
Please note that this isn't the final version of the 'Book of Abstracts'! Special characters (in names, etc..) may not be displayed correctly due to the limitations of the pdf generator.

SDEWES12-0569

Sustainable Materialization of Residues from Thermal Processes into Products - SMaRT-Pro²

Valérie Cappuyns^{*1}, Karel Van Acker², Peter Tom Jones², Tom Van Gerven³

¹Hogeschool-Universiteit Brussel, Economics and Management, Belgium

²KULeuven, Department of Metallurgy and Materials Engineering, Belgium

³KULeuven, Department of Chemical Engineering, Belgium

Abstract

SMaRT-Pro² is an Industrial Knowledge Platform on the Sustainable Materialization of Residues from Thermal Processes into Products. It consists of three research institutions and more than 25 partners from industry, government and civil society. The Platform brings together expertise from chemical technology, materials and metallurgical engineering, civil engineering and building technology, applied mineralogy, economy, organization psychology and law. As such it is able to consider the whole implementation chain of sustainable valorization of waste materials, in particular solid residues and carbon dioxide, the two largest and most important waste products from thermal processes. This Knowledge Platform focuses on different types of waste-to-product valorization such as the production of a carbon sink, construction materials, and sorbents. Thermal processes constitute a bulk activity in metals production, waste incineration, glass industry, etc. They generally produce major amounts of solid waste materials, such as slag and fly ash. Rising prices of raw materials and growing awareness for environmental issues lead to a change in perception of these materials from waste to a potential product. However, this trend is still hampered by various barriers: unreliable low-cost technologies, uncertain and inferior quality of the material, underdeveloped legislation and markets for the resulting products, and poor societal experience with closing material cycles. Thermal processes also generate a vast amount of carbon dioxide which they emit into the atmosphere. The discussion concerning carbon dioxide is evolving rapidly, but it is clear that the emission of this greenhouse gas will become ever more regulated in the future. Limiting net carbon dioxide emissions will in this regard constitute a financial benefit for industry. Sustainable use of solid residues and carbon dioxide, the two largest and most important waste products from thermal processes, is an urgent issue both for the industry involved and society as a whole, considering the financial and environmental repercussions of their production. This Knowledge Platform aims at valorizing solid materials and/or carbon dioxide in high-value products by intensified processes and with clear prospects on the economic and legislative feasibility, ecological benefits and societal relevance. The generic goal of the Knowledge Platform is to strengthen knowledge on valorization of inorganic

industrial by-products and provide a formal platform that can enhance the closing of industrial material cycles in Flanders and abroad.