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The *Swiss-Inno HJT Project* – a joint effort between the Meyer Burger Group and the CSEM PV Center

The Meyer Burger Group and CSEM, with support from the Swiss Federal Office of Energy and of the Canton of Neuchâtel, will strengthen Switzerland's position as leader for technological innovation in the photovoltaic sector and ensure its competitiveness as a major equipment provider in the international photovoltaic industry. The key is heterojunction silicon technology.

More than 37 Gigawatt peak (GWp) of photovoltaic (PV) output was installed in 2013. The cumulative global output by the end of 2013 will be approximately 140 GWp, leading to a major expansion in electrical energy in Europe. Photovoltaics will contribute significantly to the future global energy mix. Increasingly efficient modules and competitive technologies are making photovoltaic more economically viable while achieving lowest cost of energy (CHF/kWh).

Against this background, the *Swiss-Inno HJT* project is promoted and supported by the Swiss Federal Office of Energy, industrial partners and the Canton of Neuchâtel for a budget of about 10 million Swiss Francs over 3 years. This grant promotes the setup of a pilot production system for high-efficiency cells with the goal of producing photovoltaic energy at lowest prices while illustrating the superiority of this innovative heterojunction technology in a demo system.

Heterojunction silicon technology (HJT) consists of ultra-thin (several thousandths of a micrometre) layers of amorphous silicon in the nanometre range that have been deposited on both sides of mono crystalline silicon wafers. The level of efficiency is higher than in standard cells with the production process actually requiring fewer steps. Additional advantages of the HJT technology are its remarkable temperature characteristics and its bi-faciality which can lead to increased energy efficiency (kWh/Wp). This is the basis of decreased energy costs (CHF/kWh). HJT technology also paves the way for low cost mass production of PV modules (less than 0.6 CHF/Wp). Development of the technology started in 2008 in a partnership between Roth and Rau, the competence centre for coating technologies within the Meyer Burger Group, and the Photovoltaics Laboratory of the IMT at EPFL.

Enormous export opportunities for Swiss industry

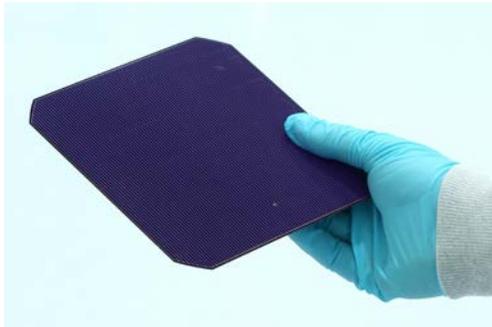
The heart of the *Swiss-Inno HJT* project is the development of an innovative pilot production line for heterojunction cells and modules while continuously improving and optimising the production process. Important goals for the project are the successful market entry of the HJT technology as well as the realisation of promising export opportunities.

The successful market entry of HJT is expected to contribute to further price reductions for PV power systems in general and to significantly lower the overall cost of solar energy production. Heterojunction silicon technology is especially suitable for energy efficient roof installations and building integrations and could therefore become a preferred technology for Swiss domestic market applications. This will support the Swiss federal energy strategy 2050 which targets an increased share of renewable electricity in the future energy mix.

Several Swiss technology centres such as Meyer Burger group members Roth & Rau Research, PASAN and the Meyer Burger competence centre in Thun as well as CSEM's PV-center, are joining forces and combining their respective expertise to develop HJT technology for the industrial production of advanced solar cells and modules. After the project is completed, the pilot lines will become key research and development platforms to bring further innovations in PV technology to maturity under industrial-like production conditions in order to maintain a competitive edge.



MEYER BURGER



Heterojunction solar cell



Swiss-Inno HJT video by Federal Office of Energy
([French language link](#))

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About Meyer Burger Technology Ltd

www.meyerburger.com

Meyer Burger is a leading global technology Group specialising on innovative systems and processes based on semiconductor technologies. The Group's focus is on photovoltaics (solar industry) while its competencies and technologies also cover important areas of the semiconductor and the optoelectronic industries as well as other selected high-end markets based on semiconductor materials. The Group currently employs over 1,800 people across three continents. Over the past ten years, Meyer Burger has risen to the forefront of the photovoltaic market and established itself as an international premium brand by offering superior precision products and innovative technologies.

The Group's offering in systems, product equipment and services along the photovoltaic value chain includes the manufacturing processes for wafers, solar cells, solar modules and solar systems. Meyer Burger provides substantial added value to its customers and clearly differentiates itself from its competitors by focusing on the entire value chain.

The Group's comprehensive product portfolio is complemented by a worldwide service network with spare parts, consumables, process know-how, customer support, after-sales services, training and other services. Meyer Burger Group is represented in Europe, Asia and North America in the respective key markets and has subsidiaries and own service centres in China, Germany, India, Japan, Korea, the Netherlands, Switzerland, Singapore, Taiwan and the USA. The Group is also working intensively to develop new markets such as South America, Africa and the Arab region. The registered shares of Meyer Burger Technology Ltd are listed on SIX Swiss Exchange (Ticker: MBTN).



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CSEM – an innovation center and a photovoltaic expertise

CSEM SA, founded in 1984, is a private research and development center specializing in microtechnology, nanotechnology, microelectronics, system engineering, photovoltaics and communications technologies. Approximately 400 highly qualified and specialized employees from various scientific and technical disciplines work for CSEM in Neuchâtel, Zurich, Muttenz, Alpnach and Landquart.

Established in 2013, CSEM PV-center has been created to accelerate the pace of technology transfer in photovoltaic, to bring to maturity new high-tech solutions for components and systems, and to serve the Swiss and global renewable energy industry. *Swiss Inno HJT* is a perfect illustration of CSEM's central role in supporting Swiss industrialization efforts by providing a full range of services to its partners, spanning from technology development to product prototyping, including the realization of full size demonstration systems. CSEM PV-center work closely with the EPFL PV-lab installed in Neuchâtel and with other Swiss research institutes

Further information is available at www.csem.ch

About *Swiss-Inno HJT*

The SFOE 'Pilot and Demonstrators Programme' promotes the development of energy technologies in the efficiency and renewable energy sector. By supplementing projects initiated by the private economy and public-sector research institutions, it sets out to fill certain knowledge gaps, promote the further development of promising technologies and demonstrate the status of technology for more widespread application.

The *Swiss-Inno HJT* project involves Meyer Burger Technology Ltd and its subsidiaries PASAN SA and Roth & Rau Research SA as well as the PV-center of CSEM SA. The project started October 1st 2013 and will run over a period of 3 years. The Swiss Federal Office of Energy grant, complemented by partner investments and by a financial support of the Neuchâtel regional government will permit to support the set-up two demonstration lines: the pilot line in the new infrastructures of Roth & Rau Research AG in Hauterive, Switzerland and the metallization line at the PV-center of CSEM in Neuchâtel, Switzerland. The goal of this project is to develop advanced silicon hetero junction solar cell and module interconnections in order to achieve very high power output and performance ratio. Such modules will be produced in a demonstration line and monitored in outdoor test PV systems to show the benefit of the developed technology over state-of-the-art commercial PV products.