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C_1 presents own reactor for green methanol

Milestone on the way to industrial production of green methanol at competitive prices

Climate tech start-up C_1 has unveiled the world's first chemical reactor to use its proprietary and patented process to continuously produce green methanol. The alcohol is seen as the key to freeing shipping and the chemical industry from dependence on oil and gas and saving gigatonnes of CO_2 in the long term. To produce green methanol in sufficient quantities and at a competitive price, C_1 has reinvented production from scratch.

"For us, this reactor is further proof that our highly efficient catalysis process works. It brings us an important step closer to our goal of producing green methanol at competitive prices," explains Dr. Ralph Krähnert, who as Chief Technology Officer at C_1 is responsible for the development of the production unit. While the C_1 catalysis process could only be carried out for a limited time in previous test series, the new reactor allows continuous production of methanol, as is common in industrial-scale plants. "The presented production unit is therefore also a milestone for us to produce large quantities of green methanol on an industrial scale in the future. Only in this way can we replace oil, gas and coal with green methanol in a wide variety of applications and achieve our goal of closed carbon cycles. "

Using quantum chemical simulations, C_1 has developed a highly efficient catalysis for the production of green methanol from waste biomass or CO_2 and H_2, enabling production at

competitive costs. The new chemistry allows decentralised production where renewable energy and sustainable feedstocks are available.

The design of the production unit was developed independently by the team led by Dr. Marek Checinski, Christian Vollmann, Dr. Christoph Zehe and Dr.-Ing. Ralph Krähnert. The construction was carried out by the Berlin-based chemical plant manufacturer Intergrated Lab Solutions, which specialises in research plants and supplies leading companies and research institutes.

Anton Nagy, Managing Director of Integrated Lab Solutions, comments: “ILS is extremely proud to have had the pleasure of being chosen as the desired collaboration partner with C_1 to realize their 1st generation, fully-automated, continuous green-methanol production unit. The close collaboration builds upon ILS’ previous wealth of nearly 20 years of experience in syngas chemistry. This is an excellent example of a win-win collaboration with a valued client in an area which will play a key part in decarbonizing heavy industrial sectors like shipping.”

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About C_1

C_1 develops new, climate-friendly chemical production processes by rethinking chemical reactions from the atomic level all the way up to the production scale. The chemical processes are designed with the help of quantum chemical simulations and implemented in proprietary production technologies. In doing so, the Berlin-based company develops and scales exclusively on the basis of renewable raw materials and energy. From the first steps in the development of a production process, all processes are designed to enable a closed carbon cycle. In this way, C_1 supports industry on its way to net-zero.

C_1 was founded by Dr. Marek Checinski (chemist), Dr.-Ing. Ralph Krähnert (chemical engineer), Dr. Christoph Zehe (chemist) and Christian Vollmann (tech entrepreneur). Dirk Radzinski (tech entrepreneur), Dr. Jürgen Hambrecht (former CEO BASF) and Dr. Udo Jung (BCG) sit on the supervisory board. Prof. Matthias Beller (Leibnitz Institute for Catalysis LIKAT) supports as scientific advisor.

Existing investors include Planet A Ventures, Square One Ventures and experienced industry managers such as Jim Hagemann Snabe, chairman of the supervisory board of Siemens, or Prof. Wolfgang Reitzle, most recently chairman of the supervisory board of Linde.

About the C_1 technology

C_1 has developed a fundamentally new proprietary homogeneous catalysis for the production of methanol. The C_1 process is much more selective than the heterogeneous catalysis currently in use, which dates back to a patent from 1921. It works at significantly lower pressure and temperature, allows for more flexible operations, is more tolerant towards feedstock impurities and scales better.