Press release

Synhelion inaugurates DAWN – the world's first industrial plant for the production of solar fuels

Jülich, Germany, June 20, 2024

Today Synhelion inaugurated the world's first industrial-scale plant to produce synthetic fuels using solar heat in Jülich. By inaugurating DAWN, Synhelion proves that the technology to produce solar fuels is ready for large scaling. The renewable fuels will demonstrate the technology's potential to defossilize the transportation sector, particularly in aviation. Thus, Synhelion marks a significant milestone for the transportation sector's energy transition.

First of its kind – world's first industrial solar fuel plant

DAWN features a 20-meter-high solar tower and a mirror field. This marks the first time Synhelion's innovations are integrated on an industrial scale. The solar tower contains a solar receiver, a thermochemical reactor, and a thermal energy storage that enables cost-efficient solar fuel production around the clock. DAWN demonstrates the entire technology chain from concentrated sunlight to synthetic liquid fuel on an industrial scale for the first time.

Solar fuels for sustainable transportation

Plant DAWN will produce several thousand liters of fuel per year. Production is expected to start in 2024. On-site, the plant will produce synthetic crude oil, known as syncrude. This intermediate product is particularly suitable to be transported. The syncrude is then processed into certified fuels in a conventional oil refinery. Thus, Synhelion will produce not only solar kerosene for aviation, but also solar gasoline and solar diesel for road transportation and shipping applications. Solar fuels can directly replace fossil fuels and are fully compatible with the global existing fuel infrastructure – from storage and transportation to internal combustion engines and aircraft engines.

The biggest milestone in the company's history to date

Synhelion was founded in 2016 as a spin-off from ETH Zurich and has since established itself as a pioneer for solar fuels. The fact of solar heat being able to produce fuels was first demonstrated in 2019 in a mini refinery on the roof of ETH Zurich. Since then, Synhelion's growing team has worked continuously to scale up the promising Sun-to-Liquid technology and to apply it on an industrial scale. With DAWN, this step has now been achieved. The technology is ready for the industry and will revolutionize the transportation sector in the long term.

The construction of DAWN was possible thanks to Synhelion's investors and funding from the Energy Research Program of the German Federal Ministry of Economic Affairs and Climate Protection.

Toward net zero in the transportation sector

Synhelion will begin building its first commercial plant in Spain in 2025. The plant will produce a total of around 1'000 tons of fuel per year. Planned future plants will significantly exceed the size of the first two plants and thus offer a much higher production capacity. Synhelion aims to achieve an annual production volume of around one million tons of solar fuel within ten years.

Ceremonial inauguration on the summer solstice

The inauguration of DAWN took place on the occasion of the summer solstice on June 20, 2024. Well-known representatives from industry and politics attended the celebration and toured the new solar fuel plant.

Hartmut Höppner, State Secretary at the German Federal Ministry for Digital and Transport, said in his speech: “The potential of renewable, synthetic fuels is huge. In order to achieve the climate targets in the transport sector, we need alternatives to fossil fuels. The first plant for the production of solar fuels in Germany is a clear sign of how technical innovations can help to reduce CO_2 emissions.”

Heike Birlenbach, Chief Commercial Officer of Swiss International Air Lines, said: “The large-scale use of sustainable aviation fuels is one of the most important measures to achieve the CO_2 targets in aviation. The inauguration of DAWN marks a milestone in this process. As strategic partners of Synhelion, Lufthansa Group and SWISS as investor are proud to support the market introduction of solar fuels and congratulate Synhelion on this extraordinary achievement.”

Dr Philipp Furler, CEO and Co-Founder of Synhelion, commented: “Today is a historic day for Synhelion. The inauguration of DAWN marks the beginning of the era of solar fuels – a turning point for sustainable transportation. Our founding dream of producing renewable fuels from solar energy is becoming a reality. We are immensely proud of our great team and would like to thank all of our pioneers who have made this once seemingly impossible idea possible.”

About Synhelion

Synhelion offers innovative solutions to produce sustainable fuels. The cleantech scale-up company is on a mission to contribute to a net-zero transportation sector by replacing fossil fuels with renewable solar fuels. Founded in 2016 as a spin-off of ETH Zurich, Synhelion is now commercializing the Sun-to-Liquid technology. In June 2024, the company inaugurated the world’s first industrial plant for the production of solar fuel in Jülich, Germany. Construction of the first commercial production plant in Spain is planned from 2025. On its road to defossilize transportation, Synhelion is supported by a network of international partners such as Eni, Cemex, Lufthansa Group, Swiss International Air Lines, SMS group, Wood, AMAG Group, Zurich Airport, and Pilatus Aircraft.

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