CIRC-01-2016-2017

PAPERCHAIN

Full Title: New market niches for the Pulp and Paper Industry waste based on circular economy approaches

Aim:

PAPERCHAIN tackles the valorisation of almost the totality of these PPI waste streams. The project focuses on those waste streams whose current fate is mainly landfilling, such as the causticizing residuals, and those which are produced in major quantities, such as sludge or ashes. Only boiler and furnace ash has been discarded due to the low technical performance for construction applications and their potential for fertilizers, in favour of wastepaper ash, much more promising for the construction sector.

The project will demonstrate the valorisation of the PPI waste streams in three different ways: with no modifications (Green liquor dregs for mining applications), minimal processing (Slaker grits, lime mud and Waste paper ash) and under any treatments (Green liquor dregs for asphalt pavements, Deiking paper sludge + Waste paper ash, fibre sludge).

Concept:
Europe is the second world producer of pulp and paper, manufacturing 130 million tonnes in 2014 and representing 23% of world production. The EU pulp and paper manufacturing and converting industries generate an annual turnover of €180 billion, representing 1,26% of the European GDP. In particular, the Pulp and Paper industry (PPI) has a turnover of €75 billion, comprises 920 plants and provides 180,000 jobs in Europe directly, and 1.5 million in the value chain. This sector is resource intensive and produces 11 million tonnes of waste yearly. It has been found that 25-40% of municipal solid waste generated each year worldwide is paper-related. Furthermore, Europe is nowadays facing the

challenge of resource scarcity and more efficient use. If managed in a sustainable manner, PPI waste can become a valuable raw material for other resource intensive industries such as the construction (i.e 5,4 billion tonnes of raw material consumption) or the chemical industry (1 billion tonnes). Mining industry waste generation is estimated at up to 20.000 million tons of solid waste yearly, and relevant part of this waste needs to be kept in environmental safety conditions, which in turn implies additional use of resources (e.g borrow materials). New widespread markets are needed to extend the valorisation operations, reduce the landfilling rates and increase the competitiveness of the PPIs creating new added value markets for their inorganic waste. The overall objective of PAPERCHAIN is to deploy five novel circular economy models centred in the valorisation of the waste streams generated by the PPI as secondary raw material for a number of resource intensive sectors: construction sector, mining sector and chemical industry. PAPERCHAIN aims to unlock the potential of a resource efficient model based on industrial symbiosis which will demonstrate the potential of the major non-hazardous waste streams generated by the PPI as valuable secondary raw material.

Start date:
01/06/2017

End date:
31/05/2021