

Fortum's pilot successful in capturing and utilising CO₂ emissions of waste incineration – moves forward with plans to produce fossil free plastics

Fortum's Recycling and Waste business aims to significantly improve the circulation of materials in waste streams using next-generation circular economy solutions. The company's [Carbon2x concept](#), launched in April 2022, aims to transform the Waste-to-Energy sector by recycling the CO₂ emissions of waste incineration and turning the emissions into CO₂-based plastics. The ongoing development work is now moving forward with the next phase of development work, planning to start producing CO₂-based plastics.

"Combining carbon capture in the context of waste incineration and using that CO₂ to make sustainable plastics will help to reduce dependence on fossil-based raw materials, improve Europe's self-sufficiency, and decarbonise waste incineration. The now starting development phase focuses on finding the right technology to convert the captured CO₂ into plastics," says **Tony Rehn**, Carbon2x Programme Director, Fortum Recycling & Waste.

The next phase of the development work follows a successful carbon capture and utilisation (CCU) pilot, previously concluded at Fortum's Riihimäki Waste-to-Energy plant. The CCU pilot placed Fortum among the first companies in the world to have successfully captured its own CO₂ emissions and used the emissions to produce methane. Now the company is one step closer to revolutionise the Waste-to-Energy sector.

"I am very excited that we can move forward with our plans to start producing the first quantities of CO₂-based plastics by building our own container research laboratory next to our Riihimäki Waste-to-Energy plant. The laboratory will be a state-of-the-art mobile facility that can test all possible production routes for converting our CO₂ emissions into plastics," Rehn says.

"Our research for the CO₂-based plastics has already started. The aim of the Carbon2x concept is to tie our captured carbon into physical products. The plastics that we are making will be fossil-free and the applications of CO₂-based plastics are very versatile. They can be used in food packaging, textiles and cosmetics, for example," Rehn says.

The research lab is expected to be up and running in Riihimäki, Finland during Q4/2023, aiming to find the best technologies and processes in using waste incineration originated CO₂ emissions as a feedstock for producing CO₂-based plastics. In addition to the Riihimäki plant, Fortum has waste incineration plants in Denmark and Sweden, and the company is constructing a new waste incineration plant in the UK as well. Fortum foresees piloting different CCU technologies and solutions in these other Waste-to-Energy facilities in preparation for a possible large-scale industrial demo plant that could potentially begin within the next five years.

Further information

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Fortum

Fortum is an energy company driving the change for a cleaner world. Our role is to ensure the security of supply and a fast and reliable transition to a carbon-neutral economy by providing customers and societies with clean energy and sustainable solutions. Fortum's core operations are located in the Nordics and consist of CO2-free power generation, electricity sales, district heating as well as recycling and waste solutions. Fortum's share is listed on Nasdaq Helsinki. www.fortum.com