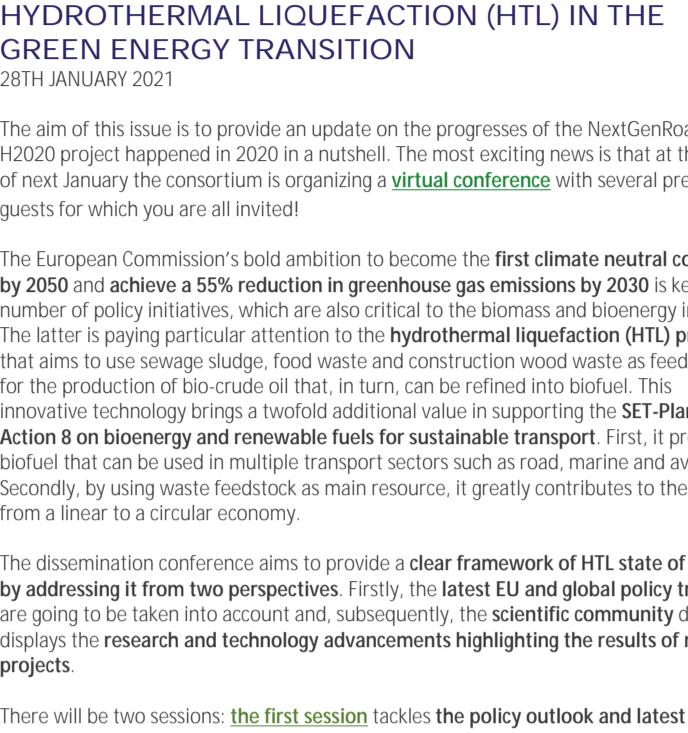


Newsletter Issue 2, December 2020



1ST NEXTGENROADFUELS CONFERENCE SAVE THE DATE!

HYDROTHERMAL LIQUEFACTION (HTL) IN THE GREEN ENERGY TRANSITION

28TH JANUARY 2021

The aim of this issue is to provide an update on the progresses of the NextGenRoadFuels H2020 project happened in 2020 in a nutshell. The most exciting news is that at the end of next January the consortium is organizing a [virtual conference](#) with several premium guests for which you are all invited!

The European Commission's bold ambition to become the first climate neutral continent by 2050 and achieve a 55% reduction in greenhouse gas emissions by 2030 is key for a number of policy initiatives, which are also critical to the biomass and bioenergy industry. This letter is paying particular attention to the **hydrothermal liquefaction (HTL)** process that aims to use sewage sludge, food waste and construction wood waste as feedstocks for the production of bio-crude oil that, in turn, can be refined into biofuel. This innovative technology brings a twofold additional value in supporting the SET-Plan Key Action 8 on **bioenergy and renewable fuels for sustainable transport**. First, it provides biofuel that can be used in multiple transport sectors such as road, marine and aviation. Secondly, by using waste feedstock as main resource, it greatly contributes to the shift from a linear to a circular economy.

The dissemination conference aims to provide a clear framework of HTL state of the art by addressing it from two perspectives. Firstly, the latest EU and global policy trends are going to be taken into account and, subsequently, the scientific community directly displays the research and technology advancements highlighting the results of multiple projects.

There will be two sessions: [the first session](#) tackles the policy outlook and latest scientific and technology advancements for HTL. [The second session](#) is focused on technology scale up and market uptake: bringing together technology providers and end users.

In a context where new EU legislative strategies on renewable energies and the climate sector are in the pipeline, including greater attention to hydrogen, together with an ongoing Covid-19 pandemic impacting the global economy, the business potential, the regulatory aspects, and exploitation needs will be tackled considering the ongoing energy transition and decarbonization processes. The conference brings together a panel debate that will discuss how current and future HTL plants can successfully close the loop between feedstock providers and end-users under different perspectives, both in Europe and globally (Canada, USA, Japan).

[Check the agenda here](#)

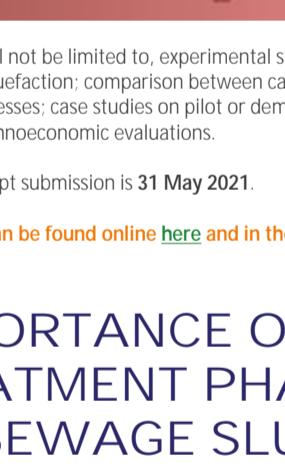
[Register here for S1](#) and [here for S2](#)

ENVIRONMENTAL ASSESSMENT OF HTL IN NEXTGENROADFUELS

A key challenge is to make consumers aware that biofuels will have a positive impact on energy and environment through the valorization of diverse wastes as a feedstock. From one side this prevents waste of going to landfill with the negative consequences of it and on the other side it promotes the production of new sustainable products.

Evidence should be provided that the production of biofuels is done in a safe and sustainable way, without compromising food security and threatening biodiversity.

CENER is committed to evaluating environmental performances of NextGenRoadFuels value chain. CENER will study the sustainability of the innovative solutions investigated in the project and compare it with current management and reference systems. The project will set-up a specific and robust methodology for GHG (Green House Gases) and sustainability analysis.



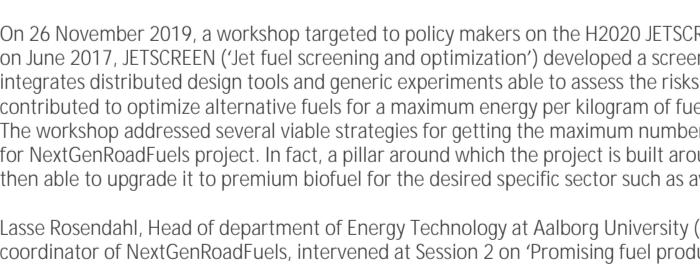
The sustainability of the NextGenRoadFuels integrated value chain will be analyzed by means of LCA according to ISO 14040 and ISO 14044 and comparison of GHG emission savings according to Renewable Energy Directive (RED) II. The system boundaries analyzed include the entire life cycle of the biofuel from source to usage, which considers feedstock collection, biofuel production by means of HTL technology and upgrading, and its distribution and use phases of the biofuel. Therefore, LCAs will help to identify key aspects of the process which can be improved in order to optimize the sustainability of the product and the full value chain.

Besides GHG emission of biofuel produced in NextGenRoadFuels value chain is evaluated and compared with conventional fuel (diesel and gasoline).

This environmental assessment will help to estimate the potential contributions to renewable energy and GHG emission reduction targets derived from the implementation of this innovative process.

Text by: CENER – Blanca de Ulibarri Martínez

MEMORANDUM OF UNDERSTANDING SIGNED BY THE CITY OF CALGARY WITH STEEPER ENERGY CANADA LTD.



The City of Calgary and Steeper Energy Canada Ltd. have announced on the 8th of September a new cooperation agreement, by way of a Memorandum of Understanding (MoU), with regards to the future transformation of The City's sewage sludge and other urban generated bio-organic wastes for the production of sustainable biofuels such as renewable diesel or jet fuel. The proposed project will be a collaborative effort towards sustainable practices; the elimination of contaminants contained in sewage sludge, such as spent pharmaceuticals and microplastics, as well as advancing cleantech in Calgary. Upon concluding final arrangements with the municipality and the approval from Steeper's board of directors, the project could break ground in early 2021.

Currently, development is ongoing at Steeper's pilot plant in Denmark. The new plant will be **North America's first demonstration** of Steeper's proven **Hydrofaction®** technology – a patented thermo-chemical process that converts bio-organic wastes (including sewage sludge, food, or forestry wastes) into renewable biofuels. In addition to fuel production, the process converts and eliminates wastewater contaminants such as microplastics and pharmaceuticals and isolates heavy metals. Hydrofaction® allows for the capture of beneficial nutrients from sewage such as phosphorus and nitrogen, which can later be made available for other beneficial reuse as fertilizer.

Read the full press release [here!](#)

SPECIAL ISSUE ON PROCESSES OPEN FOR SUBMISSION

A Special Issue of the international peer-reviewed open access journal Processes (ISSN 2227-9717) is open for submission, with focus on **Catalytic Liquefaction Processes of Biomass for Fuels and Chemicals**.

"Gathering recent, high-quality research contributions in the field of catalytic liquefaction processes for biomass, for the production of sustainable biofuels and/or chemicals" is what Dr Daniele Castello (Department of Energy Technology, Aalborg University) is looking for, in its role of Guest Editor for this Special Issue.

Topics will include, but will not be limited to, experimental studies on catalytic pyrolysis or catalytic hydrothermal liquefaction: comparison between catalytic and noncatalytic biomass liquefaction processes; case studies on pilot or demonstration scale plants and modelling studies and techno-economic evaluations.

The deadline for manuscript submission is **31 May 2021**.

[Additional information can be found online here and in the flyer.](#)

THE IMPORTANCE OF THE PRETREATMENT PHASE ON HTL OF SEWAGE SLUDGE

On the 18 September 2020, M.Sc. Joscha Zimmermann (KIT, Institute of Catalysis Research and Technology – IKFT) took part in the 3rd edition of the Doctoral Colloquium BIOENERGY, organized by DBFZ, as a virtual web conference.

The Doctoral Colloquium BIOENERGY, chaired by Prof. Dr.-Ing. Daniela Thran, covered the full biomass conversion chain, from the feedstock to different conversion pathways and their technological implementation, up to the resulting products and services.

Zimmermann presented a poster on the influence of thermochemical pre-treatments on hydrothermal liquefaction (HTL) of sewage sludge, a work done in team with Dr. Klaus Raffelt and Nicolaus Dahmen as part of the activities performed in NextGenRoadFuels project.

The poster showed the results from the application of different pre-treatment methods to sewage sludge prior to its conversion, as foreseen in the hydrothermal liquefaction (HTL) process.

Since sewage sludge has a relatively high content of inorganics (mostly alkali and alkaline earth metallic species) and it is rich in nitrogen and sulphur, the goal is to develop an efficient and doable pre-treatment method for HTL of sludge without losing carbon, therefore with limited impact on resulting bio-crude yields and quality.

MAXIMIZING SUSTAINABLE AVIATION FUELS BENEFITS BEYOND CO₂ REDUCTION JETSCREEN PROJECT WORKSHOP

On 26 November 2019, a workshop targeted to policy makers on the H2020 JETSCREEN project was organized at the Press Club Brussels Europe. Started on June 2017, JETSCREEN ('Jet fuel screening and optimization') developed a screening and optimization platform for alternative fuels. Among its goals, the platform integrates distributed design tools and generic experiments able to assess the risks and benefits of new developments within ASTM certification of fuel and a reduction of pollutants' emissions.

The workshop addressed several viable strategies for getting the maximum number of benefits from the delivery of premium biocrude to the refineries. The latter is then able to upgrade it to premium biofuel for the desired specific sector such as aviation, maritime or road.

Lasse Rosendahl, Head of department of Energy Technology at Aalborg University (AAU) in Denmark and project coordinator of NextGenRoadFuels, intervened at Session 2 on 'Promising fuel production pathways: Sustainable fuel from wastes, residues, and advanced energy crops.'

After attending the conference, Professor Lasse Rosendahl commented: "The JETSCREEN workshop was a very good and relevant presentation on new developments within ASTM certification of fuel and a reduction of pollutants' emissions."

His observations and the participation in the conference highlight the necessities and efforts of each and every transport sector, including aviation, in seeking sustainable alternatives to traditional and current practices through the adoption of innovative technologies.

The leaflet can be found [here](#) and more information on the project [here](#).

ABOUT NEXTGENROADFUELS PROJECT

NextGenRoadFuels is a Research and Innovation project funded by the Horizon 2020 programme to develop a cost-effective valorization pathway for multiple urban waste streams such as sewage sludge from treated wastewater, food waste and construction wood waste. These waste streams will be converted into renewable fuels, fertilizers, and proteins, thus fostering the urban transition towards a circular economy.

Started in 2018 with a consortium of thirteen partners coordinated by the University of Aalborg, the 4-years project will prove the **Hydrothermal Liquefaction pathway** as a viable, sustainable, and efficient route for **liquid drop-in fuels**, as well as other hydrocarbon compounds.

The project is fully aligned with the SET Plan Key Action 8 on **renewable fuels**, which calls for an acceleration of the development and deployment of low-carbon technologies in the transport sector. NextGenRoadFuels will also contribute to the renewable-energy-in-transport target, as well as to the European Energy Roadmap 2050.

The consortium, coordinated by Aalborg University (Denmark), counts on 11 beneficiaries from 7 countries: Steeper Energy ApS (Denmark), Chemical Process and Energy Resources Institute | CERTH (Greece), CENER (National Renewable Energy Institute) (Spain), Technical University of Munich (Germany), Karlsruhe Institute of Technology (Germany), SINTEF ENERGI (Norway), Haldor Topsøe A/S (Denmark), ENI S.p.A. (Italy), Goodfuels (The Netherlands), ETA-Florence Renewable Energies (Italy).

Further information: <https://www.nextgenroadfuels.eu/>

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 818413.

Follow the project on:

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Catalytic Liquefaction Processes of Biomass for Fuels and Chemicals

Guest Editor

Dr. Daniele Castello

Deadline

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