

## **ALTERNATIVE FUELS**

### **(707) - (\*) - INVESTIGATION OF POLYMER RICH WASTE STREAMS IN AN INDUSTRIAL SIZED FLUIDIZED BED REACTOR**

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#### **Draft Paper**

The reuse of the carbon bound in solid waste for production of new material is a route in line with the ambitions of circular economy. However, those waste streams are characterized by their heterogeneity and their demand for decontamination. Here, thermal conversion offers options to both decontaminate and transform the carbon in the waste into molecules of value. The resulting carbon containing products, carbon dioxide, syngas, monomers and oils can all be turned back into new materials. However, each of the products carries a thermodynamic penalty and requires upgrading to be introduced into the production cycle anew. While monomers can after thorough separation go straight into existing production lines, syngas, carbon dioxide and pyrolysis oils require a chain of conversion steps back to the material level of its origin.

The work presented, discusses the possibilities and challenges for reuse of carbon based on experimental results from an industrial sized research plant 100-400kg/h for a range of fuels such like Automotive Shredder Residues, plastic waste from cable stripping and textile waste. The product slates (distributions) are highlighted considering possible value chains.

**Palavras-chave : polymer, carbon utilization**