

Modular drop-in fuel technology to boost bio-share of oil refineries

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EU project COMSYN aims to develop a production concept for competitive bio-based fuels by means of a compact gasification and synthesis process. The target reduction for biofuel production is up to 35 percent compared to alternative methods, which translates to less than 0.80 €/l production cost for diesel.

The production concept is based on the distributed primary conversion of various kinds of biomass residues to intermediate liquid products at small-to-medium scale units located close to biomass resources (10-50 kt/a Fischer-Tropsch products, 30-150 MW biomass). The Fischer-Tropsch products will be upgraded to fuels in existing central oil refineries, also bringing the benefits of economy of scale for the overall process.

The smaller scale of primary conversion lowers the risks of the investment, which has been the main bottleneck for large-scale biofuel plants. Integration of the primary conversion to local heat and power production is estimated to result in 80 percent energy efficiency in biomass utilization.

The COMSYN project validates the process concept from biomass gasification to final biofuel product. The gasification of biomass and the gas cleaning process are developed and piloted by VTT Technical Research Centre of Finland Ltd together with GKN Sinter Metals Filters GmbH.

The [synthesis process](#) utilizes a modern intensified Fischer-Tropsch reactor by INERATEC GmbH and one of the key targets of the project is to further develop the technology for even higher syngas conversion. Refining of Fischer-Tropsch [products](#) to high quality drop-in liquid transport fuels is done at UniCRE, the Unipetrol Centre for Research and Education.

Provided by VTT Technical Research Centre of Finland

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