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Leuna100 plant successfully completes 3,000 hours of continuous operations

- **Several tons of IMPCA grade methanol produced in a single run**
- **Outstanding catalyst stability and real-world feed gas tolerance confirmed**
- **Wide range of operating points explored and process models validated**
- **Next step: co-electrolysis coupling with Fraunhofer UMSICHT**



Berlin/Leuna, November 09, 2026 – The Berlin-based climate tech company C_1 Green Chemicals AG has successfully completed more than 3,000 hours of continuous operations in its Leuna100 pilot plant. The company produced several tons of 99.9% pure methanol, certified to IMPCA standards. The results mark a major milestone on C_1's path toward the industrial-scale production of green methanol.

Data-driven scale-up

The focus of the campaign was on generating the data needed for confident scale-up. The team systematically explored a wide range of operating points to understand system stability and productivity in depth. The data allowed C_1 to validate and refine the process models of its Process Technology Team. These models are a critical foundation for confident scale-up.

Real-world feed gas tolerance

C_1 investigated the influence of common inert gases typically present in green syngas sources. The feed gas composition was based on a real-world syngas specification, bringing the process one step closer to industrially relevant conditions.

Outstanding operational stability

Over the full 3,000+ hours, the system showed outstanding operational stability, even when subjected to typical pilot plant disruptions — a strong signal for long-term industrial operation.

"This campaign was a true endurance test for our system — and it delivered. Running for more than 3,000 hours continuously while exploring a wide range of operating conditions gave us exactly the data and confidence we need for scale-up. I am incredibly proud of what our team achieved," says Jonas Spitzer, Leuna100 plant operations lead at C_1.

Next step: co-electrolysis coupling with Fraunhofer UMSICHT

As a next step in the Leuna100 project, C_1 will couple the low-temperature co-electrolysis unit from Fraunhofer UMSICHT with its methanol synthesis process. The co-electrolysis unit produces syngas from CO_2 and H_2, which then feeds directly into the C_1 methanol catalysis unit to produce e-methanol. This will demonstrate the full process chain from CO_2 to green methanol.

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About C_1

C1 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, C1 supports industry on its way to net-zero.

More information: https://www.carbon.one/

About Fraunhofer UMSICHT

Fraunhofer UMSICHT is pioneering the way to a sustainable world. With our research in the areas of climate-neutral energy systems, resource-efficient processes and circular products, we make concrete contributions to achieving the 17 Sustainable Development Goals (SDGs) of the United Nations. We develop innovative, industrially feasible technologies, products and services for the circular economy and bring them to application. The focus is on the balance of economically successful, socially equitable and sustainable developments
More information: https://www.umsicht.fraunhofer.de/

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