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PRESS RELEASE

From Emissions to Solutions: CO_2-Based Graphite, Plastics, and Methanol win big at "Best CO_2 Utilisation 2025" Innovation Award

UP Catalyst, Far Eastern New Century Corporation, and Oxylus Energy were recognised at the "Best CO_2 Utilisation 2025" Innovation Award for transforming carbon emissions into high-performance battery materials, sustainable plastics for footwear and textiles, and methanol fuel, marking major strides toward a renewable carbon future.

Hürth, 07 May 2025: A total of 230 participants and 45 speakers from around the globe took part in this year's Innovation Award Ceremony, held as a highlight of the **CO_2-based Fuels and Chemicals Conference 2025** (www.co2-chemistry.eu), both in Cologne, Germany, and online. Recognised as one of the leading international gatherings for the Carbon Capture and Utilisation (CCU) and Power-to-X sectors, the 13th edition of the event highlighted cutting-edge developments in this rapidly evolving field.

Six nominees presented their pioneering CCU technologies to a broad audience of international CCU specialists. Attendees then cast their votes in real time to determine the three winners of the "Best CO_2 Utilisation 2025" Innovation Award.

The winning innovations – ranging from battery-grade graphite derived from CO_2, to non-isocyanate polyurethanes (NIPU), and carbon-negative methanol production – mark important steps towards reducing dependence on fossil-based resources.

The innovation award "Best CO_2 Utilisation 2025" goes to UP-Catalyst

The prestigious innovation award for "Best CO_2 Utilisation 2025" has been awarded to the Estonian company **UP Catalyst** in recognition of their development of battery-grade graphite derived from CO_2 emissions.

UP Catalyst has pioneered a process that utilises Molten Salt CO_2 Capture and Electrochemical Conversion (MSCC-EC) technology to convert CO_2 emissions into durable carbon materials, including graphite and carbon nanotubes (CNTs). Their approach boasts the lowest energy consumption per tonne of graphite produced.

This advanced method enables the continuous production of carbon materials at temperatures between 500 and 750 °C – markedly lower than the 2,800 °C typically required for conventional graphite

synthesis. As a result, the technology consumes about half the energy needed for traditional synthetic graphite production and up to 20 times less energy for CNT production.

https://upcatalyst.com/

Far Eastern New Century Corporation received the second prize for its innovative FENC® TopGreen® CO_2-based NIPU technology. The Taiwan-based company has developed the world's first non-isocyanate polyurethane (NIPU) derived from CO_2, creating high-performance elastomeric materials.

In contrast to conventional thermoplastic polyurethanes (TPUs), which depend on toxic materials such as phosgene and isocyanates, this proprietary NIPU technology provides a safer and more sustainable alternative. It is particularly suited to applications including waterproof and breathable membranes, shoe uppers and midsoles, elastic fibres, and synthetic leather.

By employing carbon capture technology developed by the Far Eastern Group, CO_2 is converted into chemical compounds with a CO_2 content exceeding 50%, which are then used in advanced polymer production processes to manufacture CO_2-based NIPU elastomers at scale, achieving permanent carbon capture. This innovation results in a reduction of carbon emissions by up to 58% compared to traditional TPU production, while maintaining outstanding performance and sustainability.

https://www.fenc.com/

Oxylus Energy, a US-based company, was awarded third prize for its innovative direct electrochemical method for producing green methanol. The company's Methanol Producing Electrolyser converts industrial CO_2 emissions directly into sustainable methanol using only renewable electricity and water.

This cutting-edge technology enables the production of carbon-neutral and even carbon-negative methanol at a cost competitive with fossil-derived methanol. By transforming CO_2 emissions into a liquid product, the process not only facilitates direct decarbonisation of industrial outputs but also presents a commercially viable solution to defossilise the hard-to-abate sectors such as aviation, maritime transport, and chemical manufacturing, together accounting for approximately 11 % of global greenhouse gas emissions.

https://oxylusenergy.com

Sponsors and partners

Yncoris is the sponsor of the innovation award "Best CO_2 Utilisation 2025". This established award, co-organised by nova-Institute and CO_2 Value Europe, recognises pioneers in the field of CCU. CO_2 Value Europe, the European association dedicated to CO_2 utilisation, brings its expertise in promoting sustainable industrial solutions, while Yncoris, a leader in the planning, construction, and operational support for chemical industry plants, supports the commitment to advance sustainable technologies. **nova-Institute,** an independent research institute, contributes its extensive expertise in renewable carbon cycles and sustainability to the award.

CO_2 Value Europe (CVE) is an international non-profit association representing the Carbon Capture and Utilisation (CCU) community in Europe and beyond, with a mission to promote the development of a circular carbon economy based on CO_2 to reduce greenhouse gas emissions and to move away from fossil. More information at https://co2value.eu.

The Association brings together over 110 organisations worldwide from diverse sectors (including industries, start-ups, universities, research and technology organisations, and regional clusters), and develops a large network of many more organisations and individuals who share the belief that CCU technologies are necessary to help the EU reach climate targets.

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nova-Institut GmbH has been working in the field of sustainability since the mid-1990s and focuses today primarily on the topic of renewable carbon cycles (recycling, bioeconomy and CO2 utilisation/ CCU).

As an independent research institute, nova supports in particular customers in chemical, plastics and materials industries with the transformation from fossil to renewable carbon from biomass, direct CO_2 utilisation and recycling.

Both in the accompanying research of international innovation projects and in individual, scientifically based management consulting, a multidisciplinary team of scientists at nova deals with the entire range of topics from renewable raw materials, technologies and markets, economics, political framework conditions, life cycle assessments and sustainability to communication, target groups and strategy development.

50 experts from various disciplines are working together on the defossilisation of the industry and for a climate neutral future. More information at: nova-institute.eu – renewable-carbon.eu

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