



SMA Solar Technology AG – Press Release

**PV Pack Research Project – Innovative Solutions for New Highly Integrated Inverters  
in the 10-kW to 40-kW Range**

**Niestetal, February 4, 2014 – SMA Solar Technology AG (SMA), the Fraunhofer Institutes for Solar Energy Systems (ISE) and Manufacturing Technology and Advanced Materials (IFAM) and Phoenix Contact GmbH & Co. KG have initiated PV Pack, a joint research project that focuses on innovative inverter concepts. The goals of this joint project are to develop alternative solutions for cooling technologies and advanced packaging and to research application of new cooling materials. The new packaging concepts will be optimized in terms of how they interact with the power electronics used in inverter systems. As a result, three-phase photovoltaic inverters in the 10-kW to 40-kW range should see a marked improvement in functionality, efficiency, cost and service life. The project is backed by €1.4 million from the German Federal Ministry of Education and Research (BMBF) as part of its “Power Electronics for Improved Energy Efficiency (LES) Part 2: Electronics for the Energy of the Future” initiative. SMA is responsible for coordinating the project.**

Technologically, inverters are the most important components of PV systems. They determine the efficiency and reliability of the entire system. To further strengthen the international competitiveness of the German photovoltaic industry, the technology used in inverters must be continuously improved while innovations in a wide range of relevant areas are also needed to reinforce the technological advantage the industry currently enjoys.

Today, mechanical and electromechanical components for connecting, supporting and cooling make up 70% of a PV inverter. The partners in the PV Pack project want to develop totally new approaches in optimization of advanced packaging and cooling technologies. These innovative solutions will be used in a three-phase inverter to achieve a new, highly integrated system concept and then tested in real-world conditions. The results of the project will lead to significantly more compact PV inverters, which in turn will reduce costs, thus meeting the future demands of solar power use.

The mission of the project is to develop future-proof technologies that enable more effective manufacturing of highly reliable and durable inverters in the 10-kW to 40-kW power range, thus contributing toward improving the competitiveness of photovoltaics and in strengthening Germany as a country of development and production.



## Participating Partners

### **SMA Solar Technology AG**

The SMA Group generated sales of €1.5 billion in 2012 and is the global market leader for solar inverters, a key component of all PV systems and, as an energy management group, offers innovative key technologies for future power supply structures. It is headquartered in Niestetal, near Kassel, Germany, and is represented internationally in 21 countries. The Group employs more than 5,000 people worldwide. SMA's broad product portfolio encompasses compatible inverters for every type of module on the market and for every system size, including inverters for both PV systems connected to the grid and inverters for off-grid systems. SMA is therefore able to provide ideal technical inverter solutions for all system sizes and types. Since 2008, the Group's parent company, SMA Solar Technology AG, has been listed on the Prime Standard of the Frankfurt Stock Exchange (S92) and also in the TecDAX index. In recent years, SMA has received numerous awards for excellence as an employer with first place in the nationwide "Great Place to Work®" competition in 2011 and 2012 and fourth place in 2013.

### **Fraunhofer Institute for Solar Energy Systems (ISE)**

With a staff of 1,300, the Freiburg-based Fraunhofer ISE is the largest solar energy research institute in Europe. Fraunhofer ISE is committed to promoting energy supply systems which are sustainable, economic, safe and socially responsible. It creates the technological foundations for supplying efficient and environmentally sound energy in industrial, emerging and developing countries. To this end, the Institute develops materials, components, systems and processes for energy efficiency, generation, distribution and storage. The business areas covered by the Fraunhofer ISE include: energy-efficient buildings; silicon photovoltaics; III-V and concentrator photovoltaics; dye, organic and advanced solar cells; photovoltaic modules and power plants; solar heating; hydrogen and fuel cell technology; system integration and power; heating and gas networks; energy-efficient power electronics; emission-free mobility; storage technologies; and energy system analysis. The Fraunhofer ISE also has numerous certified test centers and other service facilities, and is a member of the Fraunhofer Society, the largest organization for applied research in Europe.

[www.ise.fraunhofer.de](http://www.ise.fraunhofer.de)

### **Fraunhofer Institute for Manufacturing Technology and Applied Material Research IFAM, Dresden**

The Fraunhofer IFAM is actively involved in research and development in the areas of shaping and functional materials and adhesive bonding technology and surfaces. The Institute employs more than 550 people, of which over 90% work in scientific and technical fields. The Dresden branch of the Fraunhofer IFAM conducts basic and applied research in the development of new sintered and composite materials and cellular metallic materials through the use of innovative powder metallurgy technologies. Services range from industrial implementation of research results to prototype component manufacturing. The extensive technological and material expertise at the IFAM laboratories facilitate development of metallic sintered and composite materials whose properties are combined in a tailor-made fashion. In



its certified test laboratory, power characterizations and sintered material analyses are conducted according to DIN and ISO standards. The result includes material and component innovations for automotive manufacturing, electronics, energy technology, mechanical engineering, biomaterials and aerospace engineering.  
<http://www.ifam.fraunhofer.de/de/Dresden.html>

### **Phoenix Contact GmbH & Co. KG**

Phoenix Contact is a global market leader in components, systems and solutions for electrical engineering, electronics and automation. The family-owned company employs 13,000 people worldwide and generated €1.64 billion in sales in 2013. Headquartered in the North Rhine-Westphalian town of Blomberg, Germany, the Phoenix Contact Group comprises nine companies and 50 sales subsidiaries. The company's global presence is also maintained by 30 offices throughout Europe and overseas. It services the automotive, renewable energy and infrastructure markets through integrated customized solutions that include engineering, service and training. In close cooperation with higher education and research institutions, future technologies such as electric mobility and environmental technologies are researched and then transformed into commercially viable products, systems and solutions.

### **SMA Solar Technology AG**

Sonnenallee 1  
34266 Niestetal  
Germany

### **Head of Corporate Communications:**

Anja Jasper  
Tel.: +49 561 9522-2805  
Presse@SMA.de

### **Press contact:**

Susanne Henkel  
Manager Corporate Press  
Tel.: +49 561 9522-1124  
Fax +49 561 9522-421400  
Presse@SMA.de



**Investor Relations contact:**

Julia Damm

Manager Investor Relations

Tel. +49 561 9522-2222

Fax +49 561 9522-2223

IR@SMA.de

**Disclaimer:**

This press release serves only as information and does not constitute an offer or invitation to subscribe for, acquire, hold or sell any securities of SMA Solar Technology AG (the "Company") or any present or future subsidiary of the Company (together with the Company, the "SMA Group") nor should it form the basis of, or be relied upon in connection with, any contract to purchase or subscribe for any securities in the Company or any member of the SMA Group or commitment whatsoever. Securities may not be offered or sold in the United States of America absent registration or an exemption from registration under the U.S. Securities Act of 1933, as amended.

This press release can contain future-oriented statements. Future-oriented statements are statements which do not describe facts of the past. They also include statements about our assumptions and expectations. These statements are based on plans, estimations and forecasts which the Managing Board of SMA Solar Technology AG (SMA or company) has available at this time. Future-oriented statements are therefore only valid on the day on which they are made. Future-oriented statements by nature contain risks and elements of uncertainty. Various known and unknown risks, uncertainties and other factors can lead to considerable differences between the actual results, the financial position, the development or the performance of the corporation and the estimates given here. These factors include those which SMA has discussed in published reports. These reports are available on the SMA website at [www.SMA.de](http://www.SMA.de). The company accepts no obligation whatsoever to update these future-oriented statements or to adjust them to future events or developments.