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Groundbreaking technology for the photovoltaic industry

Spin-off NexWafe wins Fraunhofer Founder Award 2020

NexWafe GmbH wins the Fraunhofer Founder Award 2020 endowed with 5000 euros. The start-up convinced the high-caliber panel from Fraunhofer Venture and High-Tech-Gründerfonds with a revolutionary new approach for the photovoltaic industry.

The Fraunhofer spin-off NexWafe GmbH, based in Freiburg, wins the renowned Fraunhofer Founder Award 2020 with an innovative process for the low-cost and resource-efficient manufacture of silicon wafers for photovoltaic plants. In the EpiWafer process developed by NexWafe, a crystalline silicon layer is deposited directly onto a kerfless wafer and then detached. This innovative technology can be used to produce any desired wafer thickness for a fraction of the energy, material and capital costs required so far.

Disruptive potential for renewable energy production

Compared to the conventional crystal growth method, the innovative new process is reducing the costs involved in manufacturing photovoltaic wafers by 50 percent and cutting the CO₂ emissions generated during manufacture by 70 percent. The significant cost benefits that the NexWafe technology is able to achieve are opening up a new future perspective in solar cell production, especially for the technology-oriented companies in Germany.

NexWafe GmbH is supplying solar cell manufacturers with high-quality monocrystalline silicon wafers that are fully compatible with the standard processes used in cell and module production. The company is currently commissioning a 5MW pilot line in Freiburg and plans to supply customers for qualification purposes in the first half of 2021.

NexWafe was founded in 2015 by Stefan Reber, Head of the Crystalline Silicon Materials Department at the Fraunhofer Institute for Solar Energy Systems ISE, and Frank Siebke, an experienced expert and entrepreneur in the solar energy sector. Davor Sutija, a renowned habitual business founder in the international energy and technology sector, joined the NexWafe management team as CEO in September 2020.

The costly early phase of the next wafer production generation was financed by the Fraunhofer Institute for Solar Energy Systems ISE and Fraunhofer as seed investors.

Editorial Notes

Janis Eitner | Fraunhofer-Gesellschaft, München | Communications | Phone +49 89 1205-1333 | presse@zv.fraunhofer.de

Susanne Weber | Fraunhofer Venture | Phone +49 1205-4502 | fraunhoferventure@fraunhofer.de | www.fraunhoferventure.de

Further funding from Germany, Switzerland and Saudi Arabia secured the company's continued development and growth course.

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Cutting edge technology as a location advantage

In the panel's deliberations, Thomas Doppelberger, Director of Fraunhofer Venture, highlighted the fact that the NexWafe process is resolving a structural problem in the photovoltaic sector by means of a Fraunhofer technology and opening up new perspectives for an entire industry: »The kerfless wafer process developed by NexWafe has the potential to shift the competition in the photovoltaic industry all over the world, from low manufacturing costs to the innovative technologies involved. NexWafe shows that the technological advantage gained through research can be a crucial factor for the future of Germany as a location and is therefore a role model for spin-offs from the scientific world.«

Dr. Andreas Olmes, Principal at High-Tech Gründerfonds, adds: »It's awesome that the Fraunhofer success story with NexWafe is still being written. I am grateful that we, as HTGF, are able to lend a helping hand. I consider NexWafe to be an outstanding example of how German deep tech can be successfully and sustainably commercialized from a research environment.«



The Fraunhofer Founders Award 2020 was presented as part of the digital Fraunhofer Symposium »Netzwerk«.

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About the Fraunhofer start-up award

The Fraunhofer start-up award was introduced in the scope of the new spin-off and investment strategy of the Fraunhofer-Gesellschaft and was awarded for the first time in 2016. For the sixth time already, it honors a spin-off that is active and successful on the market and offers products or services with a direct benefit for society. With the award Fraunhofer Venture and High-Tech Gründerfonds aim to honor extraordinary start-up projects and further advance spin-off ideas within the Fraunhofer-Gesellschaft.

About NexWafe

NexWafe uses a proprietary process to produce ultra-thin, high-efficiency, monocrystalline green silicon wafers. Fully compatible with conventional solar cell manufacturing, NexWafe offers a 70% reduction in carbon dioxide emissions during manufacturing. In addition to being “green,” Nexwafe’s continuous, direct gas-to-wafer manufacturing process minimizes waste, resulting in wafers that are 30% less expensive than conventional wafers. NexWafe’s in-line, ultra-scalable process shatters cost down roadmap barriers and inherently supports the industry’s extraordinary growth as the transition to solar power accelerates worldwide. The company, which was spun out from Fraunhofer Institute for Solar Energy Systems ISE in 2015, has a 5MW pilot prototype facility located in Freiburg, Germany.
www.nexwafe.com

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About High-Tech Gründerfonds

The seed investor High-Tech Gründerfonds (HTGF) finances technology start-ups with growth potential. With a volume of around EUR 900 million spread across three funds and an international partner network, the HTGF has supported more than 600 start-ups since 2005. The team of experienced investment managers and start-up experts supports the young companies with know-how, entrepreneurial spirit and passion. The focus is on high-tech start-ups in the areas of digital tech, industrial tech, life sciences, chemistry and related business areas. External investors have so far invested almost 3 billion euros in more than 1,700 follow-up financing rounds in the HTGF portfolio. The fund has also successfully sold shares in more than 120 companies.

Investors in the public-private partnership include the Federal Ministry for Economic Affairs and Energy, KfW Capital, the Fraunhofer-Gesellschaft as well as ALTANA, BASF, Bayer, Boehringer Ingelheim, B.Braun, Robert Bosch, BÜFA, CEWE, Deutsche Bank, Deutsche Post DHL, Dräger, Drillisch AG, EVONIK, EWE AG, FOND OF, Haniel, Hettich, Knauf, Körber, LANXESS, media + more venture Beteiligungs GmbH & Co. KG, PHOENIX CONTACT, QIAGEN, RWE Generation SE, SAP, Schufa, Schwarz Gruppe, STIHL, Thüga, Vector Informatik, WACKER and Wilh. Werhahn KG.
www.high-tech-gruenderfonds.de

Fraunhofer Venture is the central department for spin-offs and investment management of the Fraunhofer-Gesellschaft and offers founders, start-ups, industry and investors access to the cutting-edge technologies of the 75 Fraunhofer Institutes, the Fraunhofer infrastructure and Fraunhofer know-how with over 7,050 patent families through a comprehensive support program. The range of services includes complete support and consulting from the idea to the founding of a company, active participation management of Fraunhofer participations, support with finding investors up to a possible sale of the company.
www.fraunhoferventure.de

The Fraunhofer-Gesellschaft, headquartered in Germany, is the world’s leading applied research organization. With its focus on developing key technologies that are vital for the future and enabling the commercial exploitation of this work by business and industry, Fraunhofer plays a central role in the innovation process. As a pioneer and catalyst for groundbreaking developments and scientific excellence, Fraunhofer helps shape society now and in the future. Founded in 1949, the Fraunhofer-Gesellschaft currently operates 75 institutes and research institutions throughout Germany. The majority of the organization’s 29,000 employees are qualified scientists and engineers, who work with an annual research budget of 2.8 billion euros. Of this sum, 2.4 billion euros are generated through contract research.
www.fraunhofer.de