supervisory Board

The election of a new Supervisory Board was due at this year's Annual General Meeting. Along with the previous Deputy Chairman, Dr. Bernhard Heiss, two new members were nominated and duly elected: Guido A. Krass and Martinius Brandal. The entrepreneur Guido A. Krass is the largest private investor in CENTROSOLAR Group AG with a shareholding of around 15 %. As Chairman of the Supervisory Board of CENTROTEC Sustainable AG, which has a 26 % interest in CENTROSOLAR, he is moreover in a position to represent the interests of CENTROTEC.

Martinius Brandal, Norway, was also elected to the Supervisory Board. Mr. Brandal's previous posts included that of CEO of Aker Solutions ASA, a Norwegian metals and energy group whose market value increased several-fold during his time in office. As a partner of Bio Energy Group AG, Switzerland, he will also be able to share his useful experience in the renewable energy sector. Dr. Bernhard Heiss, Germany, was re-elected as the third member. Dr. Heiss, a lawyer and entrepreneur, has sat on the Supervisory Board of CENTROSOLAR ever since its establishment and is extensively involved

in various companies, particularly in the media industry. A major objective for this international team is to promote the international expansion of the CENTROSOLAR Group. After the Shareholders' Meeting the new Supervisory Board elected Mr. Guido Krass as its Chairman. The Management Board and Supervisory Board thanked the departing members, Gert-Jan Huisman and Friedrich Lützwow, for their committed support and effective involvement over eventual first four years of the company.

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### Solar Key Components

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Renusol France SARL  
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