

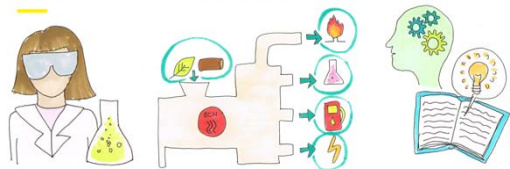


R&D Services ECN Biomass


Katharina Andrés
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ECN: thermochemical and chemocatalytic conversion of biomass





Chemicals Materials Fuels Energy



Biomass and The Bio-Based Economy



Thermochemical conversion of biomass and waste as energy and fossil component replacement. Maximizing the value from each molecule.

Pre-treatment Resource efficient use of residues Gasification Combustion Bio refinery concepts

R&D services

- ECN supports industry
 - Further developing your innovation ideas
 - Improvement of processes
 - Feasibility studies
 - Technology choice, technical due diligence
 - Sampling and analysis for diverse processes/feedstocks
 - Debottlenecking

R&D services examples





Process de-bottlenecking and optimization




Diversification fuel portfolio
Eliminate fouling problems



Feasibility study of 50-70% torrefied biomass co-gasification in IGCC




TORWASH®: A technology to valorize complex biomass streams



Biomass residues

- Too much water
- Too much salt

- Solid biomass fuel
- Biogas
- Minerals recovery



TKI-BBEG EnCore

EnCore
(Efficiente Cascadering en Opwerking Riwoolslib voor Energie-neutrale bedrijfsvoering)

- Pilot scale TORWASH® + anaerobic digestion (40 kg/h)

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Biomass pretreatment for valorisation

What can ECN do for you?

Evaluation of state-of-the-art biomass pretreatment methods (water, acid, base, organosolv)

Study of hot water extraction of birch wood chips

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Biomass pretreatment success stories (1)

Acquisition of an European project on **biomass pretreatment** for valorisation

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Application trials lignin pyrolysis products

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Sustainable transport fuels

RESEARCH NEEDED

- One of the major applications for biomass in NL
- Opportunities NL: petrochemical industry
- 2nd generation biofuels

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Sustainable Transport Fuel Technology Development Centre

Which fuels?
Which routes?

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INVESTA
 Expertise centre for green gas and biomass gasification

- Accelerator of innovation for large-scale production of bio-based chemicals and energy through biomass gasification
- 4 MW_{th} input, 300 Nm³/h bioSNG production
- Consortium of DRT/Synova, Gasunie, Engie, PDENGH and ECN

Our vision on biomass utilisation

1. Biomass has to play an essential role in the transition to a sustainable chemistry and energy sector
2. Aim at biomass utilisation with maximum added value.
3. We need to act now!

The bio based economy is a challenge and a chance for the Dutch economy!

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ECN

We want to be your **PARTNER** on your **SUSTAINABILITY** journey



Interested? Contact me!



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