



Press release

nova-Institut GmbH (www.nova-institute.eu)

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“Best CO₂ Utilisation 2023” Innovation Award – Three winning CCU solutions open the road to transition away from fossil resources

Carbon dioxide is a renewable resource able to replace fossil carbon. CellCO₂, Arkeon and Ultra-low Carbon Concrete showcase the versatility of carbon capture and utilisation (CCU) solutions.

More than 245 participants from 30 countries across the world attended the innovation award ceremony at the Conference on CO₂-based Fuels and Chemicals 2023 (www.co2-chemistry.eu) in Cologne, Germany and online. The conference is one of the most established events on CCU for the entire Power-to-X industry and its customers worldwide. This year’s 11th edition showcased the latest and most important developments in the fast-growing field of CO₂ capture and utilisation.

During the ceremony, six nominees had the opportunity to present their innovative CCU solutions to a broad audience of international experts, while nearly 200 people selected the three winners in an audience live voting.

From materials that improve carbon capture to the production of proteins and CO₂-based building materials, the three winning CCU innovations open the road to transition away from fossil resources.

The innovation award “Best CO₂ Utilisation 2023” granted to CellCO₂

The innovation award “Best CO₂ Utilisation 2023” has been granted to CellCO₂, an outstanding solution developed by the German Institutes of Textile and Fiber Research (DITF). By combining bio-based carbon sources and CCU, CellCO₂ successfully manages to incorporate two of the three pathways to renewable carbon solutions.

CellCO₂ is a CO₂ adsorber material based on amines functionalised cellulosic fibre materials e.g., non-woven. The technology starts with the conversion of cellulosic fibres into non-woven followed by chemical modification of the surface with amines. The advantage of using non-woven is the open, air-permeable structure allowing a high air throughput. Furthermore, non-woven also have a large specific surface area, which is advantageous for binding the largest

possible volumes of CO₂. Due to the structure, the material can be used in a continuously operating process that permits continuous and energy-saving operation (www.ditf.de).

Arkeon was awarded the second prize for its innovative technology leveraging archaea microorganisms that naturally produce all the building blocks of proteins in only one fermentation.

The Austrian company's process converts CO₂ directly into amino acids and functional peptides, enabling an entirely new world of food products. With a team that comprises archaea biologists, process engineers, food scientists and fermentation technologists, the company is on a mission to change food production on a global scale (www.arkeon.bio).

Ultra-low Carbon Concrete by the US company CarbonBuilt won the third prize for its visionary carbon utilisation technology reducing the embodied carbon of concrete by 70–100 %, hereby helping to establish sustainable low-carbon solutions in the building sector.

The technology replaces cement with a proprietary mix of low-cost, low-carbon industrial waste materials. The used CO₂ is captured from on-site waste biomass incineration or emerging Direct Air Capture (DAC) technologies to cure (harden) the mix into concrete, storing the CO₂ permanently. As CO₂ becomes the key ingredient in ultra-low concrete production, CarbonBuilt expects to be one of the world's largest purchasers of captured carbon and thus accelerate the development of capture technologies (www.carbonbuilt.com).

Sponsors and partners

The Innovation Award “Best CO₂ Utilisation 2023” was sponsored by YNCORIS, a service partner for the future-proof chemical industry, and it is co-organised by nova-Institute and CO₂ Value Europe, the international association representing the CCU community in Europe and beyond.

The Conference on CO₂-based Fuels and Chemicals 2023 is supported by numerous industry and trade associations, non-profit organisations, research institutions and interest groups, that are thematically linked to the conference: BBE - Bundesverband Bioenergie (DE), BCNP Consultants (DE), BIG C -BioInnovation Growth Mega-Cluster (EU), C.A.R.M.E.N. (DE), CLIB – Cluster Industrial Biotechnology (DE), Global CO₂ Initiative (International), IBB – Industrielle Biotechnologie Bayern Netzwerk (DE), IN4climate.NRW (DE), kunststoffland NRW (DE), Plastics Europe (DE), Renewable Carbon Initiative (International), VoltaChem (NL) and Premium Partner CO₂Value Europe (Co-organiser Innovation Award).

Borealis, GIG Karasek, OMV and Sulzer are supporting the event as sponsors.

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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: How to substitute fossil carbon with biomass, direct CO₂ utilisation and recycling. We offer our unique understanding to support the transition of your business into a climate neutral future.

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