IEA Bioenergy

Task 34 - Pyrolysis

Country Update: Norway

In Norway significant amounts of wood and agricultural feedstocks are available for biofuel production. Direct liquefaction by fast pyrolysis technology is considered an attractive route for cost-competitive conversion of such biomass raw materials into energy carriers and liquid transportation fuels, as the technologies offer significant advantages with respect to logistics and technology readiness level.

Paper and Fibre Research Institute (PFI)
PFI has been working with fast pyrolysis technology since 2009. At present PFI is heading a project consortium aiming at developing new marine fuel qualities containing stabilized pyrolysis oils as fuel component. PFI is also heading a national research infrastructure termed Norwegian Biorefinery Laboratory, NorBioLab. As a part of NorBioLab an advanced and flexible fast pyrolysis reactor system is under construction and will be in operation in the autumn 2015. The reactor system is capable of studying both *in situ* and *ex situ* catalytic fast pyrolysis conversion processes.

University of Bergen (UoB)
Bergen University addresses thermochemical conversion of lignin rich feedstocks by hydrothermal conversion. Here, a one-step method termed lignin-to-liquid (LtL) process has been developed. The LtL process is based on lignin conversion in water or ethanol as reaction medium, using formic acid as hydrogen donor. The research includes small-scale mechanistic studies and catalyst screening, as well as pilot scale optimization in a stirred 5-L high pressure batch reactor. Detailed analytical product characterization is performed by chromatography, NMR spectroscopy and mass spectrometry to evaluate lignin oil quality and suitability for use as fuels and chemicals

Norwegian University of Science and Technology (NTNU)
Research performed at the Norwegian University of Science and Technology, Department of Chemical Engineering, addresses catalytic hydrothermal liquefaction of biomass into diols and further conversion of diols into fuel components and biochemicals via hydration, dehydrogenation and aldol condensation reactions.

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