Press Release

Austrian research project “H2Pioneer“
Green hydrogen for the semiconductor industry

August 18, 2021 - Semiconductor company Infineon Technologies Austria and industrial gases and engineering company Linde have signed a contract to **build a plant for sustainably produced hydrogen in the semiconductor industry.** Planned as part of the "H2Pioneer" research project, the demonstration plant for the production of high-purity hydrogen from renewable energy sources in Villach will go into operation in early 2022.

The semiconductor industry is one of the most dynamic, technically demanding and competitive industries in the world with high growth potential. Infineon is currently expanding production capacity at its Villach site and investing 1.6 billion euros in a new high-tech chip factory for power electronics ("energy-saving chips"). As demand for microelectronics solutions increases, so does the need for the gases and chemicals required in production - including high-purity hydrogen as a process gas. This **hydrogen,** which was previously delivered by truck from Germany, **will then be generated directly at Infineon's production site in Villach from renewable energies**.

Thomas Reisinger, Board Member for Operations at Infineon Technologies Austria, sees the hydrogen plant as an integral part of a sustainable site expansion: "Today, resource-efficient production is a key lever on the path to climate neutrality. With the start of production of our new chip factory for power electronics at the beginning of August 2021, the demand for hydrogen for the manufacturing process will also increase continuously. With the implementation of the electrolyzer plant at Infineon's Villach site, we are prepared for the future in two respects: with an important contribution to climate protection as well as the necessary security of supply."

Funded research project

The industrial partners Linde, Infineon Technologies Austria and VERBUND, together with their research partners HyCentA Research GmbH, the Energy Institute at Johannes Kepler University (JKU) Linz and the WIVA P&G showcase region, are driving this sustainable solution forward as an important step towards a "Tech for Green Industry": The project is being funded as part of the Climate and Energy Fund's RTI initiative "Showcase Energy Region", endowed with funds from the Ministry of Climate Protection (BMK).

Austrian Federal Minister of Climate Protection Leonore Gewessler: "Hydrogen from renewable energies will play an important role in achieving climate neutrality by 2040, especially in industry. This is because emissions must be reduced in all economic sectors. By investing and promoting energy innovations, domestic industrial companies are also making an important contribution to the economic recovery after the corona crisis."

Theresia Vogel, Managing Director of the Climate and Energy Fund: "Green hydrogen is an extremely scarce commodity. Thanks to H2Pioneer, a lighthouse is being created that will demonstrate the advantages hydrogen brings to industry internationally. The partners involved, a strong and powerful consortium, are creating a highly innovative project that will contribute significantly to the reduction of greenhouse gases in Austria. At the same time, it opens up export opportunities for domestic companies on the world market."

Implementation starts

The design, construction and operation of the first plant for on-site production of green hydrogen in the semiconductor industry is being carried out from a single source by Linde, a global market leader in the field of hydrogen technology. The entire plant consists of a containerized PEM (Proton Exchange Membrane) electrolysis plant, which Linde will deliver to Villach on a turnkey basis. Linde processes the gas produced there in a cryogenic process so that high-purity hydrogen can be provided to Infineon. In addition, Linde is supplying a liquid hydrogen supply system to ensure round-the-clock delivery to the semiconductor production facility. Using sustainably generated electricity, **the plant can produce up to 800 kg of green hydrogen per day**.

"We are pleased to be working with Infineon to advance the use of green hydrogen in the semiconductor industry," says Richard Hagenfeldt, Managing Director of Linde Electronics GmbH. "The long-term sustainable alignment of production is of high importance to Linde because the business success of our customers and thus our own success depend on it. The use of our plant experts and our advanced technologies are essential building blocks that contribute to sustainable power generation in the semiconductor industry," Hagenfeldt added.

Philipp Schautschick, Head of Engineering at Linde Electronics, explains: "Linde is proud to be a pioneer in the production of green hydrogen for the semiconductor industry. With this plant, we are able to meet the increasing customer demand for high-purity hydrogen in an environmentally sustainable way, thus achieving significant CO_2 reductions in production. We see this as a significant milestone on the way to more sustainability and a low CO_2 semiconductor industry."

About Infineon Austria

Infineon Technologies Austria AG is a group subsidiary of Infineon Technologies AG, a world-leading provider of semiconductor solutions that make life easier, safer and greener. Microelectronics from Infineon reduce the energy consumption of consumer electronics, domestic appliances and industrial facilities. They make a major contribution to the convenience, security and sustainability of vehicles, and enable secure transactions in the Internet of Things.
Infineon Austria pools competencies for research and development, production as well as global business responsibility. The head office is in Villach, with further branches in Graz, Klagenfurt, Linz and Vienna. With 4,517 employees from around 70 countries (including 1,960 in research and development), in the financial year 2020 (ending in September) the company achieved a turnover of € 3.1 billion. With a research expenditure of 498 million euros, Infineon Austria is one of the strongest research company in Austria.
Further information at www.infineon.com/austria

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About Linde

Linde is a leading global industrial gases and engineering company with 2020 sales of $27 billion (€24 billion). We live our mission of making our world more productive every day by providing high-quality solutions, technologies and services which are making our customers more successful and helping to sustain and protect our planet.
The company serves a variety of end markets including chemicals & refining, food & beverage, electronics, healthcare, manufacturing and primary metals. Linde's industrial gases are used in countless applications, from life-saving oxygen for hospitals to high-purity & specialty gases for electronics manufacturing, hydrogen for clean fuels and much more. Linde also delivers state-of-the-art gas processing solutions to support customer expansion, efficiency improvements and emissions reductions.
For more information about the company and its products and services, please visit
www.linde.com

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About VERBUND

VERBUND is Austria's leading electricity company and one of the largest producers of electricity from hydropower in Europe. The company generates around 95 percent of its electricity from renewable sources, primarily hydropower. VERBUND trades electricity in 12 countries and generated annual sales of around €3.9 billion in 2019 with around 2,800 employees. With subsidiaries and partners, VERBUND is active in everything from electricity generation and transport to international trading and sales. VERBUND has been listed on the Vienna Stock Exchange since 1988, and 51% of the share capital is owned by the Republic of Austria. Further information: www.verbund.com

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About Ministry of Climate Protection

The Ministry of Climate Protection (BMK) is the Federal Ministry of the Republic of Austria responsible for climate protection, the environment, energy, mobility, innovation and technology. Leonore Gewessler has been Climate Protection Minister since January 2020.

Further information

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About Climate and Energy Fund

With "Vorzeigeregion Energie", the Climate and Energy Fund launched a superlative RTI initiative in 2017, through which Austria also participates in the global "Mission Innovation" network. The stated goal is to develop and apply internationally competitive and innovative energy technologies in Austria in order to export them around the world. Currently, novel technologies are being developed and tested in three showcase regions together with partners from the private sector. A total of 120 million euros in funding is expected to flow by 2021. www.vorzeigeregion-energie.at

Further information

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About Association WIVA P&G - Hydrogen Initiative Showcase Region Austria Power & Gas

The research association WIVA P&G (Hydrogen Initiative Showcase Region Austria Power & Gas) has set itself the task of promoting climate-neutral hydrogen and green gases in Austria. An important point is to coordinate the showcase energy region of the same name. As a central energy storage region, hub in energy transport and important location for renewable energy sources, Austria is ideally suited as an energy model region.
In the coming years, WIVA P&G will demonstrate how Austrian technologies tested on the domestic market can contribute to the reduction of greenhouse gases and thus serve as an export hit not only for the Austrian economy, but also make a significant contribution to the global reduction of greenhouse gas emissions (www.wiva.at).

Further information

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About HyCentA

HyCentA Research GmbH, located at the Graz University of Technology, is the only non-university research institution in Austria exclusively dedicated to research and development on hydrogen technologies. Since its foundation in 2005, HyCentA has been conducting projects on the production, distribution, storage and application of hydrogen in an international network with industry and science - thus covering the entire value chain. HyCentA has all the necessary competencies to research, develop and demonstrate technologies from laboratory to industrial scale. This includes relevant knowledge and practical experience in the disciplines of engineering, simulation and testing of hydrogen and electrochemical technologies, such as electrolysis, hydrogen storage, fuel cells, refueling and measurement and safety systems. In addition, HyCentA supports academic education together with the Graz University of Technology by supervising theses (Bachelor, Master and PhD) and offering hydrogen-related courses. The numerous scientific publications and awards received underline this competence.

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About Energy Institute at the Johannes Kepler University Linz

The Energy Institute at JKU Linz is engaged in about 80 R&D projects per year to further develop an energy system that has a positive impact on living, economic and environmental spaces, thereby strengthening the European economies and reducing fossil energy sources as far as possible. As a non-university research institution, the institute has a multidisciplinary structure. The inter- and transdisciplinary cooperation of the three departments of the Energy

Institute - Energy Economics, Energy Law, Energy Technology - enables a comprehensive and interdisciplinary analysis of the future topic of energy.

Further information

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