

Carbon2Chem® awarded €50 million research grant

- Research project for the green transformation enters third phase
- State Secretary Huthmacher presents grant approval documents valid through 2028
- thyssenkrupp DT CFO Nadilo: “This project demonstrates the tremendous potential of industrial decarbonization.”

Carbon2Chem®, a collaborative project coordinated by thyssenkrupp in close cooperation with the Max Planck Institute for Chemical Energy Conversion (MPI CEC) and the Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT, is now entering its third phase. The research initiated in 2016 is working to answer one overarching question: How can blast furnace gases emitted during steel production be converted into valuable chemical starting products used for fuels, plastics and fertilizers, among other things. In the years since the research funded by the German Ministry of Education and Research has made some groundbreaking findings that will make a strong contribution to the climate friendly transformation of industry. The third phase of the project focuses on the application-based verification of the solutions developed during the work, the adaptation of gases used in direct reduction in the steel sector and the comprehensive study of methanol and hydrogen. Today, Dr. Karl Eugen Huthmacher, the state secretary in the Education and Research Ministry, presented a €50 million grant that runs through 2028.

Highly productive second phase completed

During the second phase of the project, researchers successfully demonstrated that it is technically possible to produce methanol at various CO/CO₂ ratios. They also demonstrated that hydrogen storage in large caverns is the best way for the system itself, particularly for locations in the northern Ruhr region. Furthermore, additional carbon sources like lime reduction, thermal waste treatment and direct reduction were qualified in principle for methanol production.

“The results of the second phase are impressive and demonstrate the tremendous potential of Carbon2Chem® for industrial decarbonization,” Carolin Nadilo, the CFO of thyssenkrupp Decarbon Technologies, said during a ceremony at which the grant documents were presented. “This project underscores our commitment to reducing industrial CO₂ emissions around the world with the help of innovative technologies and accelerating the green transformation. We would like to thank the German ministry for its trust and its continuing financial support of this critical project of the future that will help us reach our climate goals.”

Dr. Karl Eugen Huthmacher, State Secretary at the German Federal Ministry of Education and Research, explained: “Carbon2Chem® impressively demonstrates how research is making a concrete contribution to making industrial processes more climate-friendly. The progress made so far is already bringing us considerably closer to a CO₂ circular economy – especially in steel production, chemicals and energy.”

New challenges and expanded project scope in third phase

Since the project was launched nine years ago, many framework conditions have changed significantly, and many of these new conditions are having a major impact on the transformation path. The third phase of the work will focus more closely on these new conditions. This will include application-based verification of the solutions developed during the work, the adaptation of gases used in direct reduction in the steel sector and the comprehensive study of methanol and hydrogen – both during production and storage. A new generation of electrolyzers will be developed. Production will be expanded as well: Value chains will be lengthened in the direction of sustainable aviation fuels.

“The challenges and opportunities offered by the restructuring of a sustainable energy system require innovative solutions that will extend well beyond the horizons of individual sectors,” said Professor Dr. Walter Leitner, the Director of the MPI CEC. “Carbon2Chem® is a lighthouse and an excellent example of a successful alliance of basic research, applied research and industrial applications.”

The third phase of the project has also attracted a wide range of highly respected partners once again: BASF, EY Consulting GmbH, Germany’s State Distance-Learning University in Hagen and the University of Duisburg-Essen will add new strength to the alliance. “The new partners will really help us,” said Professor Dr. Görgen Deerberg, the project director of Carbon2Chem® and the Director for Transfer at Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT. “Working together, we will continue to move Carbon2Chem® forward and prepare the technology for wide use. With these new focal points and partners, we will enter a very promising phase of our work and make a critically important contribution to a sustainable industrial transformation.”

About the project:

The collaborative project Carbon2Chem® is an interdisciplinary initiative that brings together industrial, scientific and political communities to develop industrial process gases as a valuable source of carbon for the chemical industry. With its 16 partners and extensive funding, the research is one of the central projects devoted to the green transformation of German industry.

As a pioneer of the green transformation, thyssenkrupp is working intensively to replace carbon-intensive production processes with climate friendly technologies. One example is the construction of the first hydrogen-capable direct reduction plant at the Duisburg site, one of the world’s largest industrial decarbonization projects. We also extensively help our customers carry out their own green transformations. The Decarbon Technologies segment created just over a year ago is already one of the world’s largest and most respected industrial suppliers of cutting-edge technologies for the green transformation.

Contact person for media

thyssenkrupp AG Communications

Frank Grodzki

Phone: +49 152 21830826

mailto: press@thyssenkrupp.com