D1-10 Design and construction of pyrolysis oil pump skid

In SupraBio a number of routes are developed to produce, collect, pre-treat and condition the biomass feedstocks for subsequent processing in the biorefinery processes. One possible route is to collect the feedstock for a biorefinery from distributed producers of biomass in the form of pyrolysis oil. This intermediate may then be processed into transport fuels by the syngas route. A viable option (economic, sustainable) is the use of high temperature, high-pressure entrained flow gasification with integrated clean up and upgrading.

This deliverable report describes the development of an oil feeding skid which is required for the actual gasification tests (to be performed by ETC). The main challenge is to maintain a steady continuous flow under pressure, of a viscous fluid, which is acidic and sensitive to re-polymerisation, into the oxygen-blown gasifier.

From the constraints given by the use of pyrolysis oil and the requirements for ETC's gasifier a basis flow scheme was drawn for the pump skid. In time and through discussions with ETC this scheme has developed into the detailed flow scheme and design described in chapter 3.

In the second phase of the development, the constructed unit will be tested and optimised in BTG's laboratories at actual gasification (feeding) conditions, the outcome of which will be reported in D1-11. Finally, the optimised unit will be used at ETC's facilities in Sweden to perform the actual gasification tests.

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