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Green Crude, Fuels and Hydrogen from Sewage Sludge and Organic Residues †

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Abstract: It has become apparent that the transportation sector still offers great potentials to facilitate a sustainable transition. Therefore, biogenic fuels that meet fossil fuel standards could be utilized in standard fossil fuel engines without market entry barriers. These fuels are only sustainable if the production is not competing for food security or is economically competitive. Furthermore, the given technical approach delivers, besides the desired fuels also green hydrogen and char.
The Thermo-catalytic Reforming (TCR®) is an intermediate pyrolysis process combined with a unique integrated catalytic reforming step. Various biogenic and industrial residues like dried sewage sludge or dried digestate from corn/manure digesters were utilized in a TCR®-plant with a capacity of 30kg/h. The purpose of this work was the production of renewable, high-quality transport fuels from residual and waste biomass. A new system is installed running with up to 500 kg/h of sewage sludge. The renewable gasoline and diesel were analyzed and showed the required properties to meet fossil fuel standards (EN 228; EN 590). These fractions were successfully tested in modern EURO-6 car engines.

Keywords: sewage sludge; intermediate pyrolysis; reforming; fuel; hydrogen; char.

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Conflicts of Interest

The authors declare no conflict of interest.