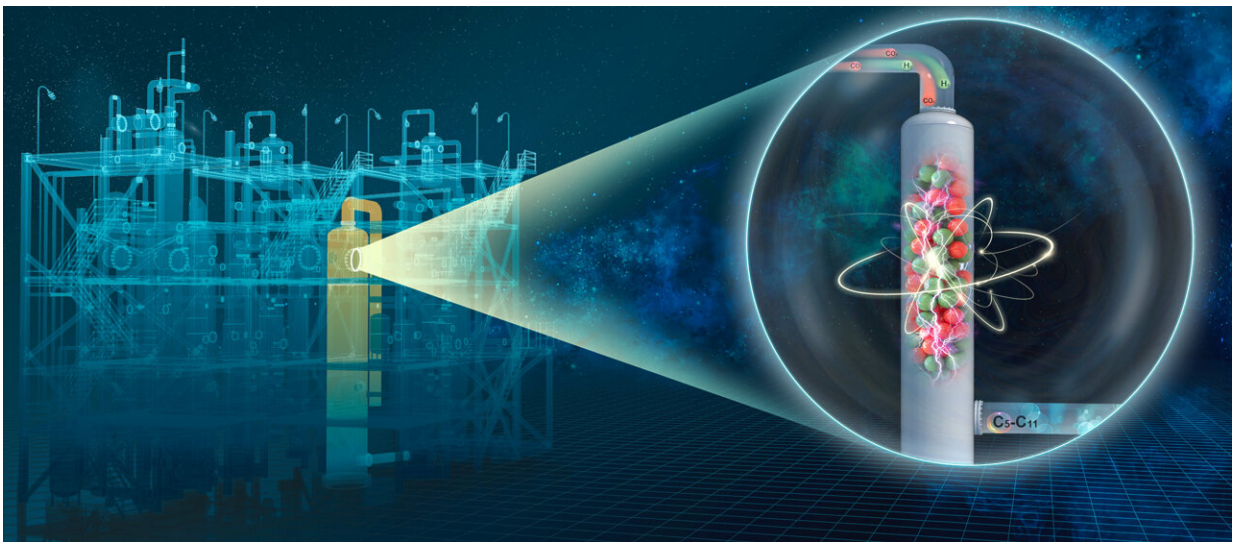


World's first pilot project producing gasoline from carbon dioxide hydrogenation completes trial operation

March 7 2022



The world's first demonstration device for 1,000 tons/year production of gasoline from carbon dioxide hydrogenation has completed its trial operation and technology assessment on March 4. Credit: DICP

The world's first demonstration device for 1,000 tons/year production of gasoline from carbon dioxide (CO_2) hydrogenation located in Zoucheng Industrial Park, Shandong province, China has completed its trial operation and technology assessment on March 4.

The project was jointly developed by the Dalian Institute of Chemical Physics (DICP) of the Chinese Academy of Sciences (CAS) and Zhuhai Futian Energy Technology Co., Ltd.

Hydrogenation of CO₂ into [liquid fuels](#) and chemicals can not only realize the resource utilization of CO₂, but also facilitate the storage and transportation of renewable energy.

However, the activation and selective conversion of CO₂ are challenging. A technology that can selectively produce value-added [hydrocarbon fuels](#) with high energy density will provide a new route for promoting clean and low-carbon energy revolution.

The technology of [carbon dioxide](#) hydrogenation to gasoline was proposed by Sun Jian, GE Qingjie and WEI Jian from DICP in 2017, with a paper published in *Nature Communications*.

The demonstration device has been completed in Zoucheng Industrial Park, in 2020. In October 2021, the device passed the continuous 72-hour on-site assessment organized by China Petroleum and Chemical Industry Federation (CPCIF). It could realize both CO₂ and H₂ conversion of 95%, gasoline selectivity of 85% in all carbon-based products, with reduced consumption of the raw material of CO₂ and H₂.



The world's first demonstration device for 1,000 tons/year production of gasoline from carbon dioxide hydrogenation has completed its trial operation and technology assessment on March 4. Credit: DICP

It produced clean and green gasoline product with octane number more than 90 conforming to the Chinese national VI standard, accompanied by low energy consumption of the whole process.

"This technology marks a new stage of CO₂ resource utilization [technology](#) in the world, and provides a new strategy for realizing the goal of carbon neutral," said Prof. Sun.

More information: Jian Wei et al, Directly converting CO₂ into a gasoline fuel, *Nature Communications* (2017). [DOI: 10.1038/ncomms15174](https://doi.org/10.1038/ncomms15174)

Provided by Chinese Academy of Sciences

Citation: World's first pilot project producing gasoline from carbon dioxide hydrogenation completes trial operation (2022, March 7) retrieved 24 April 2024 from <https://phys.org/news/2022-03-world-gasoline-carbon-dioxide-hydrogenation.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.