

AssessSAF

Sustainability assessment of the Sustainable Aviation Fuel FT-SPK from biogenic residues and wastes

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Introduction

- Aviation is responsible for about 14% of EU transport emissions
- Demand for Sustainable Aviation Fuels (SAF) is increasing
 - Sustainable Transport Investment Plan - 20 Mt of sustainable fuels needed (13.2 Mt of which biofuels) by 2035 to meet targets of ReFuelEU Aviation and FuelEU Maritime
 - Growing sector & net-zero targets of airlines

By 2050
90%
Decrease
of transport emissions
in the EU



By 2035

Between
€57-67 billion
for sustainable
aviation fuels (SAF)

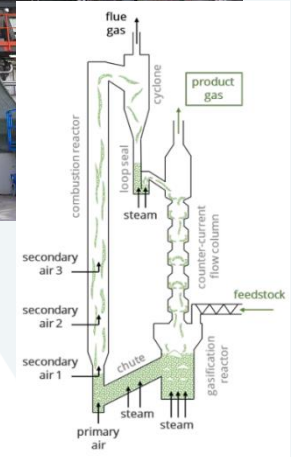


Background

- Due to feedstock limitation HEFA pathway not expected to provide sufficient amounts
- Alternative pathways Gasification-FT and ATJ have higher feedstock flexibility and must be implemented and scaled-up rapidly
- “Syngas Platform Vienna” from BEST



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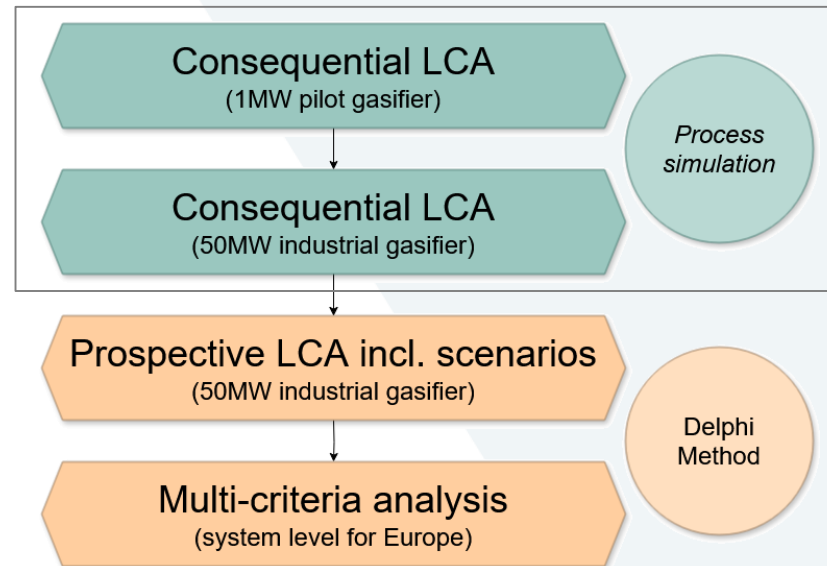
Kuba M. (2023) Second generation biomass gasification: Syngas Platform Vienna - current status and outlook, Oral presentation, CEBC 2023

Aim of the project

- To what extent FT-SPK can contribute to the defossilization of the aviation sector, while ensuring a sustainable development?
 - What is the environmental impact of FT-SPK produced in a pilot-scale and in an industrial-scale biomass gasifier?
 - What will be the impact on environmental and socio-technical systems of overall FT-SPK production in Europe when this technology is multiplied?
 - In how far FT-SPK can contribute to the defossilisation targets of the aviation sector?

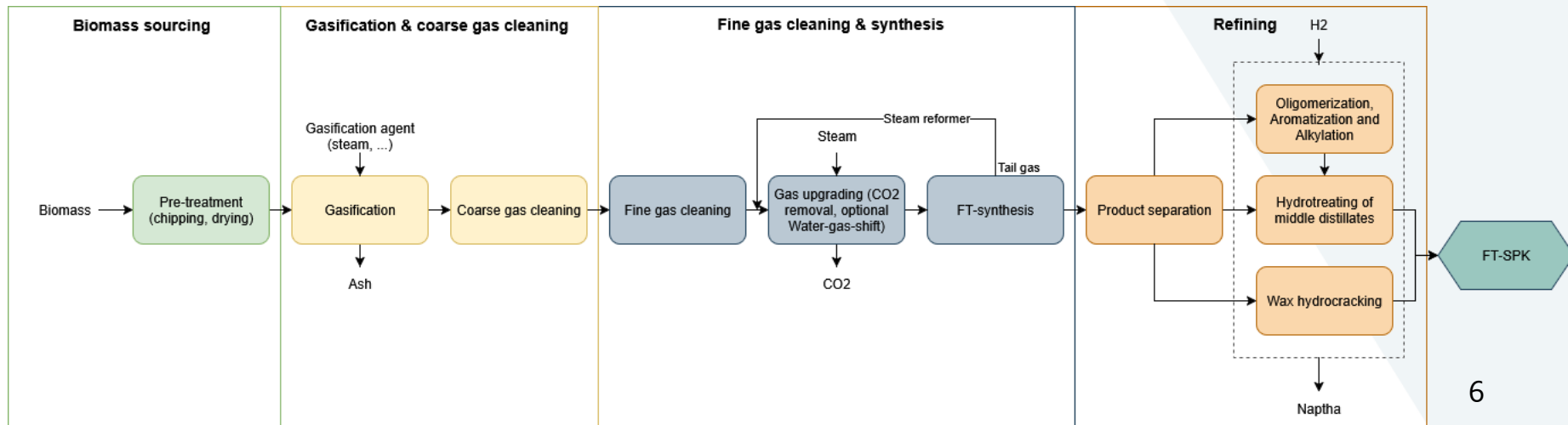
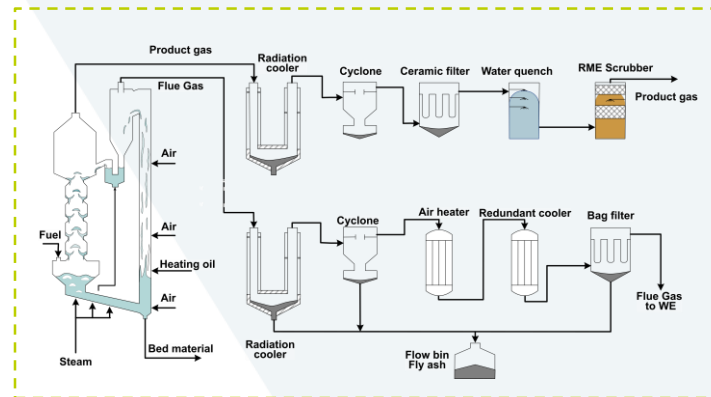
Methodology

- Data for impact assessment obtained from 1 MW dual fluidized-bed steam pilot gasifier “Syngas Platform Vienna”
- Focus on low-value biogenic residues for further processing into high-value FT-SPK
- Consideration of coarse and fine gas cleaning process steps



Life Cycle Assessment

- Impact category: Global Warming Potential
- OpenLCA 2.2, ecoinvent v3.10
- Cradle-to-gate, allocation cut-off approach
- Functional unit: 1 MJ FT-SPK



Conclusions and next step

- Rapid market ramp-up of SAF production technologies required
- Gasification Fischer-Tropsch is promising regarding GHG reduction potential and feedstock flexibility
 - All assessed feedstocks result in high GHG reduction potentials
 - R&D offers potential for optimizations
- Future developments will be assessed via prospective LCA