



2nd Task 34 Meeting Triennium 2019-2021 October 25th-26th 2019 at Aalborg University/ Denmark Minutes

Recognition of Meeting Participants

Bert van de Beld	(BvB)	NTL The Netherlands
Paul Bennett	(PB)	NTL New Zealand
Justin Billing	(JB)	NTL U.S.A.
Alex Böhm	(AB)	Assistant Task Lead
Axel Funke	(AF)	Task Lead/ NTL Germany (Minutes)
Fernando Preto	(FP)	Representing NTL Canada Ben Bronson
Lasse Rosendahl	(LR)	NTL Denmark
Linda Sandström	(LS)	NTL Sweden
Kai Toven	(KT)	NTL Norway

Discussion of Work Packages

Friday, October 25th 14:30h to Saturday, October 26th 10:30h

All work package definitions were discussed intensively and feedback/ changes included as applicable. Work packages 3.2, 4.1-4.6, ITP1, Add3.1, Add3.2, Add3.3, Add4.1 and Add4.3 have been agreed upon (see minutes from 1st Task 34 meeting 2019 in Karlsruhe for work package overview). For work packages 1.1, 1.2, 2.1, 3.1, Add3.4 and Add4.2 changes have been proposed. AF will send around the updated versions to the respective WP leads to finalize the descriptions.

For WP 3.2 following topics were identified as suitable to prepare technical notes (with possible contributors added in brackets):

- Choice of quenching medium/ setup in fast pyrolysis processes (AF, BB, LS)
- Storage/ processing of FPBO (aging) (AF, BB, LS, PB)
- Balancing in general (AF, LR, LS)
- Safety/ health issues (flaring/ venting of byproducts) (BvB, LS, PB)

It was decided that WP Add2.1 will no longer be followed as a separate work package and that HTL mass balances will be incorporated into the technical note about balancing (WP 3.2). It was also decided that WP Add4.4 will not be followed any longer and rather check how to refer to existing DTL videos during the website refresh.

There are ongoing activities to develop a collaboration with Task 44 on flexible use of bioenergy. The scope of work still has to be defined and there is more to be expected after the joint workshop beginning of 2020. The interest of Task 34 is very high and it was decided that a budget of \$20k is



reserved for these activities because it is unclear whether it becomes an intertask or ExCo strategic project.

After revising the additional budget and the expected carry over funds it was decided that all proposed additional work packages will be conducted. AF will prepare an updated timeline/ Gantt chart once all WP descriptions have been finalized.

The status of the WP descriptions from the meeting are part of these internal minutes (see attachment).

DTL Brochure

Saturday, October 26th 11:00h-11:30h

The structure of the DTL brochure was discussed and feedback incorporated by AF. The datasets for process conditions and bio-oil properties will be aligned to present consistent values and revised by all NTL's upon final review. An intensive discussion developed around how highlights should be presented in the brochure to showcase realized plants without compromising Task 34's neutrality. It was decided that two highlights will be presented with a general text regarding the technology/ application including a meaningful picture (BvB: highlight for FP; LR: highlight for HTL).

The finalized brochure will be send around for revision prior to publication.

Public Country reports

Saturday, October 26th 11:30-12:00h

It was decided that a single report will be created and updated annually covering DTL activities in all countries. AF will prepare a template (with input from previous review article from Task 34 regarding a suitable structure) and circulate it to let NTL's fill in the text for their respective countries.

PyNe Newsletter

Saturday, October 26th 13:00-13:30h

The update for PyNe 45 articles was discussed and results are summarized in Table 3. JB will ask Mainstream Engineering to include more details from experimental runs in their article. AB will send around the specific deadline for handing in articles.

Table 1: Article overview PyNe 45

PyNe 45		
Topic/Author	Response	Lead
Pyrolysis activities/ Mainstream Engineering	Received	AF/ JB
New participating country Norway/Toven	Approved/ not received yet	KT
New participating country Denmark/ Rosendahl	Approved/ not received yet	LR
Upgrading project/ Jörn Appelt	Approved/ not received yet	AF



Catalytic Fast Pyrolysis/ Research Triangle Institute	ask for specific topic	JB
Comparison of fast pyrolysis experiences between poplar bark and clean stemwood residues/ CanmetENERGY	Approved/ draft ready	BB
Operational experiences using an immiscible quench fluid for R&D in fast pyrolysis/ CanmetENERGY	Approved/ draft ready	BB
Lessons learned from fast pyrolysis bio-oil cross-flow microfiltration/ CanmetENERGY	Approved/ draft ready	BB
Summary HTL workshop	Approved/ not received yet	LR
Envigas AB	Approved/ not received yet	LS
FPBO phase equilibria/ Ille	Approved/ not received yet	AF
Southern oil Refining/ University of Adelaide	ask for specific topic	JB
OWI/MEKU: FPBO Burner development	Reschedule to PyNe 46	BvB

Other Task 34 business

Saturday, October 26th 13:30-14:00h

Pyrolysis of plastics

It was discussed how Task 34 should take a position regarding the consideration of plastic pyrolysis, which experiences increased attention in many of the participating countries. Consensus was reached as follows:

Under the condition that the primary aim is to produce a liquid, Task 34 also looks at co-processing of biomass with other materials such as e.g. plastics.

Round Robin Manuscript from Triennium 2016-2018

The manuscript from past Triennium's Round Robin has not been finalized, yet. None of the current authors have responded to AF that they are willing to finish it off. It was decided by the present authors that the manuscript from past trienniums Round Robin will be finalized by Phil Bultink from Canmet, who was also extensively involved in the Round Robin. He will contact all other authors and manage completion of the manuscript by 2019.

Upcoming Task 34 meetings

The following updated schedule has been agreed upon:

Q2 2020	Finland, either April 20-22 nd or May 4 to 8 th
Q4 2020	October 8 th /9 th 2020 Richland/ US (aligned with TCS conference)
Q2 2021	Trondheim/ Norway (Around April 21 st /23 rd which is Task 39 meeting)
Q4 2021	New Zealand (aligned with the IEA Bioenergy End of Triennium Conference in Brisbane/ Australia)



The need to finalize the meeting date in Finland within 2019 to enable efficient planning of overseas travelling was recognized.

Site Visits/ Workshop

October 25th 09:00-14:00h

Site visit Plastic Sorting Facility at Reno Nord/ Aalborg

Reno Nord waste incineration plant operates a sorting facility for plastic waste, which was visited by Task 34 members. The process was followed with great interest and it was also elaborated which fractions could be subject to downstream pyrolysis for recycling (potential cooperation with Quantum Fuels).





Workshop with Steeper

Dr Steen Iversen gave a presentation about current activities of Steeper, the basic outline of their hydrofaction™ process and the Silva Green Fuel project. Silva Green Fuel is located in Tofte/ Norway and a cooperation of Statkraft and Södra Pulp and Paper. Steeper Energy was chosen to supply the technology for the project from a variety of different alternatives. First phase is to complete a commercial unit at scale of 2000bpd. Wood/ forestry residues are input material; biocrude is to be upgraded at a different facility. After upgrading Steeper Energy achieves suitable fractions that are miscible to achieve diesel (EN 590) and marine (ISO 8217) fuel (mixtures).

An intensive discussion was conducted around technical details of the hydrofaction™ process which continued over lunch break. Subsequently, the continuous pilot HTL unit operated at Aalborg university in cooperation with Steeper Energy was visited and explained in detail.

The tour continued to visit Lasse Rosendahl's labs and meeting postdocs active in the field of HTL.



IEA Bioenergy

Task 34

Direct Thermochemical Liquefaction

