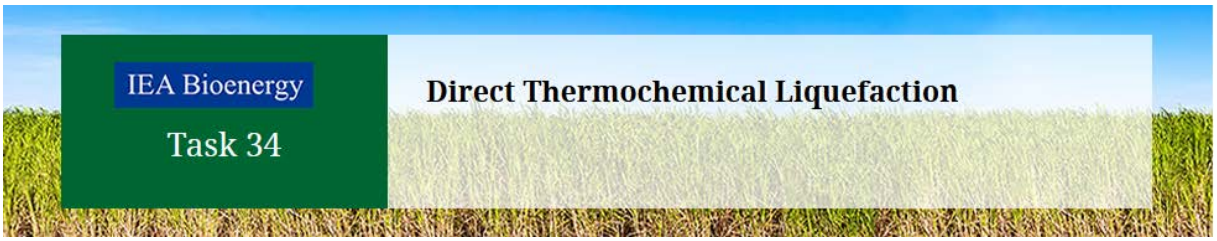


4th Task 34 Meeting Q4 2020 (videoconference series)

September 24th, 2020 8pm-9pm (CET)

October 29th, 2020 8pm-9pm (CET)

November 26th, 2020 8pm-9pm (CET)

December 17th, 2020 8pm-9pm (CET)

Feedback from ExCo Meeting

Physical meetings should be reduced to one meeting per year in future to reduce IEA Bioenergy's carbon footprint. This will also be a guideline for the task's work; however, final decision to which extent to organize physical/ virtual meetings will stay within the tasks. All ExCo meetings in 2021 will remain virtual due to the ongoing pandemic.

Proposal for upcoming triennium 2022-2024

All existing Tasks were asked to prepare a proposal for the upcoming ExCo.

Proposal organization and timeline

- Completion of WP description and tentative budget by end of January 2021 (all tentative WP leads)
- Deciding scope of work/ overall budget February 2021 (all NTL's)
- Finalizing overall proposal (incl. review) March 2021 (AF)

Four areas of activities were identified among the NTL's:

1. Deployment of marketable commodities from DTL
2. DTL System Services for an Energy & Resource Circular Economy
3. Support commercialization through knowledge transfer
4. Facilitate information exchange with stakeholders

Several work packages were proposed along these topics and potential leads identified. The proposed work packages will be detailed along creating the proposal.

Discussion of Website Renewal

It is planned to complete the content renewal before next ExCo meeting even if the new template has not been implemented by then (the latter cannot be influenced by us at the moment). AB will send around the revised webpages as packages that represent a somewhat closed content (i.e. fast pyrolysis, HTL, applications). These packages will be sent one after another to allow for a reviewing period. All NTL's will be asked to review the new/ revised pages and return any comments. There will

be an internal review at IKFT/ KIT to check suitability from an 'external' point of view early 2021 to conclude the renewal.
More details around website layout were discussed and agreed upon.

Discussion of Round Robin

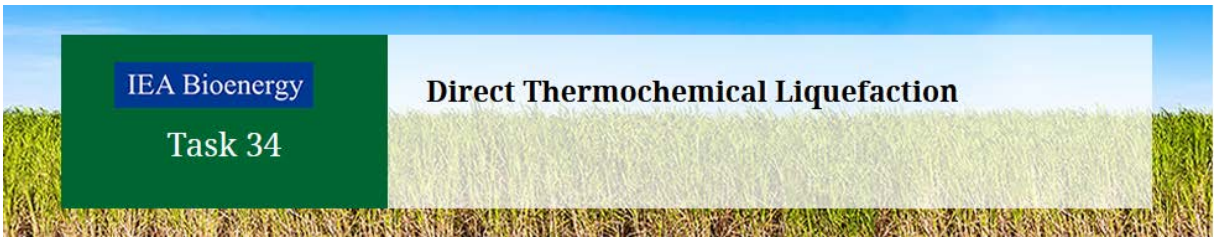
BB presented an overview of a potential strategy to realize the Round Robin of this triennium and also how subsequent Round Robins can help establishing standards for FPBO applications. He will send around his slides and asks for feedback until January 11th, 2021. Feedback should also be given by that day what kind of samples could be delivered (and up to which amount, 5-10 l each are relevant for a Round Robin study).

Country Report Presentations

(summary of presentations)

Canada

- Changes to carbon policies and clean fuel standards
    a. carbon price now planned to increase to 170 CAD by 2030 as a federal minimum value; provinces could still implement higher carbon prices
    b. The planned clean fuel standard which will cap the carbon intensity of fuels will now only apply to liquid fuels (not solid and gaseous fuels)
- Ensyn's facilities in Renfrew (now operated by Kerry Inc.) and Côte Nord operating.
- Canfor-Licella entered new JV forming Arbios Biotech. Arbios is working towards a smaller HTL commercial unit in Australia
- Steeper still active in Canada, entered a MOU with city of Calgary for an HTL facility to treat sewage sludge
- Metro Vancouver (Genifuel) – status update provided
- Pyrovac is active once again with a plastic-to-fuel technology; also listed as R&D partner for for an Elkem (Norwegian company) project in Québec.
- CanmetENERGY Ottawa continues R&D in the field of fast pyrolysis of low quality feedstocks and catalytic upgrading of products from DTL. This also includes focussing on joint activities with their metallurgical department for opportunities for pyrolysis streams (liquids and char) to replace fossil fuels in steel making (EAF, DRI, and blast furnace)
- CanmetMATERIALS Hamilton are looking at materials compatibility for HTL conditions
- CanmetENERGY-Devon active in advanced analytical tools for DTL liquids and upgrading
- National Research Council is active in the field of HTL, focussing on food waste and use of aqueous phase. National Research Council is also engaged in engine use of HTL products.
- University research is very active in the field of DTL; primarily towards use of products and TEA



Denmark

- Policy decided not to put a tax on carbon; at the moment 'only' European RED II implemented regarding transportation. Generally, there seems to be a difficult standing for biomass since there are concerns regarding sustainability. For HTL direct competition with biogas for feedstock (and biogas is well ahead regarding industrial implementation)
- New industrial endeavours include Stiesdal SkyClean (agriwaste pyrolysis) and MAKEEN Energy (plastic pyrolysis), but also Shell Refinery and COWI consultancy
- Aalborg University has conducted a prestudy to show compatibility of HTL and PtX
- Interestingly, R&D funding policy foresees a separate budget only for pyrolysis
- Maersk develops strategy for zero carbon shipping, including biofuels

Finland

- New national R&D project BioFlex to produce bio-fuels for flexible power generation and marine transport; also two new EU projects (ICEBERG and BL2F)
- New fast pyrolysis facility in Lieksa/ Finland from Green Fuel Nordic Oy (see also below).
- Fortum's fast pyrolysis unit was sold to Savon Voima and is currently not in operation; decision about continuation of bio-oil production pending.

Germany

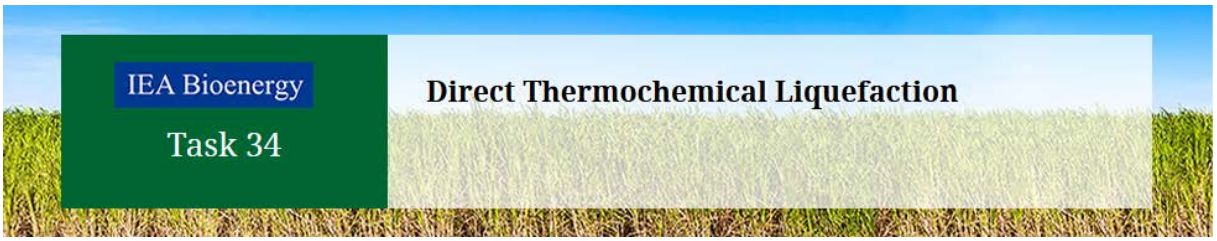
- Bioenergy project for California makes progress; the reactor was tested in Germany and shipped to the U.S. (assembly delayed due to CoVid-19).
- The new TCR pilot at Fraunhofer UMSICHT with a scale of 500 kg/h feed (dried sewage sludge) is expected to be commissioned early 2021.
- New feedstock miscanthus was tested at bioliq® pilot/ KIT. Continuation of combined gasification/ DME synthesis campaigns to produce different synthetic fuels which are tested in car engines (as part of reFuels project).

The Netherlands

- Green Fuel Nordic Oy is more or less on schedule, mechanical complete, started commission but reasonable delay due to CoVid-19 restrictions; same can be stated for the Pyrocell project
- The company btg-next was established late 2019, focussing on bio-oil upgrading. btg constructed a 2-3 kg/h feed gasifier unit to gasify FPBO.
- Two new H2020 projects (EBIO and EC2Fuel) are focussing on electrochemistry.

New Zealand

- Policies: dedicated to zero carbon with the Climate Change Response Amendment Act; clear roadmap/ targets and associated policy tools are still to be developed. There are indications that bioenergy, also for transportation, will play an important role.
- A biojet consortium was established, including Air NZ, Refining NZ, Scion, and Z Energy
- Scion continues research in the field of catalytic fast pyrolysis and have activities in the field of HTL for sanitation applications
- University of Canterbury investigates gasification of pyrolysis oil/ char slurries



Norway

KT could not attend the meeting but provided the slides for his country report upfront. They are attached to these minutes.

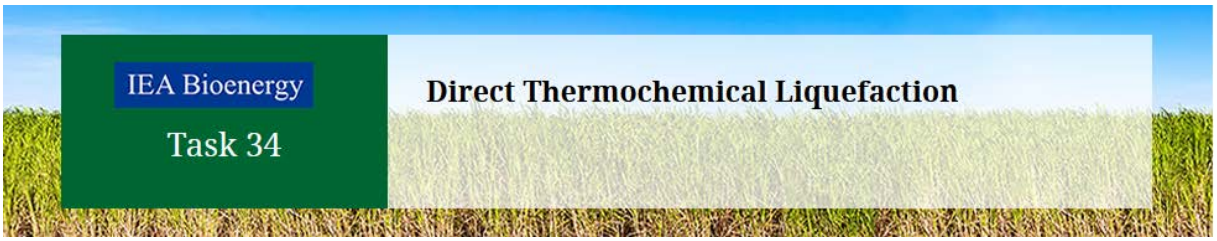
- Norway aims to join EU framework to jointly fulfil climate targets.
- There is a clear roadmap on biofuels in transportation (40% biofuels in road transport, where 'advanced' biofuels 'count double'; 30% biofuel share in sold aviation fuels by 2030). Biofuels are also exempted from carbon tax.
- Silva Green Fuel is industrial biofuel project based on HTL to target above mentioned policies, commission planned for 2021
- Biozin holding aims at producing advanced biofuels based in IH² technology
- RISE PFI is conducting research in the field of fast and catalytic pyrolysis, and also on upgrading.
- SINTEF has activities in the field of HTL
- NTNU is active in the field of catalytic pyrolysis and hydropyrolysis
- Bergen University investigates solvolysis

Sweden

- Preem announced to drop plans for a slurry hydrocracker and to invest in increased HVO production.
- Setra/Preem pyrolysis oil project (Pyrocell) ongoing.
- SCA plans a biorefinery with two lines based on saw dust/forest residues and black liquor, respectively, and received an environmental permit for this in September.
- Policies: Use of petrol and diesel to decrease until 2030 linearly to achieve a reduction of 28% and 66%, respectively.

U.S.

- Envergent (Ensyn/ Honeywell) announced in Georgia 20 M gal/yr from wood residues
- RTI International 1 tpd pilot for in-situ catalytic pyrolysis with H2 addition (not under pressure)
- Charm Industrial (FPBO carbon sequestering) new entry
- Mainstream Engineering no news since PyNe 45 article
- HYPOWERS Plant for Sewage Sludge HTL has a complete design for 3 dry tons per day input but is still in the need to raise funds for construction
- PNNL HTL activities include production of biocrude for diesel engine testing with Co-Optima consortium
- NREL is entering stand-by mode with their catalytic pyrolysis PDU; evaluating future missions/ collaborators



Other business

Next meeting

It was decided to have the Task meeting in Norway moved to late Q3 2021 and realize a virtual meeting in Q2 2021.

End of Triennium Conference

AF presented the general session topics and it was briefly discussed what input to be recommended by Task 34.

BvB will try to establish a contact to Preem refinery to present their activities, LR will approach Steeper to present Silva Green Project. Further information is required to assess potential contributions to circular bio-economy.