Press Release: Hydrothermal Liquefaction of biomass is a fast-developing technology for the green energy transition

1st February 2021 – The **Hydrothermal liquefaction of biomass** is developing at fast pace and aims at making an impact in the coming decade as one of the most promising technologies in the **bioenergy** portfolio, to convert **biogenic urban resources into liquid drop-in fuels**, thus supporting Europe's 2030 goals for renewable energy and the **circular bio-based economy**.

On the 28th of January, premium experts from research organizations, technology developers and end users, discussed the latest scientific advancements, state of the art of the technology scale up, as well as the policy outlook and the market uptake of HTL, at the conference **"Hydrothermal Liquefaction (HTL) in the Green Energy Transition"**, organized by the NextGenRoadFuels project.

The new legislative arising from the EU Green Deal to deliver on the EY's increased climate ambition are setting the playground for **biofuels** and the **HTL technology** to become **central players** in the **green energy transition**.

The workshop started by highlighting the **European Union** ambition to become a **climate neutral continent** aiming at a **cut in GHG emissions by 55% by 2050**. The availability of **advanced biofuels** is attractive not only for the transportation sector, **marine and aviation** in particular, but the availability of bio crude is also crucial for **greening the PetChem industry**, especially taking into account the attention that the EU is placing on **plastic recycling and circular economy**. Due to its versatility, HTL is not only perceived as the **"killer app"** in the petroleum business, as Perry Toms – CEO of Steeper Energy – said, but is also recognized and accepted by the general public.

A review of the ongoing Horizon 2020 projects highlighted different approaches on HTL development and revealed that multiple types of feedstock are being researched and tested. The **flexibility** in using **different types of feedstocks** beside lignocellulosic biomass, including waste such as sewage sludge, is indeed one of the pros of HTL, enabling the implementation of circular economy projects in **urban realities** alongside the forestry industry, widening the potential for the technology to be integrated in multiple different projects.

In the last months, **NextGenRoadFuels** achieved the production of **100kg of high-quality bio crude from bio waste, mostly sewage sludge**. The **protein and phosphorous recovery** from sludge are being developed as byproduct in order to provide additional value to the industry. Another significant milestone is **also the 2000 hours of continuous catalytic upgrading from bio crude into bio diesel endured by the Pacific Northwest National Laboratory (PNNL)**. These two achievements demonstrate that technology development is progressing fast towards the commercialization of HTL. Yet, the deployment of **large-scale demo pilots** is necessary to achieve the significant steps for improving the output quality and to bring the market actors on board. Even though a reliable business case is no in place yet. The technology is showing matureness in terms of its capabilities in providing premium bio crude and its dependency on feedstock price is decreasing.

The first analysis on **go-to-market possibilities** showed that the timeframe for the introduction of the technology to the market is shortening as more interest and leverage from the stakeholders of the **full value chain** is increasing. The need of demos is required to prove **competitiveness of HTL** in comparison to other established technologies such as anaerobic digestion. The **wastewater treatment industry** is evaluating the very high potential of HTL, thanks to its process design, can be fed with multiple wet streams. The **marine industry** sees in HTL a breakthrough to meet sustainability, scalability, and affordability goals in transportation fuel and confirmed its readiness to test the product once consistent quality is ensured.

The **refineries** viewpoint underlined the requirement of an often-underestimated aspect: **handling and storage**. In fact, to be effective on a large scale these two aspects need to be addressed, as acquainting with the specifics of new feedstocks is a lengthy procedure. Moreover, also **consistency in volumes** is to be reached for a complete evaluation. Even though **HTL can be integrated in the refinery sector** through different routes, such as centralized and decentralized paths and regional settings, **cross sectorial cooperation is crucial** in order to include the entire value chain.

The recording of the conference together with the presentation slides can be found here.

About NextGenRoadFuels

NextGenRoadFuels - Sustainable Drop-In Transport Fuels from Hydrothermal Liquefaction of Low Value Urban Feedstocks started on the 1st of November 2018 and runs for 48 months.

*The consortium, coordinated by Aalborg University (DK), counts on **11 beneficiaries** from **7 countries**: Steeper Energy ApS (DK), Chemical Process and Energy Resources Institute | CERTH (GR), Centro Nacional de Energías Renovables (ES), Technical University of Munich (DE), Karlsruhe Institute of Technology (DE), SINTEF ENERGI (NO), Haldor Topsoe A/S (DK), ENI S.p.A. (IT), Goodfuels (NL), ETA-Florence Renewable Energies (IT).*

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