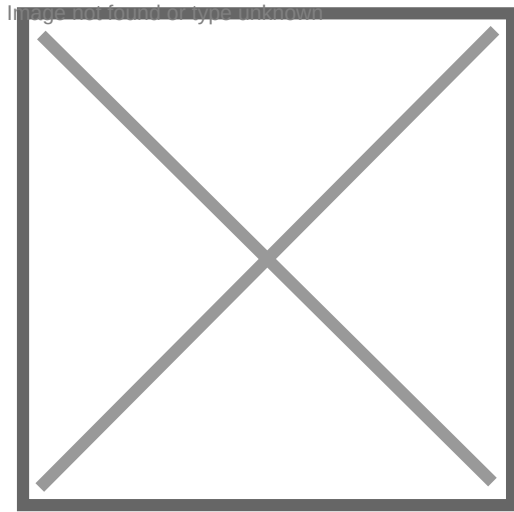




CE-SPIRE-05-2019

RETROFEED

Full Title: Implementation of a smart RETROfitting framework in the process industry towards its operation with variable, biobased and circular FEEDstock

Aim:

RETROFEED's main objective is to enable the use of an increasingly variable, bio-based and circular feedstock in process industries through the retrofitting of core equipment and the implementation of an advanced monitoring and control system, and providing support to the plant operators by means of a Decision Support System (DSS) covering the entire production chain.

This approach will be demonstrated in five Resources and Energy Intensive Industries (REII) - ceramic, cement, aluminium, steel, and agrochemical - with the potential to reach on average an increase of 22 % in resource efficiency and 19 % in energy efficiency, with a consequent reduction in costs and GHG emissions of €9.3 million and 135 ktonCO₂ , respectively

Concept:

RETROFEED activities are focussed on the furnaces and reactors of energy intensive process industries, which are usually the core equipment of one or several processes within the plant and, therefore, represent one of the highest resource and energy consumption elements. In particular, four different approaches will be considered when adapting this equipment to variable feedstock: the integration of feedstock mixtures of waste and/or by-products obtained within the plant, the introduction of waste materials from outside the plant to complement the current furnace/reactor feedstock supply, the use of bio-based sources as raw materials, and the combustion of bio-based fuels to reduce the plant's current demand for fossil fuels. The improvement and exploitation of

the plant's flexibility in terms of feedstock will be also enabled by a set of digital retrofitting measures based on monitoring and control systems, which ensure that the overall performance of the process is optimised while the main requirements for production and product quality are maintained.

Start date:

01/11/2019

End date:

31/10/2023