Abstract Template

Title: CHEMICAL ENERGY FROM WASTES (CEfW) – EMPLOYING GASIFICATION & PYROLYSIS TO PRODUCE BIOFUELS

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I. Abstract Body (up to 250 words)

The EU Waste Hierarchy positions recycling and energy recovery from waste above landfill. Thermal processes have the capability to achieve recycling of useful and beneficial resources (materials and energy) from various waste streams, which otherwise would be lost. This is consistent with the European Union's Circular Economy Directive.

Waste plastics to biofuel projects are beginning to gain traction in the energy industry around the world, with rising awareness of the environmental damage caused by single-use plastics and poor social recycling habits leading researchers to turn to alternative methods for recovering beneficial resources from the ever-increasing volume of wasted plastics. Such projects can utilise the chemical energy stored in the material's hydrocarbon structure to create chemicals, including transport fuels and precursors to produce more plastics, the latter generally considered optimal from a resource efficiency perspective.

This paper reviews the potential recovery opportunities from applying thermal technologies (gasification and pyrolysis) to a number of waste streams in order to recover useful resources by converting the wastes into syngas from which beneficially useful chemicals, including green transport fuels, can be produced as an alternative to energy and power.

The technical and economic challenges of this approach are also considered and the technologies under development and those that exist commercially are discussed.

II. Image:

III. Biography (Up to 100 words)

Dr Whiting has more than 33 years of experience in the field of thermal engineering and waste management and is recognised worldwide as an expert in the gasification, pyrolysis and combustion of various waste streams with detailed knowledge of the technologies offered by the leading suppliers of such processes. Dr Whiting has operated as a technical and engineering consultant for more than 30 years including 9 years at WSP and 7 years at Juniper Consultancy Services. He acted as a technical expert to the UK government as a member of an OSTEMS mission to Japan and South Korea in 1995 to assess novel energy generation technologies and as the lead speaker at an environmental presentation to 80 Korean businessmen on the Royal Yacht Britannia at Inchon harbour, South Korea in 1997.

IV. Research interest:

Waste to biofuels, plastics recycling, plastics to biofuels.

V. Presenting author details



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