

FIRST COMMERCIAL PLANT FOR THE PRODUCTION OF BLUE CRUDE PLANNED IN NORWAY

- **Nordic Blue Crude, Sunfire, Climeworks and the plant manufacturer EDL Anlagenbau start with the planning of a plant which shall produce 10 million litres per year / Production in Norway shall start in 2020**
- **Synthetic crude oil substitute Blue Crude as CO₂-neutral alternative for mobility and chemical sector / Target-Price per litre: less than 2.00 Euros**
- **Nordic Blue Crude relies on affordable renewable electricity from hydropower and CO₂ generated directly from ambient air**
- **The plant supplies up to 13,000 cars with e-fuel and annually avoids 21,000 tons of CO₂ emissions from fossil fuel**

Dresden (Germany), July 10th 2017. **The mass production of the environmentally friendly synthetic crude oil substitute Blue Crude becomes reality: from 2020 the first plant shall start its operation in the industrial park Heroya in Norway. It will be operating with an electric capacity of 20 megawatts, producing 8,000 tons of Blue Crude per year. Nordic Blue Crude AS, Sunfire, Climeworks, EDL Anlagenbau and additional partners have already started with the engineering. The synthetic Blue Crude consists of various hydrocarbons – making it comparable with crude oil. Refineries can use it as raw material for waxes, but also petrol, diesel, kerosene and even rocket fuel.**

About 3,000 products, which are currently made from crude oil, could be manufactured on the basis of Blue Crude – from chewing gums and credit cards to sneakers and smartphones all the way to climate-neutral fuels. Thus, a replacement is created, which can be employed directly by utilising the existing production processes and distribution networks, without any complex renewals or adjustments.

The clean tech company Nordic Blue Crude AS, located in the harbour and industrial city of Porsgrunn, will operate the power-to-liquids plant and already markets the synthetic crude oil substitute to manufacturers of cars, trucks, trains, airplanes and ships as well as to specialised chemical refineries and other customers. The annual production volume would for example be sufficient to supply 13,000 cars with synthetic fuel and thus avoid 21,000 tons of CO₂ emissions, fossil fuel would have caused. The target-price per litre lies below 2 Euros.

Since 2016 the company holds the exclusive rights for Norway and Sweden. „Our goal is to tenfold the capacity as soon as we have enough experience from operating the first plant in its first stage of operation with 10 mio. Liters”, says Gunnar Holen, CEO of Nordic Blue Crude AS. In the long-term up to ten similar plants could become reality in Scandinavia. Holden: „We are proud to announce that we are now a full member of the Social Stock Exchange in London. This is an important milestone in financing the plants. Many thanks to Balfour & Associates for their guidance.”

Blue Crude is created in a highly efficient, three-stage process, developed by Sunfire and consists of a patented power-to-liquid procedure employing nothing but water, CO₂ and renewable energy – in Norway the continuously available, cost-efficient green energy from hydropower is put to use. The core element is the steam electrolysis process (SOEC) that efficiently splits steam into its components hydrogen and oxygen. Subsequently the CO₂ is transformed into carbon monoxide (CO) and then the synthesis towards Blue Crude is effectuated. The gaseous CO₂, employed as carbon source, is partly extracted on-site from the ambient air by using the Direct Air Capture (DAC) technology, developed by the Swiss company Climeworks. Especially the exploitation of the waste heat from the Sunfire process makes the DAC technology highly efficient.

Just recently Sunfire has produced three tons of Blue Crude in its power-to-liquids demonstration plant in Dresden which was operated continuously, smoothly verifying the operational time of 1,500 hours, vital for industrial requirements.

ABOUT SUNFIRE

Founded in 2010, Sunfire GmbH develops and manufactures steam-electrolysers (SOEC) and high-temperature fuel cells (SOFC).

Steam electrolysis splits steam into hydrogen and oxygen. It is a particularly efficient method powered by renewable energy. The resulting hydrogen can be efficiently converted to a crude oil substitute using Sunfire's power-to-liquids process. Alternatively, it can be used for H₂ mobility and in industrial applications without any further processing. The economic value chains of these processes are based on the open-grid concept.

High-temperature fuel cells from Sunfire can be used to produce power and heat particularly efficiently based on cogeneration. Decentral cogeneration at the lower end of the power output range is seen as an energy concept of the future as it allows power and heat to be generated on demand exactly where it is needed. Sunfire collaborates with the most appropriate partners for individual markets here.

Sunfire was founded by Carl Berninghausen, Christian von Olshausen and Nils Aldag. The company is supported by business angels ('Sunfire Entrepreneurs Club'), INVEN Capital, the ERP Startfonds at the KfW bank, Total Energy Ventures and Electranova Capital, which is financed, in turn, by the EDF Group and Allianz.

For further information, visit www.sunfire.de

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