Press release

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Converting CO_2 through electrochemistry – The WaterProof Project

Starting soon, the new research project WaterProof aims at closing the waste(water) carbon loop by creating a novel biorefinery concept converting CO_2 emissions from urban waste treatment facilities into valuable green consumer-products. The objective is a technology resulting in a GHG reduction based on CO_2 utilization, replacement of fossil feedstock and industrial electrification.

In view of the increasing scarcity of fossil carbon feedstock and a parallel increase in carbon demand, science and industry are faced with the challenge of urgently closing any possible carbon loop. This also includes the conversion of CO_2 emissions from waste(water) processing. Many of the products we use in our everyday lives, like cleaning products, cosmetics and their packaging materials, end up in our waste and wastewater systems. Processing of these waste streams by means of incineration for the generation of energy and by water purification processes causes immense emission of greenhouse gases such as carbon dioxide (CO_2) and methane (CH_4). WaterProof aims at creating a novel technology for waste(water) treatment, combining effective CO_2 recycling and a contribution to a clean water cycle with zero-waste.

Formic acid for cleaning detergents and sustainable fish leather made from waste(water) CO_2

In order to develop an innovative process, the consortium has set high goals: WaterProof will demonstrate the possibility of creating competitive and profitable business opportunities by turning CO_2 into value-added products, such as consumer cleaning products. This will be achieved by chosing electrochemistry as the method of conversion, using electricity from renewable sources. Although technologies using CO_2 as a building block for the chemical industry are already available, WaterProof aims to progress beyond the state of the art. In this electrochemical process, two electrodes – oxidation and reduction – work together using the same energy source, hereby providing the opportunity to add a second reaction (oxidation) and producing formic acid. WaterProof aims at making the most use of the reduction reaction by testing the formic acid in formulations for new sustainable consumer cleaning products as well as the preparation of sustainable and fish leather, hereby replacing products made with fossil ingredients and reducing the CO_2 emission of wastewater-treatment to a minimum.

Twelve partners from six countries collaborate on creating a clean water cycle with zero-waste

The WaterProof project combines international expertise from all over the globe. Under the lead of Avantium Chemicals BV from the Netherlands, a research consortium including the Ecover Co-ordination Centre from Belgium, Centro de Ciencia y Tecnología de Antioquia from Colombia, Coatema Coating Machinery GmbH, Izes GmbH and nova-Institut für politische und ökologische Innovation GmbH from Germany, Nordic Fish Leather EHF from Iceland, Frames Renewable Energy Solutions BV, Stichting Waternet and NV HVC from the Netherlands, Fundacion Para El Desarrollo y la Innovation Texcnologica as well as Fundacion Tecnicalia Research and Innovation from Spain will be working on innovative solutions.

The WaterProof Project receives funding from the Horizon Europe Framework Programme under the Grant Agreement Number 101058578.

More information about the project will soon be available at www.waterproof-project.eu

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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 CO_2 utilisation and recycling. We offer our unique understanding to support the transition of your business into a climate neutral future. nova-Institute has more than 40 employees.

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