

Unlocking The Potentials Of Biomass Derived Pyrolysis Oils In Existing Refineries

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A conventional refinery may be the best place to transform biomass into a.o. transportation fuels. However, operating an oil refinery on solid biomass is (almost) impossible. Contrary to crude oil, and apart from being solid, biomass has an inhomogeneous organic structure. Even more complex, it has a low (-energy) density, and is always contaminated (specifically with air, water, ash, and so on). Just the biomass transport costs will make the option of using solid biomass in such a refinery already not viable. Some of these disadvantages can be overcome if the biomass is first de-centrally restructured (MW_{th}) and densified, and (preferably) decontaminated. The intermediate product can then be transported to a (much) larger centralized location where it is transformed (in a co-processing mode) into fuels (GW_{th}). However some additional upgrading processes are required to enable such co-processing. This presentation will focus on the potentials of using pyrolysis oils, after some upgrading, in existing refineries. The upgrading steps will be presented, and reaction pathways (hydrogenation versus repolymerisation) elucidated. Results from product testing in laboratory scale FCC Micro-Activity Test (MAT) units will be presented. These results provide indication that, after an initial upgrading step, refineries may accept pyrolysis liquids.

After his PhD at the Twente University in 1998, Robbie Venderbosch joined BTG Biomass Technology Group BV (BTG). He has more than ten years (practical) experience in thermochemical processes for biomass and its further use, a.o. in pyrolysis, pyrolysis oil hydroprocessing, supercritical gasification, torrefaction, combustion, and alike.

He was responsible for the delivery of a BTG's commercial pyrolysis plant to a client in Malaysia. He (co-)authored nearly 50 papers, conference proceedings and chapters in books. Since 2002 Venderbosch is involved in stabilisation, hydrogenation and hydrodeoxygenation of bio-oil, as project leader in national and international programs. He was actively involved in the preparation of the European Biocoup and is project leader of this project.

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