CO_2-based Fuels and Chemicals Conference 2025

29–30 April • Cologne (Germany)

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#2025CCU

#2025CCU

Meet some other Speakers & Participants at an **Original Cologne Brewery**

28 April 2025, 19:00 (CET)
On the Eve of the Conference

Meeting Point for a Social Evening Gathering

Kölsch Brewery
Brauhaus Päffgen
Friesenstraße 64–66, 50670 Köln (Cologne)
(15 Minutes Walk from Cologne Central Station)

Join at sli.do
for real time questions and comments

Main Sessions
Grand Hall
#2025CCU

Parallel Sessions
Room Adelheid
#2025CCU-2

Find your perfect match!
We have sent the link to nova's matchmaking platform to all on-site participants of the CO_2-based Fuels and Chemicals Conference 2025.

All details: Please see page 12.

Program

You can look forward to the following content:

DAY 1

29 April 2025,
9:30–18:15 (CET)

P. 22

9:30–11:40 (Main Session)
Innovation, Strategy and Policy

13:05–16:25 (Main Session)
Green Hydrogen Production, Biogenic CO_2 Sources and Carbon Capture

13:05–14:40 (Parallel Session)
CO_2 Utilisation Technologies (Part 1)

16:25–16:45 (Main Session)
Poster Pitch Session

16:45–18:15 (Main Session)
Innovation Award "Best CO_2 Utilisation 2025"

DAY 2

30 April 2025,
9:00–16:30 (CET)

P. 41

9:00–10:30 (Main Session)
CO_2 to Chemicals and Fuels

11:00–13:00 (Main Session)
CO_2 to Chemicals, Fuels, Polymers and Materials

11:00–13:00 (Parallel Session)
Advanced Research in CCU

14:30–16:30 (Main Session)
CO_2 Utilisation Technologies (Part 2)

Conference Advisory Board

We would like to thank the experts of the conference advisory board for their great help in selecting the best submitted papers and innovations.

Heleen De Wever
VITO (BE)

Martin Lindmeyer
YNCORIS (DE)

Volker Sick
University of Michigan (US)

Christoph Gürtler
Covestro (DE)

Sarah Refai
CLIB (DE)

Harry Lehmann
PTX Lausitz (DE)

Célia Sapart
CO_2 Value Europe (BE)

Welcome to the 13th Edition of the "CO_2-based Fuels and Chemicals Conference" in Cologne

Dear Participants,

The story of Carbon Capture & Utilisation (CCU) continues to unfold and there have been some interesting and significant steps in recent years. Following the introduction of stimulating policy frameworks in the US and China, the European policy framework for CCU looks promising. A milestone for the implementation of CCU was reached in June 2024, when the Council of the European Union and the European Parliament published the Net-Zero Industry Act (NZIA) in their Official Journal. The Act finally recognises CO_2 utilisation as an eligible strategic net-zero technology, providing an official reference and basis to support and encourage the deployment of clean technologies such as CCU across Europe.

CCU is much more than just a CO_2 removal technology, it is one of the three pillars of a sustainable and defossilised chemical industry for the future. 70% of GHG emissions come from additional fossil carbon from the ground used for energy and materials. For the energy sector, there is a good strategy for decarbonisation with renewable energy, but this will not work for chemicals and materials because most of them are based on carbon and there is a continuing and even increasing demand for carbon for these chemicals and materials. The key challenge is to meet the demand for carbon with alternative sources of carbon, and these alternative sources of carbon are biomass, CO_2 and the recycling of carbon-containing waste streams (bio and plastic waste) – all of which together are needed to replace fossil carbon as renewable sources of carbon. So, the equivalent of decarbonisation in the energy sector is a transition to renewable carbon in the chemical and materials industries, and both mean defossilisation.

Several future scenarios for a net-zero chemical industry in 2050 show that 25–30% of the demand for chemicals and materials will come from the use of CO_2. The potential of CCU has been recognised by several global brands that are already expanding their feedstock portfolio. Collaboration along the value chain is key to getting the costs and benefits right.

So how is the CCU landscape evolving and what else is happening in the world of CCU? The use of CO_2 as a feedstock for chemicals and polymers has been intensively diversified. There are several successful commercial-scale technologies and many more in the laboratory and pilot phase. With a current capacity of over 1.5 million tonnes of CO_2-based products and steadily growing demand, CCU technologies are helping to establish CO_2 as a renewable carbon feedstock, highlighting the urgency for investment and innovation in this area. In addition, the use of CO_2 for the production of synthetic aviation fuels is being driven by policy incentives: According to the EU's ReFuel Aviation proposal, by 2030, 5% of kerosene demand in the European Union would have to be met by sustainable aviation fuels (SAF), including a minimum 0.7% share of synthetic aviation fuels. By 2035, the mandate would increase to 20% SAF with a minimum 5% synthetic fuel sub-quota.

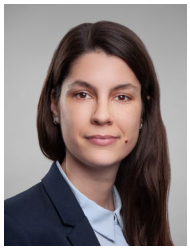
To reap the full benefits of CCU, the industry needs a long-term supply of CO_2 from persistent biogenic point CO_2 sources, efficient capture technologies and a constant supply of renewable energy and renewable hydrogen. Worldwide, more than 300 million tonnes of biogenic CO_2 are emitted from point sources annually, and more than 70 companies worldwide and a total of 110 EU-funded projects are involved in CO_2 capture. Although green hydrogen production in the EU is far below the 6 GW of installed electrolyser capacity targeted for 2024, current and future national and transnational European hydrogen infrastructure projects aim to bridge the current gap between green hydrogen production and its sufficient and efficient transport by combining renewable hydrogen production with its storage and transmission.

Over the next two days you will have the opportunity to discuss with new and leading players the developments in CCU and the need to create the right framework to promote it. Learn more about the latest technical and political developments and discuss future strategies in numerous panel discussions. It's all about communication and networking!

We wish all participants new insights, great ideas and lots of inspiration.

The future belongs to the use of CO_2 and we have the chance to actively shape this path together.

Yours sincerely,



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Program

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Registration

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Venue & Accommodation

Maternushaus
Kardinal-Frings-Str. 1–3
50668 Köln (Cologne)
Germany

Phone: +49 221 – 1631-0
frontoffice@maternushaus.de
www.maternushaus.de

Recommended Hotels
www.co2-chemistry.eu/venue

Entrance Fee

2 Days • **29–30 April 2025**
Ticket for on site (and online) attendance
incl. dinner buffet on the first day
1095 €

Day 1 • **29 April 2025**
Ticket for on site (and online) attendance
incl. dinner buffet
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Day 2 • **30 April 2025**
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Ticket for virtual attendance
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incl. dinner buffet on the first day
350 €

Address from the Minister, Mona Neubaur, to the CO_2-based Fuels and Chemicals Conference 2025

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Minister Mona Neubaur,
Ministry of Economic Affairs, Industry, Climate Action and Energy of the State of North Rhine-Westphalia

Dear guests of the "CO_2-based Fuels and Chemicals Conference" 2025,

Transitioning to a net-zero industry remains one of our greatest challenges. Being competitive and being climate-neutral go hand in hand. Through the transition to renewable energy, decarbonised processes and an intensified use of secondary raw materials, we can make industries future-proof. The challenges for the chemical industries are especially diverse.

Decarbonising through the use of renewable energies or hydrogen can already lower emissions. However, in the foreseeable future of the chemical industry, carbon continues to play an indispensable role. That is why we need sustainable solutions for the carbon demand in the chemical industry. Defossilisation, that is, finding non-fossil carbon sources, is the way to go.

This is where CCU unfolds its potential. Capturing and using CO_2 enables us to close the carbon loop. By using CO_2 from industries such as cement and lime or thermal waste treatment, where the formation of CO_2 is unavoidable, and binding it permanently, we can ensure a climate-neutral supply of carbon. By using biogenic or atmospheric CO_2 sources, we can even achieve negative emissions. Conferences like these make it possible to develop the solutions today that we will so urgently need in the near future.

Getting there is not easy. We do see that the current framework conditions for CCU are not ideal. We need stronger incentives to stimulate investment in CCU and to recognise its contribution to climate neutrality. We need funding, so we can pilot holistic CCU concepts and get them ready for large-scale rollout.

We also see that things are in motion. For instance, we have just concluded an innovation competition for "CCU model regions" in North Rhine-Westphalia. We will support the winners in developing regional concepts for CCU, following the credo: "Think global, act local."

Although this may look like a small step, it is the number of many small steps that will lead us to our goal. That said, I am grateful that this conference contributes to reaching our common goal and to developing smart solutions for a sustainable use of carbon through CCU.

I wish all participants a productive, inspiring conference with plenty of food for thought for the future.

Exhibition

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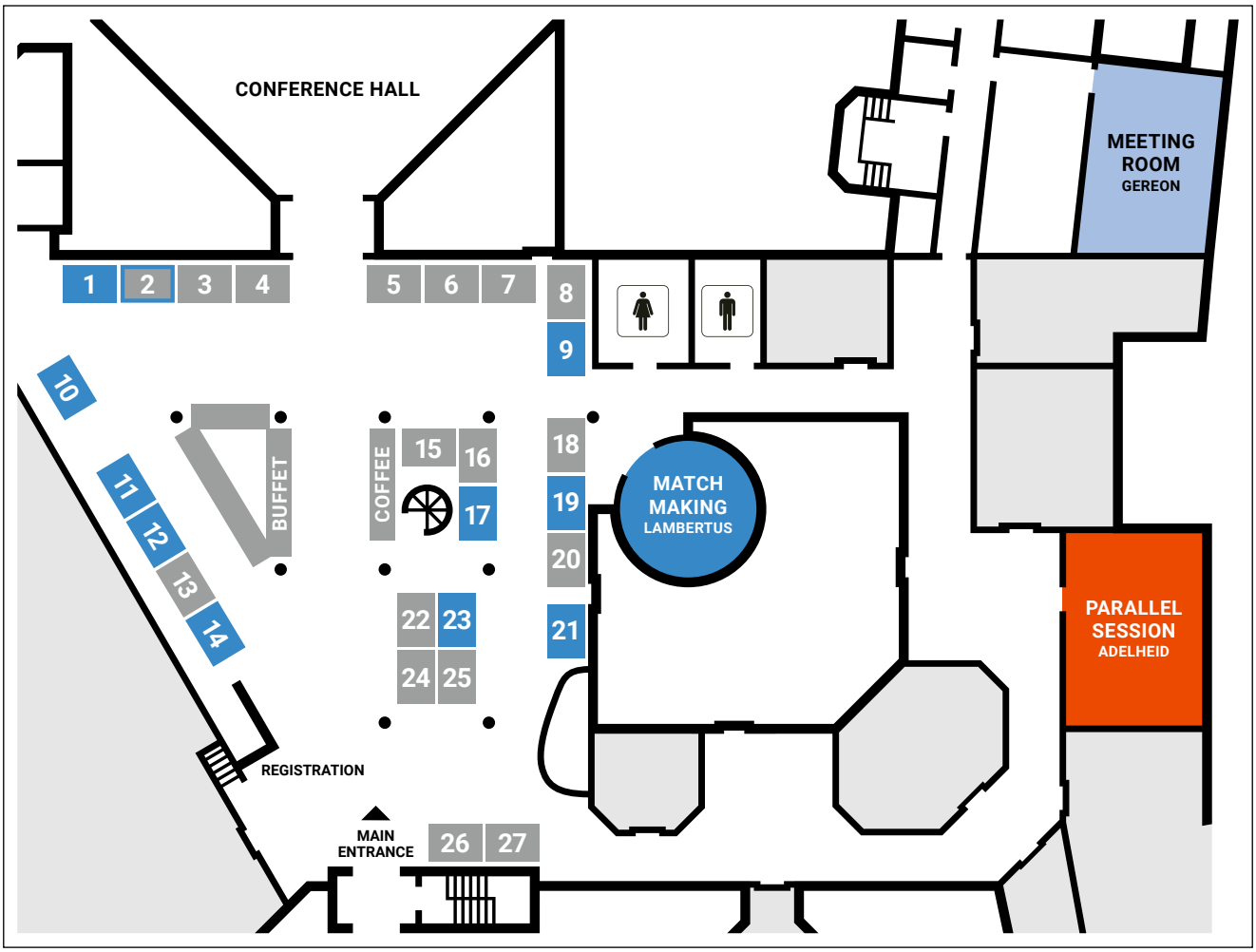

List of Exhibitors

03 Enviro Ambient (US)
04 GIG Karasek (AT)
05 YNCORIS (DE)
06 nova-Institute (DE)
07 Chemport Europe (NL)
13 Zeton (NL)
15 HOLCIM (DE)
16 PtX Lab Lausitz | Zukunft – Umwelt – Gesellschaft (ZUG) (DE)
18 Matchmaking (DE)
20 Innovation Award “Best CO_2 Utilisation 2025”
22 AIMPLAS (ES)
24 Poster Session
25 Poster Session
26 Media Table
27 Media Table

Book your booth:
co2-chemistry.eu/exhibition-booking

Status: 10 April 2025
More exhibitors expected:
co2-chemistry.eu/exhibitors

book your booth soon

Poster Session

The poster session will take place in the evening of the first conference day (29 April, 18:15) with a few minutes presentation.
There is a special poster area at booths number 24 and 25 in the exhibition.
And there will be a Poster Pitch Session (see program on page 24) on 29 April (16:25–16:45).

Centre for Research & Technology Hellas (GR)
Alexandros Symillidis & Agustín Martínez
Catalytic Production of BTEX from Biogenic CO_2 and Green H_2: Reactor Modelling and Process Integration

ETH Zurich (CH)
Juan Diego Medrano García
Sustainability Assessment to Guide the Development of New Technologies: An Acetic Acid from Captured CO_2 Case Study

Fraunhofer Institute for Solar Energy Systems ISE (DE)
Achim Schaadt
DME as a Promising Platform Molecule for Fuels

Hengst (DE)
Hüseyin Aksoy
Pre-filter for Direct Air Capture Systems

ICIQ Instituto Catalán de Investigación Química (ES)
Maryam Saketosgouei
Application of Semiconductor-based Composites in Photo Electrochemical CO_2 Reduction

IMTEK, University of Freiburg (DE)
Josephine Häberlein
Catalysts for Zero-gap CO_2 Electrolyzer Producing CO

Institute of Mechanics, Materials and Civil Engineering (BE)
Ysaline Toussaint
Regeneration of Cofactor Used for CO_2 Conversion into Formate

Malaviya National Institute of Technology, Jaipur (IN)
Sarika Yadav
Bifunctional Titanium Phosphate Based Hybrid Catalyst for Efficient CO_2 Conversion into Glycerol Carbonate

Politecnico Di Milano (IT)
Leyla Khani
Techno-Economic Assessment of Electro-fuel Production via Fischer-Tropsch Process: Comparative Analysis of Configurations

PtX Lab Lausitz (DE)
Lukas Horndasch
Crack the Crackers – Thinking Beyond a Cracker-centred Chemical Production in Europe

TECNALIA Research & Innovation (ES)
Sergio Santos-Moreno
A holistic Approach for the CO_2 Circularity: From the Development of Materials for CO_2 Capture to its use as a Source of Different Materials such Plastics and Construction Components

TLK Energy (DE)
Yann Pellny
From Hydrogen Production to Synthetic Fuels: Modeling and Simulation Along the Process Chain

Université Catholique de Louvain (BE)
Kamyll Cocon
Nature-Inspired CO_2 Valorization: Enhancing RuBisCO Stability via Immobilization on Dendritic Hierarchical Silica Nanoparticles

University of Coimbra (PT)
João Roberto Fernandes Santos
Novel Forest Residues Management Model for Carbon Capturing and Utilization Applications

UP Catalyst (EE)
Ekaterina Gujevski
From CO_2 Emissions to High-quality Carbon Materials

ZUG PtX Lab Lausitz (DE)
Anja Paumen
Can Critical Minerals Cover E-kerosene Production?

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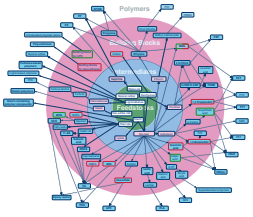
nova Market and Trend Reports on Renewable Carbon

The Best Available on Bio- and CO_2-based Polymers & Building Blocks and Chemical Recycling

NEW

Bio-based Building Blocks and Polymers

Global Capacities, Production and Trends 2024–2029



Authors: Pia Skoczinski, Michael Carus, Gillian Tweddle, Pauline Ruiz, Lara Dammer, Ann Zhang, Narendar Poranki, Lara Börger, Doris de Guzman, Rick Passenier, Tamer Ali, Harald Käb, Matthew Hartley and Achim Raschka

March 2025

This and other reports on renewable carbon are available at www.renewable-carbon.eu/publications

Alternative Naphtha

Replacing Fossil-Based Feedstocks in Refineries and Naphtha Crackers: Technologies and Market, Status and Outlook

Authors: Gillian Tweddle, Lara Krause, Pauline Ruiz, Achim Raschka, Aylin Özgen, Nicolas Hark and Michael Carus

July 2024

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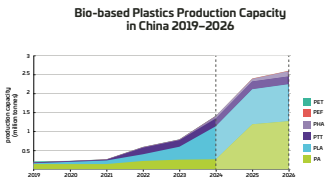
Bio-based and Biodegradable Plastics Industries in China

Policy Framework, Market Trends, Technologies and Outlook for PLA, PA, PHA and PBAT



Authors: Ann Zhang and Michael Carus

May 2024

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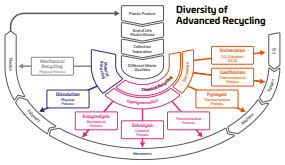
Mapping of Advanced Plastic Waste Recycling Technologies and Their Global Capacities

Providers, Technologies, Partnerships, Status and Outlook



Authors: Lara Krause, Aylin Özgen, Jasper Kern, Sreeparna Das, Michael Carus, and Achim Raschka

February 2024

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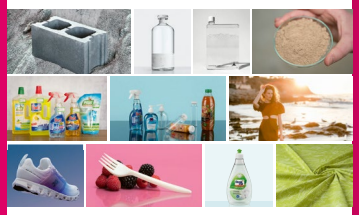
Carbon Dioxide (CO_2) as Feedstock for Chemicals, Advanced Fuels, Polymers, Proteins and Minerals

Technologies and Market, Status and Outlook, Company Profiles



Authors: Pauline Ruiz, Pia Skoczinski, Achim Raschka, Nicolas Hark, Michael Carus. With the support of: Aylin Özgen, Jasper Kern, Nico Plum

April 2023

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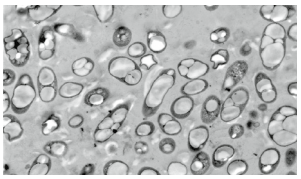
Mimicking Nature – The PHA Industry Landscape

Latest trends and 28 producer profiles



Author: Jan Ravenstijn

March 2022

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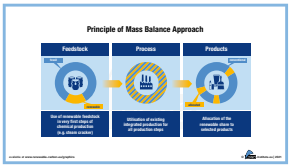
Bio-based Naphtha and Mass Balance Approach

Status & Outlook, Standards & Certification Schemes



Authors: Michael Carus, Doris de Guzman and Harald Käb

March 2021

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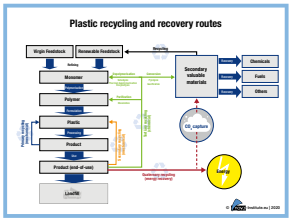
Chemical recycling – Status, Trends and Challenges

Technologies, Sustainability, Policy and Key Players



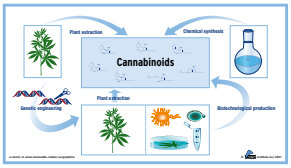
Author: Lars Krause, Florian Dietrich, Pia Skoczinski, Michael Carus, Pauline Ruiz, Lara Dammer, Achim Raschka, nova-Institut GmbH, Germany

November 2020

This and other reports on the bio- and CO_2-based economy are available at www.renewable-carbon.eu/publications

Production of Cannabinoids via Extraction, Chemical Synthesis and Especially Biotechnology

Current Technologies, Potential & Drawbacks and Future Development



Authors: Pia Skoczinski, Franjo Grotenhermen, Bernhard Beitzke, Michael Carus and Achim Raschka

January 2021

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RENEWABLE CARBON PUBLICATIONS

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Find your Perfect Match now!

Welcome to nova's Matchmaking System for the CO_2-based Fuels and Chemicals Conference 2025.

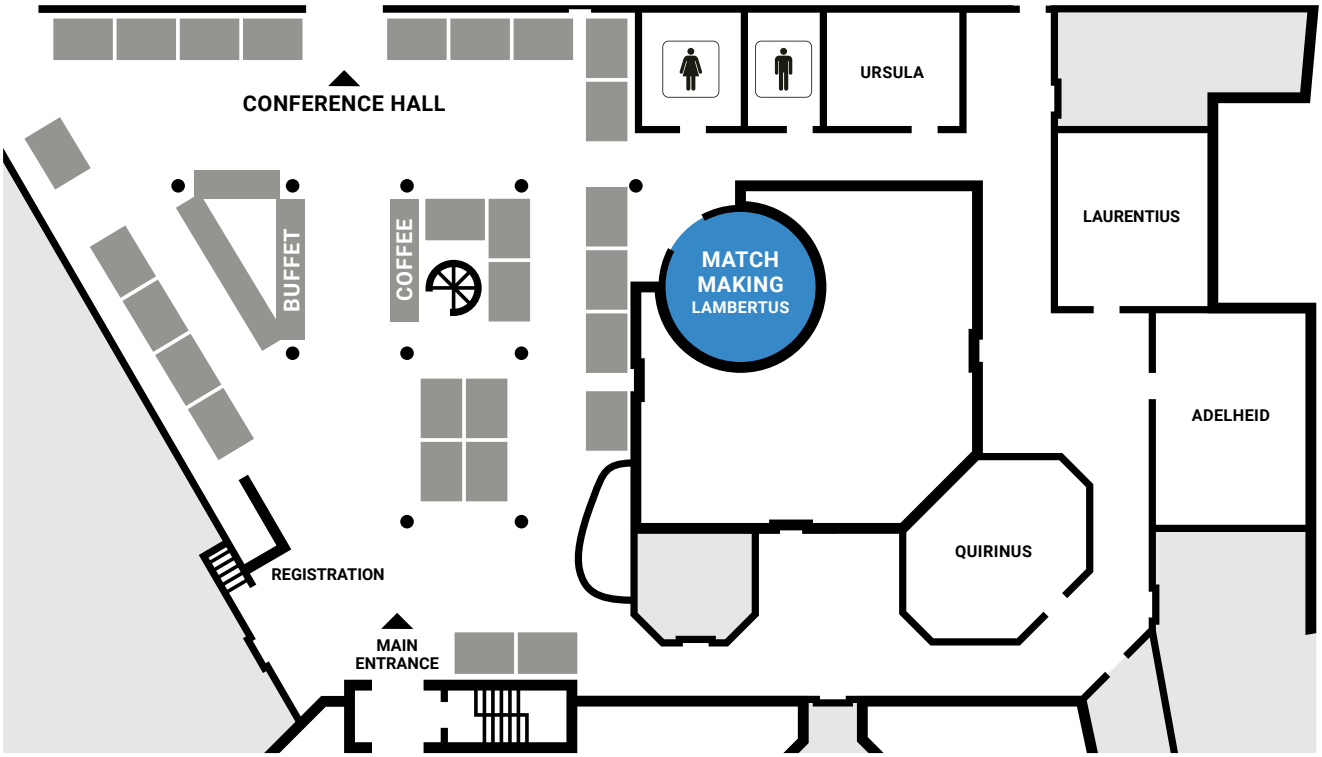
Through this Platform, you will have the Opportunity to:

- Schedule personalised 1:1 on site meetings with other attendees, speakers, and industry experts.
- Build valuable connections tailored to your professional interests and goals.
- The matchmaking system is web-based – easy access without an extra app is guaranteed.
- Save time by meeting the people who matter most to you.

Are you already registered for the matchmaking tool?
Arrange your appointments here: co2-chemistry.eu/matchmaking

You are not registered yet, but want to take part in the matchmaking tool?
Please contact Mr Dominik Vogt: dominik.vogt@nova-institut.de

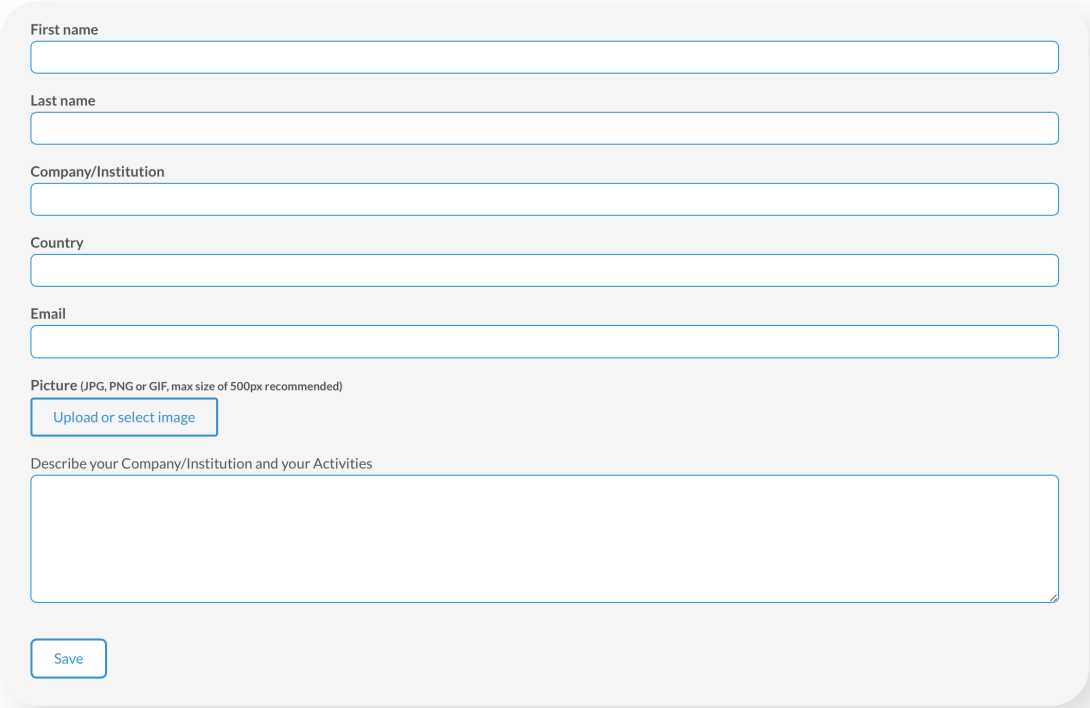
Matchmaking Room Overview



How to use the Matchmaking Tool:

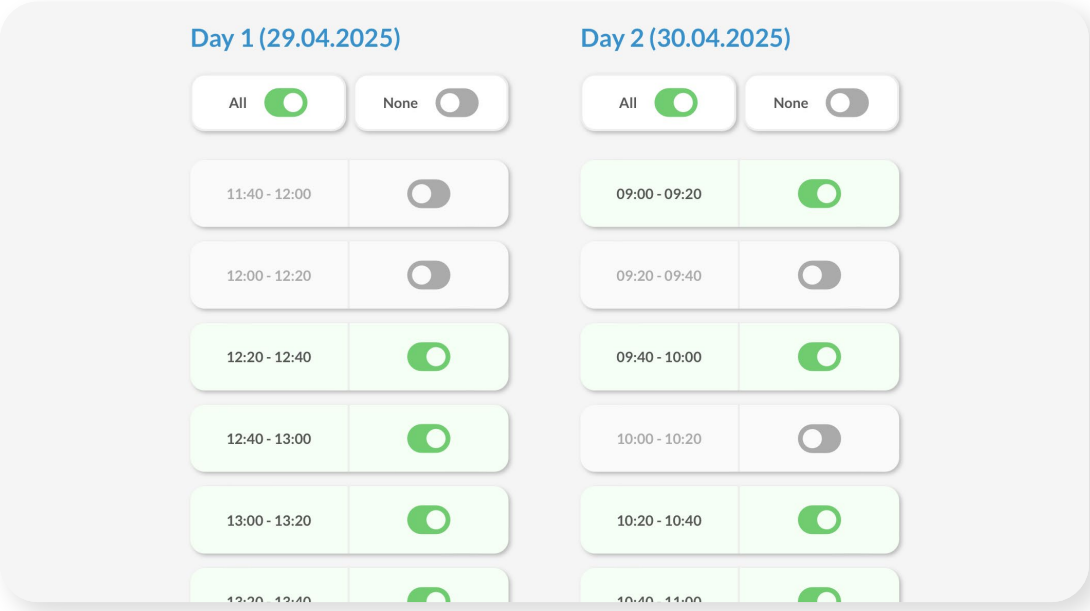
1 Your Profile

Fill out your profile as completely as possible and describe your company/institution and your activities.
Briefly describe the cooperation opportunities and project collaboration you are looking for.



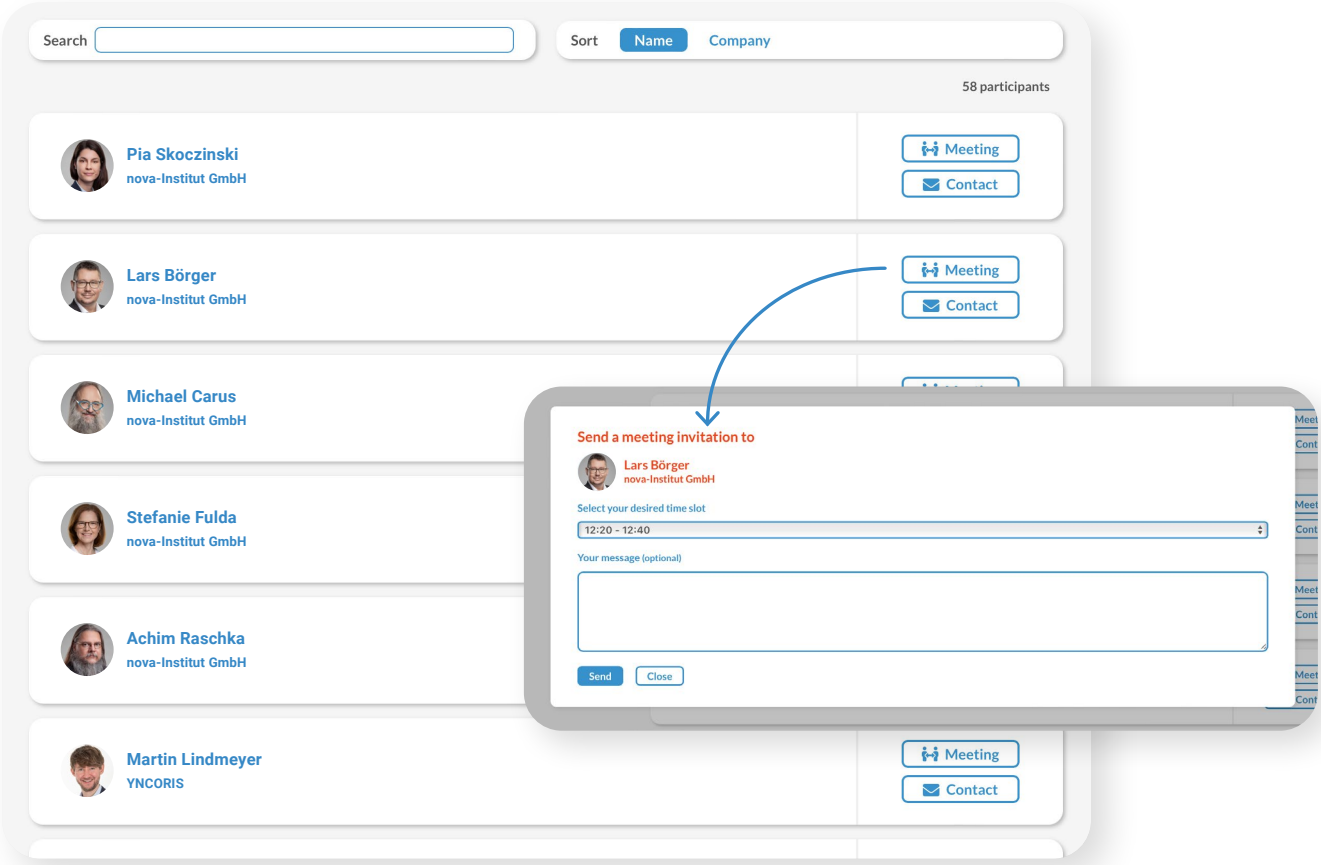
2 Your Availability

Please enter as many time slots as possible in which you could potentially have a meeting.
Please grey out the time slots that are not suitable for you.



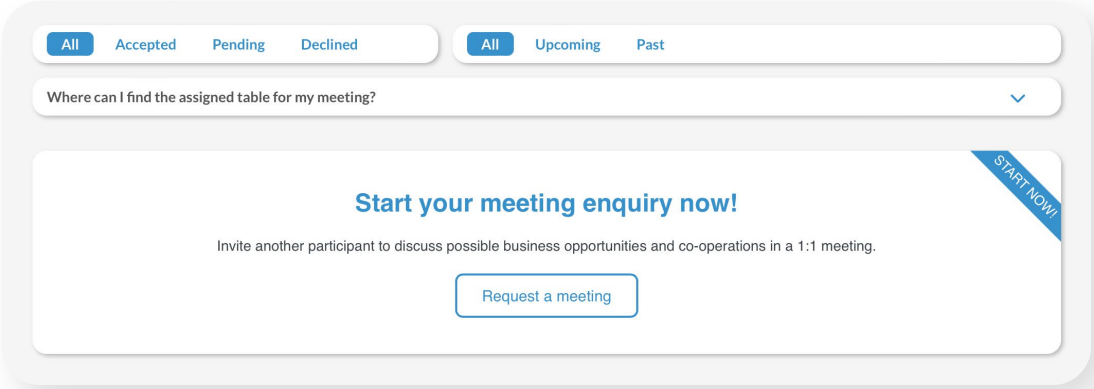
3 Request a Meeting

You can search for names, companies or keywords. The “Meeting” option will suggest time-slots you both are available. You can leave a message for the requested person in the contact field.



4 Your Meetings

All accepted, pending and cancelled meetings can be found in this overview.
Click on ‘Where can I find the assigned table for my meeting?’ to quickly find the location of the meeting room.



Don’t miss this opportunity to make meaningful connections!

Biogenic CO_2 Sources and Carbon Capture – Key-Requirements for Carbon Capture & Utilisation

Securing Long-term Supply and Utilising Biogenic Sources

To drive the successful implementation of Carbon Capture and Utilisation (CCU), industry requires long-term and secure CO_2-supply. CO_2 can be sourced from various means, including direct capture from air and oceans, persistent biogenic CO_2 sources, and efficient industrial point sources utilising advanced carbon capture technologies. The sector is rapidly expanding, as evidenced by more than 70 companies globally engaging in CO_2 capture initiatives. In the European Union, this momentum is further amplified by 110 EU-funded projects dedicated to advancing carbon capture technologies. This growing ecosystem of innovation and investment underscores the increasing importance and viability of CCU as a key strategy in the transition to a circular carbon economy.

Among these diverse CO_2 sources, biogenic CO_2 presents a particularly promising avenue for sustainable carbon capture. With its roots in the natural carbon cycle, biogenic CO_2 offers unique advantages in terms of environmental impact and potential for achieving negative emissions. Specific characteristics and sources of biogenic CO_2 make it a crucial component in the CCU landscape.

Biogenic CO_2 Sources

The term "biogenic CO_2" refers to any CO_2 derived from biomass or bio-based products. In the context of CCU, biogenic CO_2 must be the waste product of an industry whose main product results from transforming biomass to CO_2. Biogenic CO_2 streams may be almost fully or partially biogenic and can also include fossil CO_2 to some extent. Industries supplying biogenic CO_2 include bioethanol plants, biogas plants, biomass and bioenergy plants, biorefineries, food, feed and beverage production, pulp, paper and board, wood and forestry products and waste incineration plants. Each year, over 130 million tonnes of biogenic CO_2 are emitted in Europe. The pulp, paper and board, wood and forest products industries account for the largest share of these emissions, exceeding 60%, followed by biomass and bioenergy, food, feed and beverage production, and bioethanol plants.

The Costs of Carbon Capture

Industrial point sources of biogenic CO_2 are characterised by relatively high CO_2 concentrations, ranging from 7 to 99% CO_2. This is significantly higher than the concentrations found for direct air capture (0.04%) or direct ocean capture (4%). Generally, the cost of CO_2 capture are influenced by two key factors: the concentration of CO_2 and the amount and type of impurities. Higher CO_2 concentration and fewer impurities result in lower costs.

The CO_2 capture process can be divided into two main aspects: capture methods and capture technologies. Capture methods are defined based on how CO_2 is generated and captured. These include Direct Air Capture, Direct Ocean Capture, Post-Combustion Capture, Pre-Combustion Capture, and Oxyfuel Combustion Capture. Capture technologies, on the other hand, can be used for different capture methods. The selection and efficiency of the CO_2 capture technology depend primarily on the CO_2 concentration, the concentration of impurities (such as nitrogen or dust) and the flue gas pressure.

In most cases, a combination of two or more capture technologies is used to achieve the highest possible capture efficiency. These technologies include chemical absorption, physical absorption, adsorption, membrane separation, enzyme-based separation, cryogenic fractionation, hydrate-based separation, and electrochemical methods such as electro-deionization, electrodialysis, and electrochemical pH swing systems, specifically for Direct Ocean Capture.

Carbon Capture Technologies

The various capture technologies encompass a range of specific techniques. For instance, the chemical absorption group includes six different technologies, such as amine scrubbing, ammonia scrubbing, use of amino acid salts, calcium oxide or alkali carbonate scrubbing. Among these, amine scrubbing stands out as the longest-established and most-widely used technology, capable of capturing 1,000–2,000 tonnes of CO_2 per day.

In conclusion, it is not feasible to make a generalised statement about which CO_2 source and capture technology is more profitable and efficient from either a technical or economic perspective. This is because both technical implementation and economic efficiency are contingent upon several specific factors, CO_2 concentration and amount of impurities.

Firstly, the CO_2 concentration and the amount of impurities play a crucial role. Secondly, specific plant conditions significantly influence the process, including factors such as flue gas temperature and pressure, water required for cooling, the size of the capture plant, heat integration, and the quantity of captured emissions. Lastly, the intended subsequent use of the captured CO_2 must be taken into account, as this can affect the choice of capture method and technology.

Interview

CCU Pioneers – Keeping Carbon Circular: Holcim

1. Innovation & Sustainability

With the concrete sector being one of the biggest emitters of CO_2, how does Holcim integrate Carbon Capture and Utilisation (CCU) into its sustainability strategy to achieve carbon neutrality in cement and concrete production?

Florian Kleinwächter: Holcim's pathway to Net Zero is clear. There are different ways to reduce CO_2 emissions in cement production and we will pursue them all to reach our commitments, we will reduce our clinker factor, use alternative fuels and raw materials, and increase our use of renewable energy.

Around two thirds of the cement industry's CO_2 emissions come from the raw materials themselves and are emitted during the burning process. These emissions are inevitable and would persist even if cement kilns were operated entirely with renewable energy.

However, concrete serves as the foundation of the world. From houses, roads, and bridges to factories, it is utilised almost everywhere. Additionally, the transition to sustainable energy needs to be built – railway lines, tunnels or bridges for trains, foundations and towers for wind turbines. The world requires innovative solutions to continue utilising this indispensable building material without jeopardising our future. A technological leap is imperative for environmentally friendly cement production.

That is why we are scaling up advanced technologies such as carbon capture, utilisation and storage (CCUS), which will make an increased contribution in terms of reaching our targets post-2030.

The ambitious plan that we are pursuing at all three of our cement plants in Germany is to develop the captured greenhouse gas CO_2 into a valuable raw material, for example as a basic material in the chemical industry for the production of plastics. When their first life cycle ends after as much equivalent recycling as possible, they can be utilised again in the cement plant, whereby the CO_2 is captured again and used as a raw material. This creates a CO_2 cycle in which the gas does not escape into the atmosphere.

Florian Kleinwächter
Senior Business Development Manager CCU/S

2. Breakthrough Technology

Holcim is currently building the first carbon neutral cement plant in Laegerdorf. How does your Carbon2Business project address the unique challenges of carbon capture in the cement industry?

Florian Kleinwächter: With its decarbonisation strategy and the steps that have been taken, Holcim is a first mover in this area. The capturing technologies necessary for the sustainable transformation of cement plants are in different early development stages and need to be tested. That is why we chose to run a widespread approach testing different technologies at different plant sites in Germany.

First in line is our plant in Lägerdorf, where we are planning a climate-neutral cement plant using 2nd generation oxyfuel technology, which can capture CO_2 almost completely.

Lägerdorf as a site for carbon capture offers the additional advantage of a strategically favorable geographical location. This includes excellent access to sustainable energy sources and close proximity to Brunsbüttel, which presents potential CO_2 offtakers within the ChemCoast Park, as well as a port for onward transportation of the captured CO_2.

In Höver, Holcim is testing a CO_2 capture plant based on membrane technology with the aim to demonstrate the efficiency of this technology on an industrial scale in order to potentially capture 90 per cent of CO_2 emissions. In addition we are looking at pressure swing absorption (PSA) technology.

At the Beckum cement plant, we are using amine scrubbing technology to capture CO_2 and also test a separate oxyfuel calciner with a subsequent carbon purification unit (CPU).

With all these projects we are well prepared for the challenges the way to Net Zero brings. In addition there is a regular exchange within the Holcim Group to benefit from all insights that are won by the activities on an international level.

3. Challenges & Opportunities

What are the biggest challenges Holcim faces with regard to CO_2-based products, and what opportunities do you see for these solutions to transform the cement sector in the future?

Florian Kleinwächter: Many manufacturers already offer climate-friendly cements. For example, the Holcim ECOPlanet series reduces the carbon footprint by over 50 percent compared to standard cement. Key factors here are the substitution of fossil fuels and optimised formulations. Their market share of Holcim Germany's sales volume rose from 2.9 to 16.9 percent. We see the same trend in concrete.

In addition to the decarbonisation of our products, the circular economy is at the heart of our corporate philosophy. Building materials should never become waste, and the most important raw material sources of the future should no longer be exclusively sand and gravel pits, and quarries, but rather existing buildings in cities.

As a consequence, when it comes to CCUS, Holcim's strategy is based on the belief that CO_2 is a valuable raw material. Thus, we are taking into consideration all options the CO_2 use case market has to offer. One important prerequisite for the development of the CO_2 market is clarity in terms of regulations and laws such as the KSpTG. That has been a challenge over the last months and we hope to move into a safer and more plannable situation now.

As for the CO_2 based products, we are working in an environment that is still evolving on many levels. Many of the promising product developments in this area are still in relatively early development stages, so it is not easy to create realistic business cases right now. A good example are materials that result from a mineralisation process that binds CO_2 permanently. These materials can be used as additives in the cement production - thus creating a circular CO_2 process. The testing process necessary to get the material certified for construction, however, is very complex and time consuming. At the same time projects in this area can contribute enormously to the decarbonisation of cement production.

In general we see a lot of movement in the area. Many start-ups develop solutions to bind and/or use CO_2 in various products. It is important that the emitting industries join in these activities, support them and search for solutions within their own production environments in order to drive the economy towards a sustainable future – from an ecological and economical perspective.

4. Collaboration & Industry Dynamics

How does Holcim collaborate with industry partners, research institutions, and policymakers to accelerate the adoption of CCU technologies?

Florian Kleinwächter: Collaboration is a key to a carbon free economy. Holcim pursues that on all levels. We have recently started a project that represents a truly circular CO_2 value chain. Part of the project are three start-up companies, two industry representatives and a university. The value chain combines a capturing technology with a direct air capturing process and leads to two different use cases – one mineralisation process and one chemical process.

This initiative demonstrates a practical model for a closed CO_2 loop, providing startups with a vital testing ground for their technologies. Furthermore, it serves as a critical foundation for engaging with regulatory bodies, accelerating the recognition of diverse processes as permanent CO_2 binding solutions, and thus advancing their eligibility within the EU ETS.

At Holcim, we firmly believe that the future of the economy lies in sustainable and innovative solutions. Therefore, we are extremely open to exchanging with companies and experts who are engaged in CO_2 utilisation scenarios.

We are particularly interested in contacts and ideas from the chemical industry. The chemical sector has extensive expertise in the conversion of substances and can make crucial contributions to the development and scaling of CO_2-based products. We are convinced that only through cross-industry collaboration and the exchange of knowledge and experience can real change be achieved.

To foster this collaboration and advance the development of CO_2 utilisation technologies, we at Holcim have established a specialised CCUS (Carbon Capture, Utilisation and Storage) team. This team is dedicated to researching and implementing innovative solutions and is available to answer your questions and exchange ideas.

We warmly invite you to get in touch with us and work together towards a sustainable future. Your ideas and expertise are invaluable to us. Let's explore together the opportunities that CO_2 utilisation offers.

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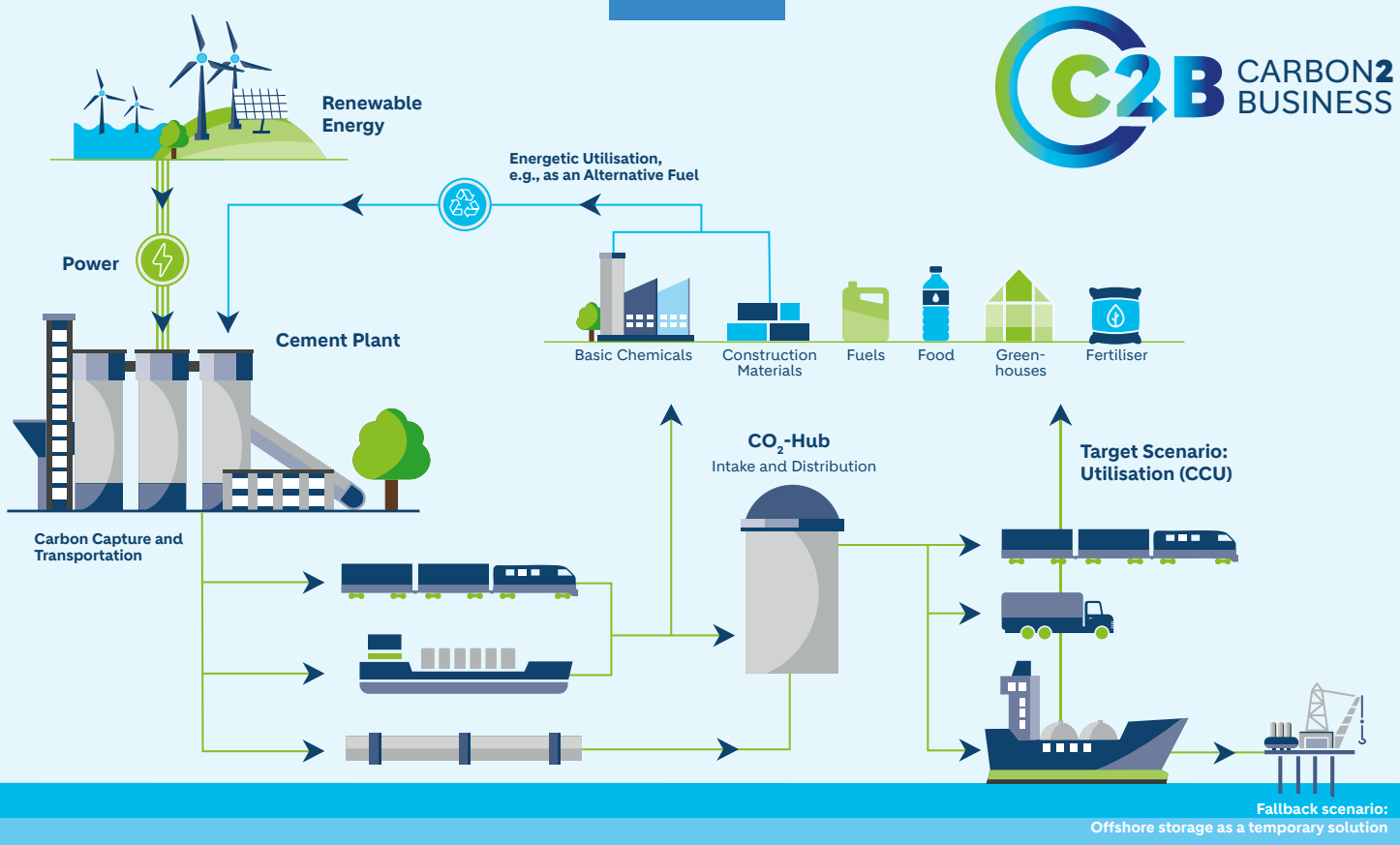


FROM GREENHOUSE GAS TO RAW MATERIAL

Carbon2Business connects climate-neutral cement with industrial CO_2 utilization.

Cement is indispensable – for buildings, infrastructure, and the sustainable energy transition. However, its production accounts for around 8 % of global CO_2 emissions. Holcim is setting new standards to not only reduce these emissions but also reintegrate CO_2 as a valuable resource into sustainable production cycles.

The key to this is CO_2 capture. In our plants, we are consistently driving the planning and implementation of these technologies to make CO_2 available to our customers for further utilization, solidifying our position as industry leaders in this field.

Holcim is a leader in decarbonizing the cement industry. We are rethinking CO_2 – for a climate-neutral construction sector and a sustainable future.

carbon2business@holcim.de
Holcim (Deutschland) GmbH
Troplowitzstraße 5
22529 Hamburg

For more information, visit:
carbon2business.de

Green Hydrogen Production – A Key Element for Maximising Carbon Capture and Utilisation (CCU) Benefits

To realise the full potential of Carbon Capture and Utilisation (CCU), the industry requires long-term supply of CO_2 from persistent biogenic CO_2 sources, efficient capture technologies and a consistent supply of renewable energy and green hydrogen.

Green hydrogen is essential as it serves as an energy-rich reactant converting inert CO_2 into valuable chemicals, polymers, materials, and fuels. To ensure an environmental advantage over other carbon sources and external energy carriers, it is crucial that the energy supply for hydrogen production, as well as the conversion and utilisation of CO_2 as a feedstock comes exclusively from renewable sources.

Renewable Hydrogen

In addition to green hydrogen, which is produced by electrolysis of water using only electricity generated from renewable sources like wind, hydro, and solar, there is also orange hydrogen. The EU defines orange hydrogen as renewable hydrogen produced from biomass or, on a transitional basis, using electricity from waste-to-energy plants. This classification highlights alternative methods of renewable hydrogen production that contribute to sustainability efforts.

The EU Hydrogen Strategy, published in 2020, introduced a definition of renewable hydrogen along with ambitious production targets for 2024 and 2030. This strategy outlines the EU's vision for leveraging renewable hydrogen as a key solution to decarbonise various sectors over time.

1. By 2024:
At least 6 GW of renewable hydrogen electrolysers in the EU

2. By 2030:
40 GW of renewable hydrogen electrolysers

These targets demonstrate the EU's commitment to developing renewable hydrogen as a strategic pathway for reducing carbon emissions across multiple sectors.

This € 400 billion strategy aims for a comprehensive energy transition to renewables and expanded use of hydrogen in innovations and technologies. It includes large-scale production of synthetic fuels and chemicals. As a result, numerous European cross-sector projects for hydrogen production using large-scale electrolysers were announced for 2021 and 2022. These projects span multiple industries and demonstrate the growing momentum behind hydrogen as a key element of Europe's energy future.

EU-Hydrogen-Capacities, Infrastructure and Outlook

Despite setting ambitious goals, the EU only reached 0.385 GW of installed electrolyser capacity in 2024. This is significantly lower than the 6 GW target, representing a 16-fold difference. The primary reason for this discrepancy is the cancellation or postponement of several announced large-scale (over 100 MW) electrolyser projects. However, technological hurdles are not the issue, as alkaline, anion exchange, proton exchange, and solid oxide electrolysis technologies are already commercially available. Instead, stakeholders identify regulatory, infrastructure, and price-related challenges as the main factors hindering the growth of the EU hydrogen economy.

Hydrogen Infrastructure

Acknowledging the necessity of developing national and transnational European hydrogen infrastructure, the EU has recently addressed this issue though EU-funded transnational hydrogen network projects such as H2Med and by the initiatives of individual Member States. Countries like the Netherlands, Spain, Denmark, and Germany are planning to establish national hydrogen backbones by 2029.

These backbones will be composed of both new hydrogen pipelines and converted natural gas pipelines for the efficient transport of green hydrogen. Infrastructure projects of this sort aim to bridge the current gap between green hydrogen production and its sufficient transport by integrating renewable hydrogen production with its storage and transmission. In doing so, they will help to increase and stabilise renewable hydrogen production within the EU.

DAY 1

29 April 2025, 9:30–18:15 (CET)

9:30 Michael Carus
nova-Institute (DE)
Conference Opening

Minister Mona Neubaur
Ministry of Economic Affairs, Industry, Climate Action and Energy of the State of North Rhine-Westphalia (DE)
Video Message

9:40 – 11:40

Innovation, Strategy and Policy

Grand Hall

Chairpersons: Lara Dammer & Christopher vom Berg, nova-Institute

9:40

Michael Carus
nova-Institute (DE)
CCU in the Wider Context of Sustainability and Policy

10:00
Anastasios Perimenis
CO_2 Value Europe (BE)
Progress of CCU Deployment in the EU Context


10:20

Esther Hegel
Roundtable on Sustainable Biomaterials (CH)
Certifying Sustainability: Frameworks for CO_2-based Fuels and Materials

10:40
Anja Fink
NRW.Energy4Climate (DE)
Meta-Analysis of Current Scenarios on the Future Role of CCU


11:00

Florian Kleinwächter
Holcim Deutschland (DE)
The Carbon2Business Lighthouse Project in Lägerdorf, Schleswig-Holstein

11:20
Panel Discussion with all Session Speakers

11:40
Lunch Break & Networking

13:05 – 14:40

Green Hydrogen Production, Biogenic CO_2 Sources and Carbon Capture

Grand Hall

Chairpersons: Lars Börger & Pia Skoczinski, nova-Institute

13:05

Eric Rambech
Endrava (NO)
Sourcing Biogenic CO_2 – Opportunities and Challenges

13:25

Álvaro Ramirez Santos
InnoEnergy (SE)
CarbFlex

13:45

Jarkko Toropainen
Fortum (FI)
Harnessing the Power of the Nordics: Fortum's Unique Position for Boosting Electrification and Use of Sustainable Carbon Sources

14:05

Juliette Poupeney
Revcoo (FR)
CarbonCloud: The Revcoo Solution

14:25
Panel Discussion with all Session Speakers

14:40
Coffee Break & Networking

13:05 – 14:40 Parallel Session

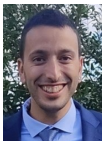
CO_2 Utilisation Technologies (Part 1)

Room Adelheid

No Online Transmission

Chairpersons: Achim Raschka & Lars Krause, nova-Institute

13:05



Guillermo Diaz-Sainz
University of Cantabria (ES)
Electrochemical Pathways for CO_2 Conversion: Toward Sustainable Formic Acid Production in the Cement Industry

13:25

Monalisa Goswami
TNO (NL)
CO_2 Electrolysis for Manufacturing of Materials: It All Circles Back to Energy!

13:45

David Soane
Carbogenesis (US)
Scalable and Profitable Carbon Utilisation Technology by Carbogenesis

14:05

Dorinde Kleinegris
NORCE Norwegian Research Centre (NO)
ALGAESOL: Sustainable Aviation and Shipping Fuels from Microalgae and Direct Solar BES Technologies

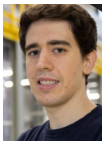
14:25
Panel Discussion with all Session Speakers

15:10 – 16:25

Green Hydrogen Production, Biogenic CO_2 Sources and Carbon Capture

Grand Hall

Chairpersons: Lars Börger & Pia Skoczinski, nova-Institute

15:10

Cristhian Molina Fernández
University of Liège (BE)
A Mobile CO_2 Capture Pilot Plant at Liège, Belgium

15:30

Maurice Ernst
Sypox (DE)
CO_2-negative H_2 from Biogas

15:50

Liv Reinecke
RWE Generation (DE)
RWE's Hydrogen Activities: Enabling the Clean Energy Transition

16:10
Panel Discussion with all Session Speakers

16:25 – 16:45

Poster Pitch Session

Grand Hall

16:25

Lukas Horndasch
PtX Lab Lausitz (DE)
Crack the Crackers – Thinking Beyond a Cracker-centered Chemical Production in Europe

16:30

Yann Pellny
TLK Energy (DE)
From Hydrogen Production to Synthetic Fuels: Modeling and Simulation Along the Process Chain

16:35

Alexandros Symillidis
Centre for Research & Technology Hellas (GR)
Catalytic Production of BTEX from Biogenic CO_2 and Green H_2: Reactor Modelling and Process Integration

16:40

Leyla Khani
Politecnico Di Milano (IT)
Techno-Economic Assessment of Electro-Fuel Production via Fischer-Tropsch Process: Comparative Analysis of Configurations

16:45 – 18:15

Innovation Award "Best CO_2 Utilisation 2025"

Grand Hall

Chairpersons: Michael Carus & Asta Partanen, nova-Institute

16:45

Anastasios Perimenis
CO_2 Value Europe (BE)

16:55

Michael Carus
nova-Institute (DE)
Innovation Award Introduction

17:05

Balázs Hepp
eChemicles (HU)
Low-Temperature Electrolyser Technology for CO_2 Reduction to CO

17:15

Fanny Liao
Far Eastern New Century Corporation (TW)
FENC® TopGreen® CO_2-based NIPU

17:25

Harrison Meyer
Oxylus Energy (US)
Methanol Producing Electrolyser

17:35

Bjørn Utgård
Skytree (NL)
Skytree Stratus

17:45

Veshal Venkat
TNO (NL)
Sorption Enhanced DME Synthesis (SEDMES)

17:55

Sebastian Pohlmann
UP Catalyst (EE)
Battery-Grade Graphite from CO_2

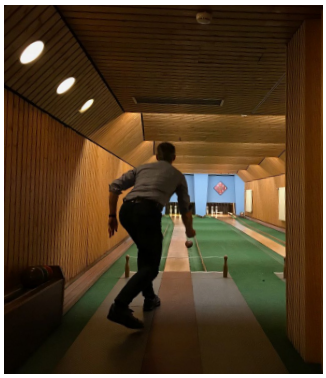
18:05
Award Voting

18:10

Martin Lindmeyer
YNCORIS (DE)
Innovation Award Ceremony

18:15
Networking with Local Beer & Poster Session

20:00
Gala Dinner



22:00
Bowling – Get Together in the Party Room beneath Maternushaus

Interview

CCU Pioneers – Keeping Carbon Circular: YNCORIS

1. Innovation & Sustainability

For many years, YNCORIS has been the sponsor of the "Best CO_2 Utilisation 2025" award. What is YNCORIS motivation in supporting and facilitating the development of innovative CCU technologies within the chemical industry?

Dr. Martin Lindmeyer: The chemical industry is currently facing a key challenge: on the one hand, emissions need to be reduced and, on the other, economically viable ways are needed to make sensible use of CO_2 as a resource. This is precisely where our commitment as sponsor of the "Best CO_2 Utilisation 2025" award comes in. We want to help establish CO_2 utilisation as an integral part of a sustainable chemical industry - and not just on paper, but in concrete industrial practice.

As an industrial service provider with in-depth experience in the fields of engineering, site operations and plant services, we see it as our responsibility to support companies in their transformation towards more climate-friendly production methods. In our view, the conversion of CO_2 into value-adding products – whether for chemicals, fuels or plastics – is not only a technological innovation path, but also an economic opportunity to rewrite existing business models or develop new ones.

What is particularly important to us is that we take a **holistic approach to technology** integration. This means that we support our customers in integrating CCU processes safely, efficiently and economically into existing plant structures – or even in setting up completely new value chains.

As the site operator of a chemical park, we also understand how crucial it is to integrate sustainable solutions into existing site structures – because this is the only way to **make industrial parks future-proof and competitive.**

Last but not least, **exchange and networking is important to us:** through our commitment in the form of networks, events and targeted partnerships, we want to bring together industry, research and start-ups in order to jointly develop and promote viable, practical solutions for CO_2 use.

Dr. Martin Lindmeyer
Process Engineering

YNCORIS
Always at your site.

2. Breakthrough Technology

As an industrial service provider with extensive experience, how does YNCORIS assist chemical companies in implementing and optimising CCU technologies in order to enhance plant efficiency and sustainability?

Dr. Martin Lindmeyer: Our support begins with **workshops, consultations and feasibility studies.** Together with the customer, we evaluate technically and economically which new value chains can be established or integrated into existing processes using CCU technologies. In other words, we analyse mass and energy flows, examine the scalability and identify synergies with existing systems.

As soon as the first fundamental decisions have been made, we take over **the project engineering** – from basic to detailed engineering. We develop process diagrams, plant layouts, and consider all safety and environmental requirements with the customer to ensure the necessary **regulatory compliance** with our approval management.

Looking beyond the planning horizon, we always have the operation of the future plant in mind. Because with our own chemical site, we not only plan, but also offer our site customers all the necessary **maintenance and optimisation** work and also ensure smooth **site operations.** This means that we provide the necessary energy, media supply and logistics, including for CCU-relevant processes. Thus, the integration into an existing "Stoffverbund" is a decisive factor, especially for companies that want to realise CCU pilot plants or large-scale technical implementations.

Consequently, YNCORIS and its approx. 1200 employees support chemical companies along the entire process plant life cycle – from concept development to long-term safe operation.

3. Challenges & Opportunities

What are the main challenges YNCORIS has identified in scaling up CCU technologies in unique chemical plants, and what opportunities do you see for the industry to overcome these hurdles?

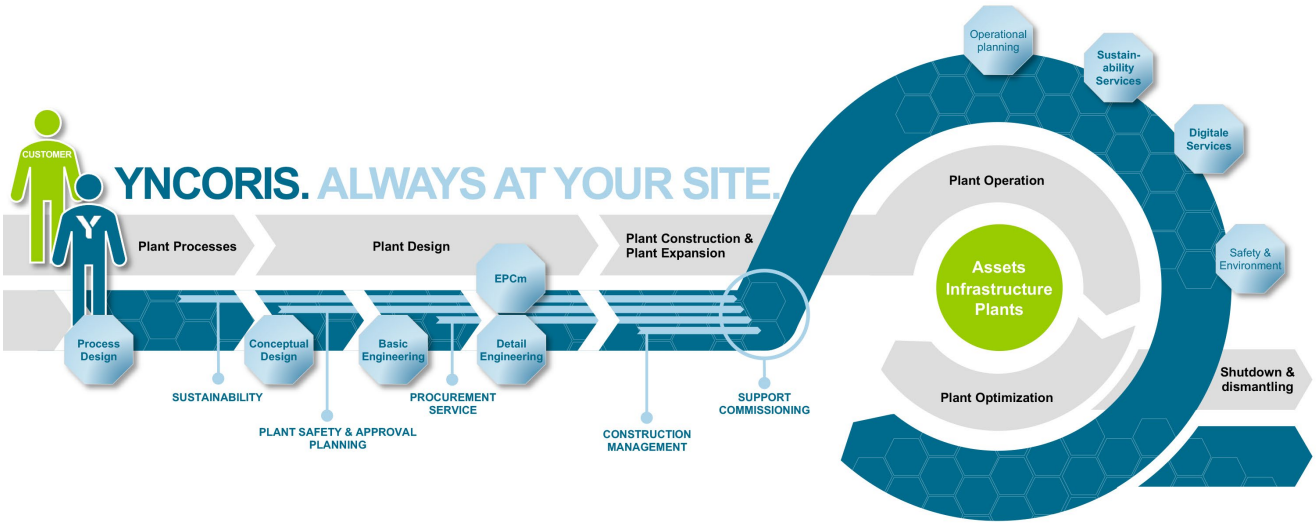
Dr. Martin Lindmeyer: The implementation of CCU technologies brings challenges that are both technical and economic in nature.

Firstly, the technology aspect: Many chemical plants have grown over decades and are geared towards specific production processes and have been continuously optimised in their environment. Since each production location is unique in terms of infrastructure and application, the implementation of CCU requires an individual process design. The challenge is to integrate CCU technologies into existing plants in such a way that they continue to operate efficiently and smoothly. The purity of the CO_2 is a particularly critical factor, as not every source is suitable for every type of further processing.

The purification technologies must be individually adapted to the further processing of the CCU process. By working together with the customer and their specific requirements and environmental conditions at an early stage, the feasibility, including the prospects for integration and scaling, can be determined as part of conceptual process and process engineering development.

Secondly, the economic viability and scalability: CCU technologies are often associated with high investment costs, while economic viability essentially depends on energy prices, but also on the product price and market acceptance in the long term.

The industry needs a stable regulatory framework in the long term, e.g. fixed quotas and/or tax advantages, in order to create investment security. Networks must be created and formed in order to develop new value chains through cooperation and replace existing ones with defossilised counterparts.



4. Collaboration & Industry Dynamics

How does YNCORIS leverage its position as both a service provider and innovation award sponsor to foster collaboration and knowledge sharing in the field of CCU across the chemical sector and its actors?

Dr. Martin Lindmeyer: YNCORIS sees itself not only as a service provider, but also as an active shaper of industrial transformation. We use our position as sponsor of the "Best CO_2 Utilisation" award to drive innovation in the field of CCU and create a platform for the exchange of knowledge between industry, research and start-ups.

Networking the relevant players: Through our work as an industrial service provider, we have direct access to companies that develop CCU technologies and to users in the chemical industry. In this way, we bring technology providers and production facilities together to create new solutions and applications.

Knowledge transfer through practical relevance: YNCORIS has decades of experience in the planning, operation and maintenance of chemical plants. We pass on this knowledge in a targeted manner – by publishing technical papers or the involvement of our experts in strategic discussions. In intensive exchanges with companies, we provide support through practical expertise that combines technical feasibility, economic efficiency and regulatory aspects.

Promotion of innovative technologies: In addition to current industrial collaborations and projects in the areas of PtG and PtX, we are also involved in funding projects to advance promising CCU technologies, among other things - accompanying them from laboratory scale to industrial production. In addition, together with industry representatives, we are driving forward a model region that evaluates CO_2 value chains and aims to replace fossil resource-based fields of application

As a bridge builder between research, technology providers and industry, as a multiplier of knowledge and as an active partner, YNCORIS supports the implementation of innovative CCU solutions in industrial practice. Only through collaboration and targeted knowledge transfer can CCU become an integral part of a climate-neutral chemical industry – and that is exactly what we at YNCORIS are driving forward.

Chemical Site Knapsack

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ENGINEERING A SUSTAINABLE FUTURE

Innovative Engineering to defossilise the chemical industry:

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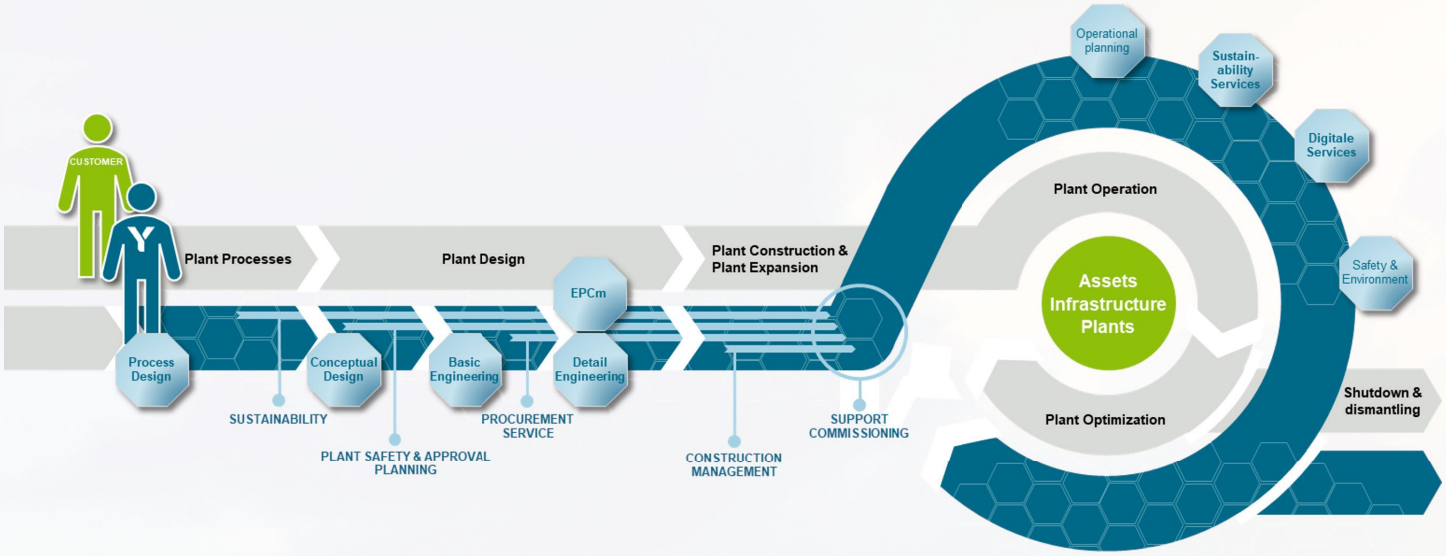
- Enabling advanced technologies: from technology assessments and feasibility studies to integration and implementation of cutting-edge technologies
- Know-how from the chemical industry: Process Optimization due to experiences in plant operation and use of state-of-the-art technologies



Innovation Award "Best CO_2 Utilisation 2025"

The "Best CO_2 Utilisation 2025" innovation award is a prestigious recognition shining a spotlight on groundbreaking technologies and products that effectively utilise CO_2. This year, six nominees are driving the future of Carbon Capture and Utilisation (CCU) across various industries, with breakthroughs in novel carbon capture and CO_2 electrolyser systems, sustainable polyurethane technologies, green methanol production, and processes for high-value carbon materials like graphite and carbon nanotubes from CO_2 emissions.

Innovation in CCU is key to transforming CO_2 into a valuable resource for the chemicals and materials sector, supporting a circular carbon economy. By converting CO_2 into renewable carbon products, these technologies reduce dependence on fossil resources and create new business opportunities.

Nominees of the Innovation Award

1

2

6

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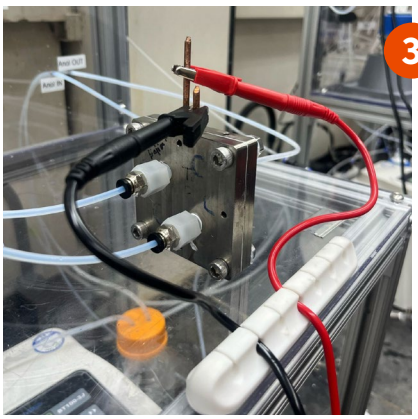
1

Best CO_2 Utilisation 2025

ORGANISER NOVA-INSTITUTE

INNOVATION AWARD



3

5

4

Organiser

Award Sponsor

Award Co-Organiser

1

eChemicles (HU)

Low-temperature Electrolyser Technology for CO_2 Reduction to CO

eChemicles, a recognised Top Innovator by UpLink – World Economic Forum, has developed the world's first containerised, scalable low-temperature CO_2 electrolyser system to revolutionise the chemical industry, driving its transition towards a better tomorrow. The technology is capable of directly utilising CO_2 in a waste-to-wealth manner, transforming emissions into valuable molecules. The electrolyser technology can be easily integrated with existing industrial infrastructure, enabling faster uptake and lower investment cost, without the need for scrapping previously built assets. It also has the potential to be directly coupled with renewable energy sources, contributing to balancing the intermittency of renewables. The stacked design is scalable, allowing easier transition to larger scales without redesign and providing more flexible scalability.

More information: www.echemicles.com

2

Far Eastern New Century Corporation (TW)

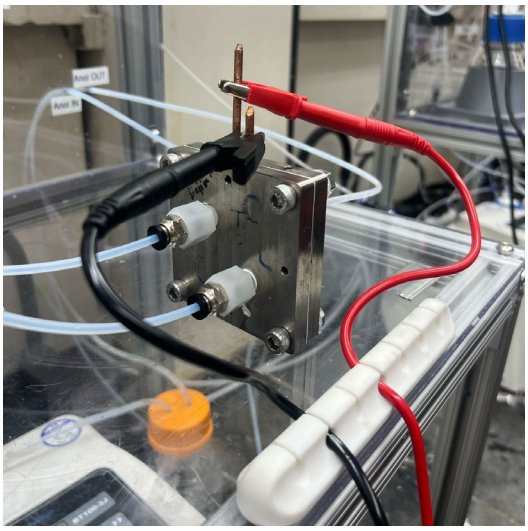
FENC® TopGreen® CO_2-based NIPU

The world's first CO_2-based NIPU (Non-isocyanate Polyurethane) technology transforms CO_2 into high-performance elastomeric materials. Unlike traditional thermoplastics polyurethanes (TPU), which rely on toxic phosgene and isocyanates, this exclusive NIPU technology offers a safer, sustainable alternative for applications such as waterproof and breathable membranes, shoe uppers, midsoles, elastic fibres, and artificial leather. Utilising Far Eastern Group's carbon capture technology, CO_2 is converted into chemicals with over 50% CO_2 content, then combined with advanced polymer production to mass-produce CO_2-based NIPU elastomers, achieving permanent carbon capture. This innovation reduces carbon emissions by up to 58% compared to traditional TPU manufacturing while delivering exceptional performance and sustainability.

More information: www.fenc.com

3

Oxylus Energy (US)
Methanol Producing Electrolyzer



Oxylus Energy has developed a direct electrochemical approach to green methanol production. This remarkable carbon electrolysis technology directly converts industrial emissions into sustainable methanol with only renewable electricity and water. With this breakthrough technology, Oxylus can generate carbon-neutral and carbon-negative methanol at a competitive cost to fossil methanol.
This approach not only enables direct decarbonisation of industrial emissions via carbon conversion to a liquid product, but also offers an economically viable route to defossilise the hard-to-abate sectors of aviation, shipping, and chemical production, responsible for ~11% of global emissions.

More information: www.oxylusenergy.com

4

Skytree (NL)
Skytree Stratus

Skytree's Stratus Direct Air Capture (DAC) Park provides a cost competitive source of CO_2 for Power to X facilities. This park can be connected to an electrolyser, which is fed with the water that is a by-product of the carbon capture process. The DAC Park and the electrolyser plant then provide inputs for the production of sustainable fuels at a synthesis plant. Unlike point source carbon capture (PSC), the DAC Park operates independent of other industrial activities, while climate modules allow global deployment; thus, the approach can optimise the DAC Park location based on electrolyser and electricity costs. The low temperature requirements of this technology allow it to be powered with industrial waste heat, geothermal heat & power, and other renewable energy sources.

More information: www.skytree.eu

5

TNO (NL)

Sorption Enhanced DME Synthesis, SEDMES

The Sorption Enhanced DME synthesis technology – SEDMES – by TNO, provides an essential element in closing industrial cycles and contributing to a circular carbon economy by converting CO_2 efficiently into dimethyl ether (DME). DME has an important market potential in the current energy transition. It can replace diesel and LPG as well as become a major intermitted feedstock for the chemical industry or an important H_2 carrier. SEDMES combines two process steps in one reactor. CO_2 and (green) H_2 is converted to DME in one reactor step with high conversion rates and efficiency due to the in-situ separation of H_2O. The conversion rate increases significantly (>80%) reducing recycles and downstream steps. Most recent milestone (2024) includes 1000 hrs operation of a state-of-the-art SEDMES pilot plant.

More information: www.tno.nl/en

6

UP Catalyst (EE)

Battery-grade Graphite from CO_2

UP Catalyst has developed a process using Molten Salt CO_2 Capture and Electrochemical Conversion (MSCC-EC) Technology to transform CO_2 emissions into long-lived carbon materials such as graphite and carbon nanotubes (CNT). UP Catalyst's technology has the lowest energy requirement per tonne of graphite produced. This technology produces carbon materials in a continuous process at 500-750°C, significantly lower than the 2,800°C required for conventional production, using 2x less energy to produce graphite compared to conventional synthetic graphite production methods and 20x less energy to produce CNTs.

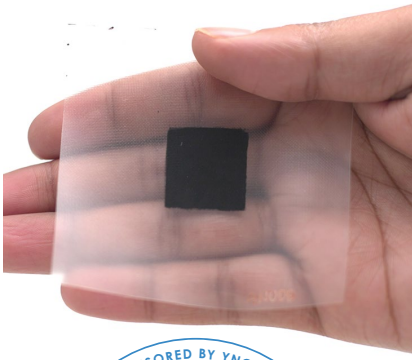
More information: www.upcatalyst.com

Winners of the Innovation Award "Best CO_2 Utilisation 2024"

Dioxycle (FR)
Ethylene Producing Electrolyser

D-CRBN (BE)
Plasma-based CO_2 Conversion

Twelve (US)
E-Jet



Interview

CCU Pioneers – Keeping Carbon Circular: PtX Lab Lausitz

1. Innovation & Sustainability

How does PtX Lab Lausitz integrate green hydrogen production with CCU technologies to create sustainable Power-to-X (PtX) products for hard-to-abate sectors like aviation and maritime transport?

Dr. Irina Akhmetova & Lukas Horndasch: PtX Lab Lausitz is a competence center that aims to accelerate the fast and sustainable market ramp-up of Power-to X (PtX) products based on green hydrogen. Located in Cottbus, Brandenburg (Germany), we serve as a knowledge platform, initiator and central point of contact for industry, policymakers, science and the public.

By using renewable electricity to produce green hydrogen via electrolysis, and then combining this hydrogen with captured CO_2, the synthesis of fuels and chemicals (PtX products) becomes sustainable. We advocate for a supportive policy framework to enable the fast and sustainable market ramp-up of PtX products in hard-to-abate sectors like aviation, shipping, and the chemical industry.

2. Breakthrough Technology

What specific CCU technologies is PtX Lab Lausitz developing or promoting that utilise green hydrogen, and how do these address the challenges of carbon neutrality in industries like chemicals and transportation?

Dr. Irina Akhmetova & Lukas Horndasch: We are working to ensure that PtX become rapidly and sustainably available for aviation, shipping, and the chemical industry – sectors, where direct electrification is often impractical or ineffective. PtX solutions are urgently needed to enable and unlock the transition to climate neutrality in these areas.

To support this, we are assisting the construction of a power-to-liquid (PtL) demonstration plant in Lausitz (Germany). This will be developed together with industrial partners and funded by the Coal Region Investment Act (InvKG) to meet the highest sustainability standards.

Dr. Irina Akhmetova
Referent

Lukas Horndasch
Referent

PtXLab LAUSITZ

To support this, we are assisting the construction of a power-to-liquid (PtL) demonstration plant in Lausitz (Germany). This will be developed together with industrial partners and funded by the Coal Region Investment Act (InvKG) to meet the highest sustainability standards.

We are aware, that the availability of affordable and sustainable CO_2 for PtX fuels and chemicals will be a major challenge for a fast ramp-up of production capacities. To overcome this barrier, we promote and engage in accelerating the development of innovative DAC-processes in collaboration with Fraunhofer IEG and other stakeholders.

3. Challenges & Opportunities

As PtX Lab Lausitz works towards promoting the market ramp-up of green hydrogen-based CCU technologies, what are the main technical and economic challenges you've identified, and what special opportunities do you see for the Lausitz region you are located in?

Dr. Irina Akhmetova & Lukas Horndasch: The production of PtX products requires large amounts of renewable energy and sustainable CO_2 (biogenic sources or DAC). Furthermore, an access to infrastructure, technology, and specialised know-how is needed.

The Net Zero Valley Lausitz is an emerging hub for infrastructure and Net Zero technologies, providing the necessary foundation for PtX development. It offers easy access to needed infrastructure, technology, and know-how while also enabling faster permitting processes.

Lusatia offers suitable conditions as a location for the plant. The high proportion of renewable energies and the geographical proximity to companies in the aviation industry already make Lusatia a pioneer of the energy transition, which is currently undergoing a transformation from a former coal-based to a post-fossil energy region. The construction of a pilot plant to produce PtL fuels on an industrial scale will equip the industrial region for the future, secure jobs, and support the structural change.

4. Collaboration & Industry Dynamics

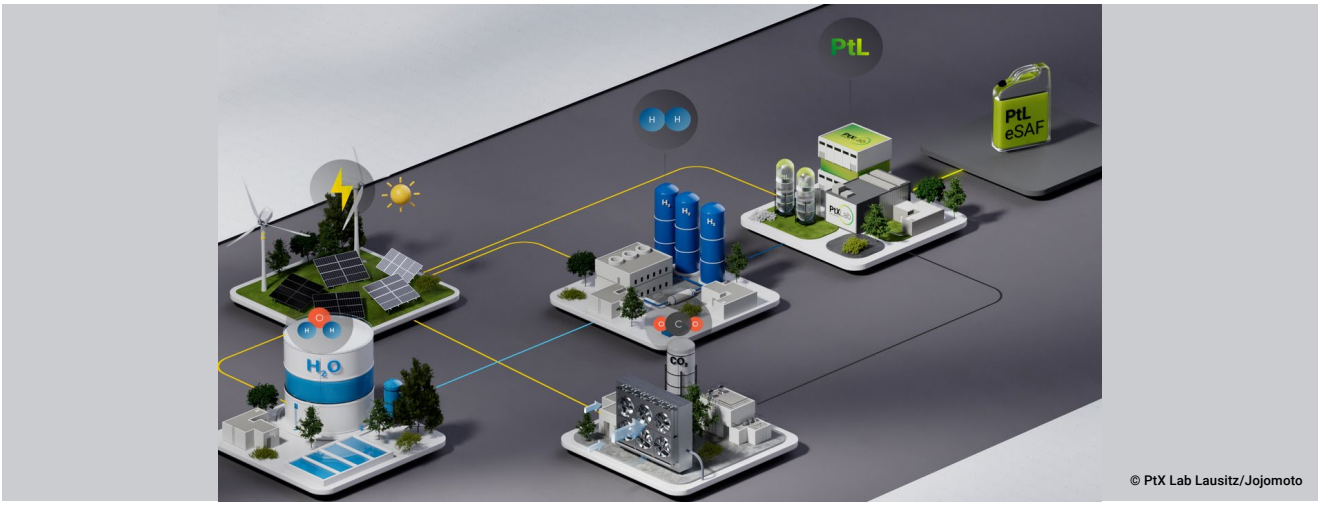
PtX Lab Lausitz is well known for its interdisciplinary and cross-sectoral dialogue approach. How does PtX Lab Lausitz foster collaboration between green hydrogen producers, CCU technology developers, and end-users, especially in the logistics sector, to accelerate the adoption of sustainable PtX products?

Dr. Irina Akhmetova & Lukas Horndasch: PtX Lab Lausitz participates in various networks to help shape targeted and efficient policy frameworks, establish facilitating standards and certification systems for PtX, and strengthen a just transition in the Lausitz region. We are part of the Cluster Dekarbonisierung der Industrie (CDI), the Lausitz Science Network, the hydrogen network durchH2atmen Lausitz. Additionally, we support the NetZero Vallely Lausitz in Brandenburg.

By hosting expert discussions, conferences, and workshops, we promote cross-sectoral dialogue and transfer of expertise.

We shape the future of sustainable aviation policy, ensuring that E-SAF (sustainable aviation fuel produced with renewable energy) unfolds its potential. Our engagement includes membership in aireg (Aviation Initiative for Renewable Energy in Germany e.V.), the Arbeitskreis klimaneutrale Luftfahrt (AKkL), and the Renewable and Low Carbon Fuel Value Chain Industrial Alliance (RLCF).

We contribute to the development of standards and certification systems. As a member of the Roundtable on Sustainable Biomaterials (RSB) and the DIN working group on sustainability, we are involved in defining sustainability criteria for hydrogen and its derivatives through the on-going development of DIN 35809.



© PtX Lab Lausitz/Jojomoto

Is CO_2 the Key to a More Sustainable Chemical and Fuel Industry?

Carbon dioxide (CO_2) is often viewed solely as a major contributor to climate change and global warming, but it also holds significant potential as a valuable resource. Utilising CO_2 as a feedstock in chemical and fuel production could play a key role in transitioning to a more sustainable chemical sector and global economy. Innovative approaches focus on converting captured CO_2 into value-added products, such as fuels, chemicals, and materials, through various technical methods.

The chemical industry is a significant consumer of carbon, which to date has traditionally been generated from fossil sources such as oil, coal and natural gas. Alternative sources of carbon include biomass and CO_2 in particular, which offer more sustainable solutions. Innovative Carbon Capture and Utilisation (CCU) technologies can convert captured CO_2 from industrial point sources and direct air capture into chemical base materials such as methanol, ethanol, ethylene or even polyols and other polymer building blocks. These substances serve as the foundation for a wide range of products, including solvents, plastics, adhesives, paints and textiles.

Reduction of CO_2 to Syngas and Other Products

The production of base chemicals and fuels through CO_2 reduction involves converting carbon dioxide using external energy sources, primarily green hydrogen or direct electricity. When hydrogen is used, it is generated through water electrolysis powered by renewable energy (e.g., wind, solar), splitting water into hydrogen (H_2) and oxygen (O_2). Modern electrolysers achieve approximately 70% efficiency in converting renewable electricity into hydrogen, which can then be utilised to reduce CO_2 into a reactive mixture of CO and hydrogen, known as syngas. Syngas can undergo further processing through thermochemical conversion technologies that use heat, pressure, and catalysts to drive chemical reactions transforming captured CO_2 into valuable products. Common reactions include methanation, methanol synthesis and Fischer-Tropsch synthesis, which produce sustainable aviation fuels (SAF), alternative naphtha and other hydrocarbons. Catalysts such as nickel or cobalt are employed to enhance reaction rates and selectivity.

Direct use of electricity in electrochemical CO_2 reduction bypasses the need for hydrogen as an energy carrier, eliminating energy losses from water electrolysis. The process begins when CO_2 molecules attach to catalytic surfaces like copper-based electrodes, where electron transfer disrupts the CO_2 structure. This breaks C=O bonds, producing adsorbed intermediates such as *CO and *COOH, which are essential for forming multi-carbon compounds. In the next step, these intermediates can combine via carbon-carbon coupling to form multi-carbon products like ethylene (C_2H_4) and ethanol (C_2H_5OH) or form again a syngas. Catalysts such as copper, palladium, or nickel enhance reaction efficiency by guiding these pathways.

Biotechnological Utilisation of CO_2

Biotechnological utilisation of CO_2 involves the use of microorganisms and bioengineered systems to convert carbon dioxide into valuable products, such as biomass, fuels and chemicals, by using CO_2 as a carbon source instead of sugars. These processes often integrate renewable energy and biological pathways to create sustainable carbon cycles. While additional energy carriers are needed for CO_2 reduction, these are incorporated into microorganisms' metabolic pathways. This enables the production of different molecules, including alcohols, organic acids and others.

Some methods combine CO_2 capture with microbial conversion in a single system to minimise energy demands, while others use renewable electricity to directly supply electrons for CO_2 reduction through microbial electrosynthesis. Photosynthetic organisms like microalgae and cyanobacteria utilise sunlight to convert CO_2 into biomass, such as lipids, carbohydrates, and proteins, via photosynthesis. These biomaterials can then be harvested for biofuels (e.g., biodiesel, ethanol) or high-value chemicals (e.g., carotenoids).

Emission Reduction by CCU

The production of petrochemical raw materials is associated with high emissions. However, using CO_2 from these emissions as a feedstock can support the circular economy by closing carbon cycles and preventing additional emissions from entering the atmosphere. In this way, utilising CO_2 as a raw material not only reduces the carbon footprint of many products but also replaces fossil-based materials.

Carbon-based fuels such as kerosene are essential in mobility, particularly in aviation, due to their high energy density. Despite their importance, their fossil origins result in considerable CO_2 emissions. Synthetic fuels made from captured CO_2, often referred to as e-fuels or sustainable aviation fuels (SAF), offer a viable alternative. These fuels are produced by combining captured CO_2 with green hydrogen, typically using synthesis gas as an intermediate product. Synthetic fuels are virtually free of sulphur components and can be used in existing combustion engines without major modifications, making them particularly interesting for long-distance transportation and aviation, where electrification remains limited. However, their production is energy-intensive, underscoring the importance of renewable energy sources for ensuring sustainable production.

DAY 2

30 April 2025, 9:00–16:30 (CET)

9:00 **Lars Börger**
nova-Institute (DE)
Day Opening

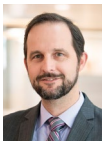
9:10 – 10:30

CO_2 to Chemicals and Fuels

Grand Hall

Chairpersons: Achim Raschka & Pia Skoczinski, nova-Institute

9:10



Peter Nieuwenhuizen
Synata Bio (US)
Turning Waste Carbon into Low-Carbon Fuel and Circular Chemicals

9:30

Francesca Di Bartolomeo
SINTEF (NO)
Pioneering Sustainable CO_2 Conversion to C_3 Chemicals and High-Value Lipids for Feed and Food Applications

9:50

Henning Friege
N3 Nachhaltigkeitsberatung Dr. Friege & Partner (DE)
Defossilizing the Feedstock of the Chemical Industry – Necessary Framework Conditions as Part of Germany's Contribution to the "Global Framework on Chemicals"

10:10
Panel Discussion with all Session Speakers

10:30
Coffee Break & Networking

11:00 – 13:00

CO_2 to Chemicals, Fuels, Polymers and Materials

Grand Hall

Chairpersons: Lars Börger & Michael Carus, nova-Institute

11:00

Vincent Peña
Air Liquide Global E&C Solutions Germany (DE)
Saving and Valorizing CO_2 with the Lurgi Methanol™ Technologies by Air Liquide

11:20

Oliver Kuisle
Celanese (DE)
Low Carbon Intensity Methanol from Industrial CCU

11:40

Volker Sick
Global CO_2 Initiative (US)
A Life Cycle Assessment of Potential Pathways to Increase Sustainable Aviation Fuel Yields Through CO_2 Upgrading Co-located with Corn Ethanol Production

12:00

Andreas Hartwig
Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM (DE)
NIPU and NIPUH: Polyurethanes made from Carbon Dioxide instead of Isocyanates

12:20

Sebastian Pohlmann
UP Catalyst (EE)
Critical Raw Materials from CO_2: Sustainable Synthesis of Nanotubes and Graphite

12:40
Panel Discussion with all Session Speakers

13:00
Lunch Break & Networking

11:00 – 13:00 Parallel Session

Advanced Research in CCU

Room Adelheid

No Online Transmission

Chairpersons: Lars Krause & Pia Skoczinski, nova-Institute

11:00

María Romero Ángel
AIMPLAS (ES)
Sustainable Formulations from CO_2 and Orange Peel Waste

11:20

Achim Schaadt
Fraunhofer Institute for Solar Energy Systems ISE (DE)
DME as a Promising Platform Molecule for Fuels

11:40

Cristian Torri
Università di Bologna (IT)
Isopropyl Alcohol Production from CO_2 with a new Direct Air Carbon Capture and Fixation (DACF) Approach: Results from Early Proof-of-Concept Investigation

12:00

Xin Tu
University of Liverpool (UK)
Plasma Catalysis for CO_2 Hydrogenation to Methanol

12:20

Mohamad Kanso
Toulouse Biotechnology Institute (FR)
Technical and Environmental Comparison of Diverse Valorization Routes of CO_2 as Ethanol under a Simulation Approach

12:40
Panel Discussion with all Session Speakers

14:30 – 16:30

CO_2 Utilisation Technologies (Part 2)

Grand Hall

Chairpersons: Achim Raschka & Pia Skoczinski, nova-Institute

14:30

Mohammad Rezaei
GIG Karasek (AT)
Exploring the Functions of Electrocatalysts and Membranes in Advanced Technologies for Green Synthesis of Carbon Monoxide from Carbon Dioxide

14:50

Födi Tamás
eChemicals (HU)
Scaling-up Low Temperature CO_2 Electrolysis to Industrial Levels

15:10

Pierre Calleja
SYKLEA (FR)
SYKLEA No Water Technology CO_2 Capture and Valorisation Based on Algae Tech

15:30

Philipp Arbter
Colipi (DE)
Exploiting Hydrogen-Oxidizing Bacteria as a Novel Biomanufacturing Platform for Production of Chemicals from CO_2

15:50

Tom Wirtanen
VTT (FI)
Novel Electrosynthetic Pathways to Ethylene Glycol, Acrylic, Adipic and Glycolic Acids: CO_2-based C2-C6 Building Blocks for Sustainable Polymers

16:10
Panel Discussion with all Session Speakers

16:25
Final Words

16:30
End of the Conference

Valuable Quotes

Maria Romero Ángel
AIMPLAS (ES)
"I am excited to attend the CO_2-based Fuels and Chemicals Conference 2025 to explore groundbreaking innovations and gain valuable insights into sustainable, carbon-neutral technologies."

Vincent Peña
AirLiquide (DE)
"The CO_2-based Fuels and Chemicals Conference brings together people from manifold industries, organisations and disciplines with a common goal: unlocking CO_2 valorisation and its integration into our value chains."

David Soane
Carbogenesis (US)
"Development and deployment of profitable and scalable utilisation technologies will be a game-changer for mitigating climate change caused by CO_2; this conference brings world-class teams and like-minded individuals to exchange important ideas."

Oliver Kuisle
Celanese (DE)
"Celanese is honored to be part of the CO_2-based Fuels and Chemicals Conference 2025 to exchange on cutting-edge solutions for a low-carbon future like our 'Low Carbon Intensity Methanol from Industrial CCU' on Day 2."

Anastasios Perimenis
CO_2 Value (BE)
"The nova Conference on CO_2-based Fuels and Chemicals is a lighthouse event for the CCU community with rich networking opportunities and knowledge sharing activities."

Philipp Arbter
COLIPI (DE)
"We are looking forward to presenting our innovative CCU technology at the CO_2-based Fuels and Chemicals Conference 2025 and engaging in valuable exchanges with experts from industry and academia to drive the future of sustainable chemical production."

Tamás Födi
eChemicles (HU)
"I'm looking forward to attending the CO_2-based Fuels and Chemicals Conference, where I'll be sharing insights on our efforts to scale up low-temperature CO_2 electrolysis and engaging with key industry players to drive innovation forward."

Balázs Hepp
eChemicles (HU)
"I am grateful for the opportunity to participate in CO_2-based Fuels and Chemicals conference engaging with industry leaders and exchanging insights that drive innovation forward."

João Oliviera
EIT InnoEnergy (PT)
"At the 2025 CO_2-based Fuels and Chemicals Conference, I'll introduce CarbFlex — the first pan-European aggregator of biogenic CO_2 — highlighting collaboration as the key to advancing CCU and BECCS projects."

Doris Hafenbradl
Electrochaea (DE)
"As CTO and Managing Director of Electrochaea, I'm excited to join the CO_2-based Fuels and Chemicals Conference 2025 to share insights and discuss transformative solutions for RNG and green methane."

Eric Rambech
Endrava (NO)
"Finding sustainable utilisation pathways for CO_2 is a key enabler for net-zero – this conference brings the best together to push the envelope."

Anja Fink
NRW.Energy4Climate (DE)
"Hot Spot to learn about the latest CCU technologies and to connect with companies and organisations working in the field."

Jarkko Toropainen
Fortum (FI)
"CO_2-based Fuels and Chemicals Conference offers a good opportunity to showcase the possibilities to build more sustainable future for our industry."

Andreas Hartwig
Fraunhofer Institute (DE)
"I am looking forward to learn more about carbon dioxide utilisation to be inspired for my research and hope that others will learn from my work on polyurethanes made from carbon dioxide."

Mohammad Rezaei
GIG Karasek (AT)
"This conference accelerates the vital transition from carbon capture research to scalable industrial applications, bridging electrochemistry with Power-to-X strategies to redefine sustainable manufacturing."

Florian Kleinwächter
HOLCIM (DE)
"With our expertise as one of the decarbonisation pioneers in the heavy industry, we can surely contribute an interesting perspective to the conference participants and, at the same time, widen our network and gain new insights on the CO_2 market."

Dorinde Kleinegris
NORCE (NO)
"The CO_2-based Fuels and Chemicals Conference gives us an excellent opportunity to present our EU project ALGAESOL, where we work on developing sustainable aviation and shipping fuels from microalgae and direct solar BES technologies. I'm very much looking forward to sharing insights and learning about the latest developments in the CCUS field."

Juliette Poupeney
Revcoo (FR)
"Unlocking CO_2 Capture to Accelerate Access to CCUS."

Esther Hegel
RSB Foundation – Roundtable on Sustainable Biomaterials (CH)
"The conference enables knowledge sharing and collaborative discussions among key stakeholders, fostering insights that drive the advancement of sustainable CO_2-based fuels and chemicals."

Liv Reinecke
RWE (DE)
"The conference offers a unique chance to network across the value chain, fostering collaborations and innovations for a zero-carbon hydrogen economy."

Francesca Di Bartolomeo
SINTEF (NO)
"This conference is a key event for staying at the forefront of Carbon Capture and Utilisation advancements and fostering essential collaborations."

Pierre Calleja
SYKLEA (FR)
"SYKLEA First solution of CCV (Carbon Capture Valorisation)."

Peter Nieuwenhuizen
Sybata Bio (US)
"This conference is a great opportunity to get together, reflect on our progress so far and conceive of ways to accelerate the development of CO_2-based fuels & chemicals and a circular economy."

Mohamad Kanso
TBI (FR)
"The CO_2-Based Fuels and Chemicals Conference 2025 is a premier event dedicated to advancements in technologies and innovations for transforming captured CO_2 into sustainable fuels and valuable chemicals, fostering a circular carbon economy."

Cristian Torri
University of Bologna (IT)
"A valuable opportunity to learn about the latest technical updates and a pleasant networking event to meet people working on this challenging topic."

Cristhian Molina-Fernández
University of Liège (BE)
"Driving innovation towards a sustainable future, the CO_2-based Fuels and Chemicals Conference 2025 unites global researchers to advance the circular carbon economy."

Volker Sick
University of Michigan (US)
"This is the go-to event to learn about the latest in fuels and chemicals made from carbon dioxide."

Sebastian Pohlmann
UP Catalyst (EE)
"This conference is an absolute go-to event for staying up to date on the latest CCU-related policies and learning about cutting-edge technological advancements in CCU from the industry's leading companies."

RENEWABLE CARBON INITIATIVE

Bio-based CO_2-based Recycling

Circular Economy

Shape the Future of the Chemical and Material Industry

WHY JOIN RCI?

RCI is an organisation for all companies working in and on renewable chemicals and materials – plastics, composites, fibres and other products can be produced either from biomass, CCU or recycling. RCI members profit from a unique network of pioneers in the sustainable chemical industry, creating a common voice for the renewable carbon economy.

To officially represent the RCI in Brussels, the RCI is registered in the EU's transparency register under the number 683033243622-34.

LinkedIn:
www.linkedin.com/showcase/renewable-carbon-initiative
#RenewableCarbon

Executive Managers:
Christopher vom Berg & Michael Carus
Contact: Verena Roberts
verena.roberts@nova-institut.de

JOIN NOW

Become a part of the Renewable Carbon Initiative (RCI) and shape the future of the chemical and material industry
www.renewable-carbon-initiative.com

Find all current RCI members at:
www.renewable-carbon-initiative.com/network

MEMBERS OF THE INITIATIVE

LARGE SUPPLIERS

ADM, Alfa Laval, Arkema, Bakelite Synthetics, BASF*, Beckers, Borealis, Braskem, Cerdia, Clariant, Cosun Beet Company*, Covestro*, cropenergies, Fortum, Givaudan*, Peter Greven, H&R, IFF*, Kemira, Kuraray, Lenzing*, Lubrizol, Mane, Mercer, Neste*, PCC, PrimientCovation, SCGC, Stahl*, Stepan, Sulzer, Syensqo, Symrise, TÜV Austria, Uniper, UPM Biofore Beyond Fossils*, Verbio, Wacker

SME

AllocNow, avantium, Fibenol, FKuR, futerro, LanzaTech*, nova, SCSglobal, TMG

BRANDS

Beiersdorf, Continental, Henkel*, IKEA, LEGO, Michelin, On, P&G, Vaude

START-UPS

Aduro Clean Technologies, amynova polymers, BioBTX, Chaincraft, clariter, Colipi, dob, Dioxycle, econic, evoco, Greenlyte Carbon Technologies, Modern Meadow, Oxylus Energy, TripleW

RESEARCH INSTITUTES

Danish Technological Institute, IKT Kunststoff Technik Stuttgart, ITA RWTH Aachen University, Leibniz-Institut für Verbundwerkstoffe, NORCE

* Board Member

PARTNERS

C.A.R.M.E.N., Change Chemistry, Chemie Cluster Bayern, Circular Rubber Platform, CO_2 Value Europe, ECBF, ecp-news, EIHA, ePure, Global CO_2 Initiative, GO!PHA, IBB, Renewable Carbon Plastics Magazine, Textile Exchange, WWF

ADMINISTRATIVE OFFICE

nova-Institute

- Initiator and scientific backbone
- Organisation, management and coordination of RCI

MEMBERS

Board

- Strategic direction
- Budget allocation
- Highly active
- Max. 20 members

General assembly

- 2–3 main representatives per member
- Identify / define priorities of RCI
- Decide on future projects

PARTNERS

- Support and promote each other
- Advise on specific topics

ACTIVITIES

- Advocacy
- Scientific background reports
- Position papers
- Networking

WORKING GROUPS - Involvement of all interested members

WG Labelling

- Development of a renewable carbon share (RCS) certificate and label

WG Policy

- Position papers
- Factsheets
- Stakeholder dialogues
- Public consultations of regulations

WG Recycling

- Chemical and mechanical recycling
- Position papers
- Strategic reports

WG Sustainability

- Deep understanding and harmonisation of sustainability assessment and reporting
- Position papers
- Strategic reports

MEMBERSHIP BENEFITS

Advocating for renewable carbon

RCI is at the forefront of advocating for the transition from fossil to renewable carbon. As a member, you'll actively contribute to shaping future policy and driving the transition, ensuring your voice is heard in the movement towards defossilisation.

Contribute to leading scientific reports and positions

RCI's publications are instrumental in advocating for renewable carbon. As a member, you contribute your knowledge and insights, shaping the discourse and decisions that are transforming our economy.

Connect with a vibrant network

Joining RCI means connecting with a diverse network spanning the entire value chain, fostering collaboration and innovation. Supported by our partners, you'll be at the heart of a growing community that drives positive change in the renewable carbon landscape.

Shape the future of the RCI

Your membership gives you the opportunity to shape the direction of RCI, by proposing new ideas, participating in ongoing projects or joining the board. Your membership funds RCI's activities, actively enabling collaboration towards a sustainable future.

Join specialised working groups

Engage in specialised working groups focused on critical aspects such as policy, labelling, recycling, and sustainability. Together, as a trusted pool of expertise, you'll tackle challenges and drive solutions forward.

Increase your visibility

As an RCI member, you'll be recognised as a leader in the transition to renewable carbon. Benefit from increased visibility through our communications activities and share your own successes to build credibility on your path to sustainability.

Enjoy exclusive discounts

Benefit from exclusive discounts on conferences and commercial market reports by nova-Institute, along with additional benefits through our partners. Your membership brings added value beyond just networking and collaboration.

Get cloud access to internal RCI documents

Gain access to the internal RCI cloud, containing draft documents, policy consultations, presentations, and factsheets. It's everything you need to stay ahead of the curve.

THE AIM

The aim of the Renewable Carbon Initiative (RCI) is to support and speed up the transition from fossil carbon to renewable carbon for all organic chemicals and materials.

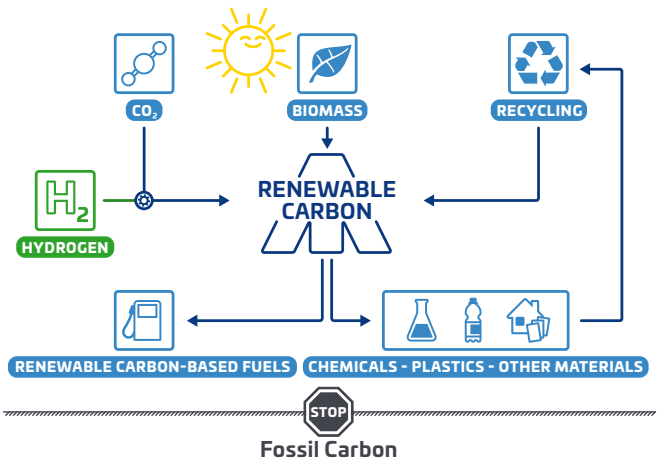
RCI addresses the core problem of climate change, which is extracting and using additional fossil carbon from the ground that will eventually end up in the atmosphere. Companies are encouraged to focus on phasing out fossil resources and to use renewable carbon instead.

The initiative wants to drive this message, initiating further actions by bringing stakeholders together, providing information and shaping policy to strive for a climate-neutral circular economy.

THE VISION

Fossil carbon shall be completely substituted by renewable carbon, which is carbon from alternative sources: biomass, CO_2 and recycling.

RENEWABLE CARBON



Save the Date

RENEWABLE MATERIALS CONFERENCE

22–24 Sep
2025

renewable-materials.eu

ADVANCED RECYCLING Conference

19–20 Nov
2025

advanced-recycling.eu

CO_2-based Fuels and Chemicals Conference

28–29 April
2026

co2-chemistry.eu

nova-Institute
for Sustainability and Innovation

Technology & Markets
Achim Raschka (achim.raschka@nova-institut.de)

- Market Research
- Market & Trend Reports
- Innovation & Technology Scouting
- Trend & Competitive Analysis
- Supply & Demand Analysis
- Feasibility & Potential Studies
- Customised Expert Workshops
- Business Plan Services

Communications
Stefanie Fulda (stefanie.fulda@nova-institut.de)

- Comprehensive Communication & Dissemination in Research Projects
- Communication & Marketing Support
- Network of 60,000 Contacts to Companies, Associations & Institutes
- Targeted Newsletters for 19 Specialty Areas of the Industry
- Conferences, Workshops & nova Sessions
- In-depth B2C & Social Acceptance Research

Sustainability
Matthias Stratmann (matthias.stratmann@nova-institut.de)

- Life Cycle Assessments (ISO 14040/44, PEF Conform)
- Carbon Footprint Studies & Customised Tools
- Initial Sustainability Screenings & Strategy Consultation
- Holistic Sustainability Assessment (incl. Social & Economic Impacts)
- GHG Accounting Following Recognised Accounting Standards
- Critical Reviews for LCA or Carbon Footprint Reports
- Sustainability Reporting & Claims (CSRD, Green Claims)

Economy & Policy
Lara Dammer (lara.dammer@nova-institut.de)

- Strategic Consulting for Industry, Policy & NGOs
- Political Framework, Measures & Instruments
- Standards, Certification & Labelling
- Micro- & Macroeconomics
- Techno-Economic Evaluation (TEE) for Low & High TRL
- Target Price Analysis for Feedstock & Products

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nova-Institute is a private and independent research institute, founded in 1994. nova offers research and consultancy with a focus on the transition of the chemical and material industry to renewable carbon.

What are future challenges, environmental benefits and successful strategies to substitute fossil carbon with biomass, direct CO_2 utilisation and recycling? What are the most promising concepts and applications? We offer our unique understanding to support the transition of your business into a climate neutral future.

Our subjects include feedstock, technologies and markets, economy and policy, sustainability, communication and strategy development. Multidisciplinary and international team of 45 scientists.

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25-04-10