

Carbon4PUR

Low-carbon plastic from steel industry flue gases

Informationen zum Projekt

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Carbon4PUR project explores industrial symbiosis between steel and chemical industry to produce polymer foams and coatings from steel off-gases. Flue gases from steel manufacturing contain a mixture of carbon dioxide and carbon monoxide, valuable feedstock gases for chemical production. Manufacturing high value polyurethane materials from these flue gases is the ambition of Carbon4PUR, a 7.8 Mill. Euro Horizon2020 project with 14 partners from 8 countries, coordinated by Covestro. The unique Carbon4PUR technology will valorise steel off-gas without previous cleaning or separation of the gas components. This flexible and energy efficient technology will allow a reduction of the CO2 footprint of polyurethane production by 20-60% and substitution of at least 15% of the oil-based reactants by waste-gas based carbon. A collaboration between value chain partners and experts. The Carbon4PUR consortium comprises industrial partners along the entire value chain. Flue gas is provided by steel manufacturer Arcelor Mittal to feed the production of polyurethane intermediates at Covestro. Polyurethane manufacturers Recticel N.V. in Belgium and Megara Resins S.A. in Greece are involved as downstream producers, testing the intermediates for the manufacturing of rigid foams and polymer dispersions. The Port of Marseille Fos, an industrial production site for both Covestro and ArcelorMittal, is the model site for which the industrial symbiosis concept will be evaluated. Leading European research and technology support partners are involved to further develop and evaluate the Carbon4PUR technology: the French Atomic Energy and Alternative Energies Commission and RWTH Aachen University for process design and catalyst development; Ghent University for flue gas treatment; Leiden University and TU Berlin for life cycle and techno-economic assessment; sustainability solutions provider South Pole Group for investigating social impacts and mechanisms for market uptake; and PNO Consultants for value chain and stakeholder analysis. DECHEMA will provide mapping and assessment of potential replication sites for the technology, together with Imperial College in London, and is responsible for dissemination and communication.

Ansprechpartner:

Telefon: 069 7564 -Durchwahl

Dr. Alexis Bazzanella -343

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