USING BIOMASS-BASED FUELS FOR DECENTRALISED POWER PRODUCTION

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The Bioliquids-CHP project was set up to break down the technical barriers preventing the use of biomass-based fuels in engines and turbines for small-scale (50 to 1000 kW_e) decentralised combined heat and power generation. It aims to adapt a micro gas turbine and a diesel engine to operate on a variety of biomass-based fuels, including straight vegetable oil, FAME (biodiesel) and pyrolysis liquids.

On the one hand, the project will modify the design of these prime movers so that these can run efficiently on bioliquids like biodiesel, vegetable oil and pyrolysis oil. On the other hand, bioliquids will be upgraded and blended in order to facilitate their use in engines and turbines. In addition, the project will develop methods to control exhaust emissions (NO_x, CO, particulates) and will carry out technical, economic and environmental performance assessments.

Catalysts are developed and tested in various steps in the biomass-to-power chain, including: biomass pyrolysis, catalytic upgrading of pyrolysis oil, reforming fossil diesel and bio-liquids to synthesis gas, and controlling exhaust emissions (NO_x, CO, particulates). So, it is offered that biofuels adaption has to realize by two cross-ways: on the one hand catalytic upgrading of bio-liquids and on the other hand minimum modernization of energy generation equipment (gas turbine, diesel engine and so on).

The project is a joint cooperation between Russia and the European Union. The paper will focus on the development and testing of catalysts used in the project, and the effect on the properties of the resulting fuel.

Acknowledgements (10 pt)
The authors like to thank the European Commission (FP7, Grant No. 227303) and the Federal Agency for Science and Innovation (FASI) of the Russian Federation for supplying funds and all partners involved in the BIOLIQUIDS-CHP project for their scientific contributions.