

The Netherlands country report

IEA Task 33 meeting

B.J. Vreugdenhil

G. Aranda Almansa

Innsbruck, Austria

2nd May 2017

Content

1. Background
2. Overview of renewable energy and SDE⁺ 2016
3. Status/update of NL gasification developments
4. R&D gasification activities at ECN

Background - change of government

Currently VVD (liberals) and PvdA (socialists) 2012 -2017

After the elections –PVV number 2



... but no one wants to work with him

Solution:

VVD – Economic/Liberal party

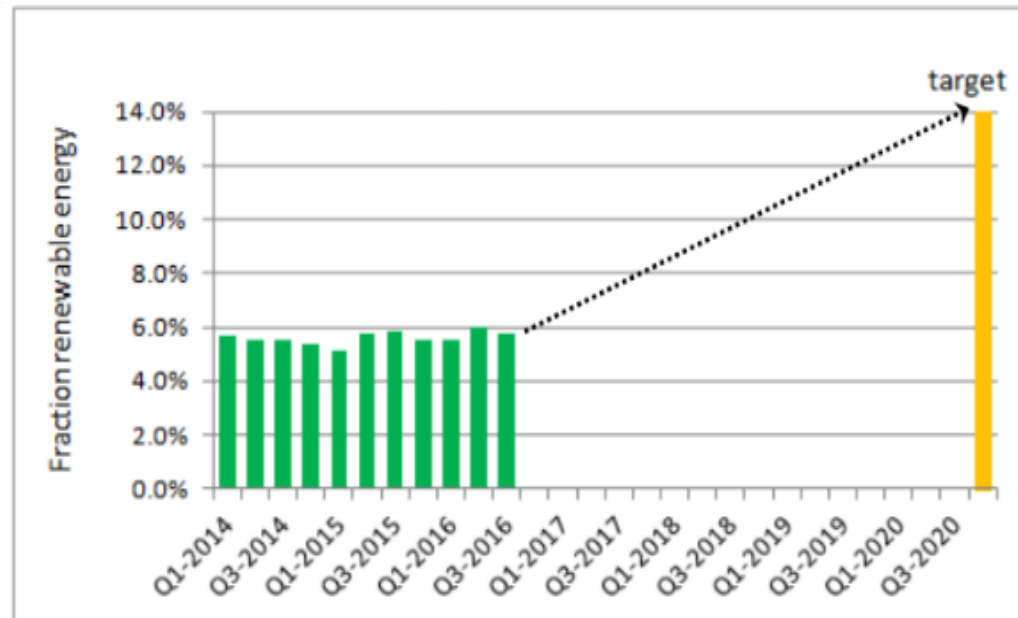
CDA – Christian Democratic

D66 – Social Liberal Progressive

Groen Links – Green and Social

Opportunity for positive impulse to sustainability in the Netherlands

Status of renewable energy



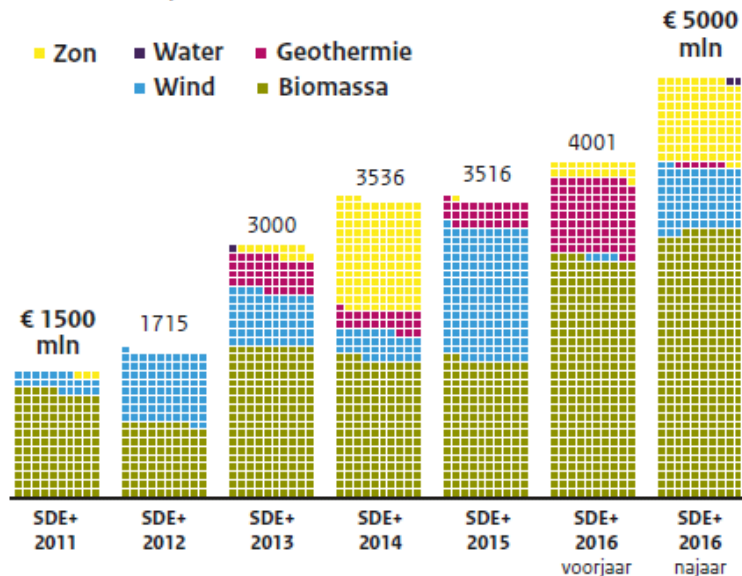
- Growth in renewable energy is going very slow.
- Currently NL is around 6% (target: 14% in 2020).

Overview of SDE+ 2016

Verplichtingenbudget

per categorie in de verschillende SDE+-rondes

□ = €10 miljoen



- SDE+: Stimulering van Duurzame Energie.
- Most SDE+ into biomass projects.
- Second round last year resulted also in an increase in solar projects.
(+ 5 billion to offshore wind).
- In 2017: 2 rounds of 6 billion € each for SDE+ subsidy.
- The government is putting more money for renewable energy.

Status/update of gasification developments



- ESKA air-blown CFB gasifier for paper rejects



- RWE Amer power plant



- AMBIGO update

- MOJI BV

CFB gasifier of ESKA

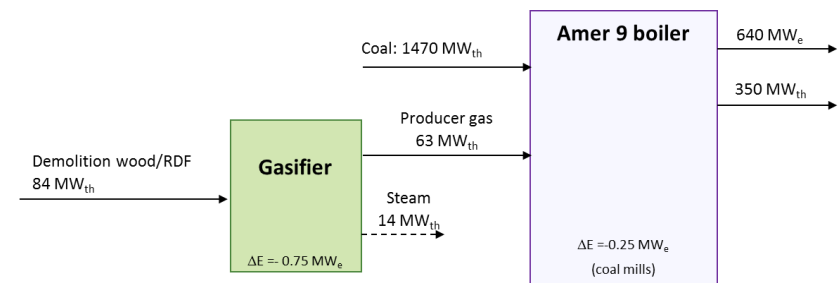
- Fuel: 25 kton/y rejects (12 MW_{th}).
 - Air-blown CFB gasifier coupled to a steam boiler.
 - Saturated steam production @ 16 bar
 - Thermal efficiency ~ 85%
-
- Installation is online and in operation.
 - Preparing for the performance test.
 - Ash disposal issues, for which a modification to the boiler is ongoing.



Amer gasifier – RWE

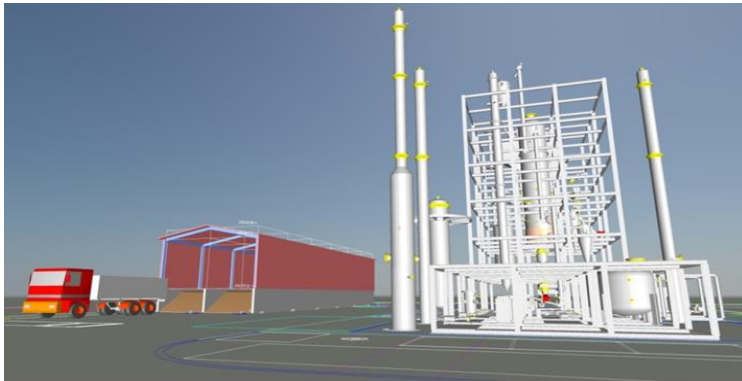


- 3 SDE+ subsidy granted in 2016 (in total 1.7 billion € for 8 years).
- RWE currently evaluating options to develop the site.
- Technical modifications required.



Green gas developments - AMBIGO

- 4 MW_{th} MILENA /OLGA /ESME demo plant for bio-SNG production in Alkmaar.
- Basic engineering finished.
- Delay due to lack of finance from the Dutch government.
- Positive outcome expected by summer 2017.



MOJI BV

- MOJI: Milena Olga Joint Innovation B.V.
- Joint venture between Dahlman Renewable Technology and ECN.
- Fast track the commercialization of MILENA and OLGA technologies.

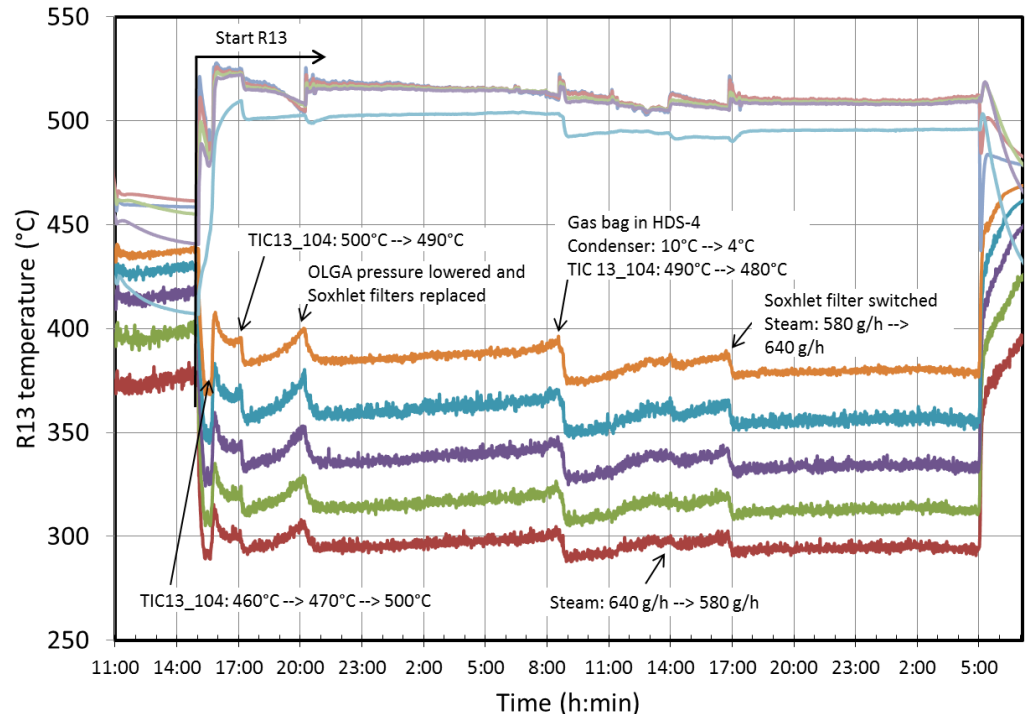


<https://www.ecn.nl/nl/nieuws/item/new-joint-venture-moji-to-fast-track-dutch-gasification-technology-commercialization/>

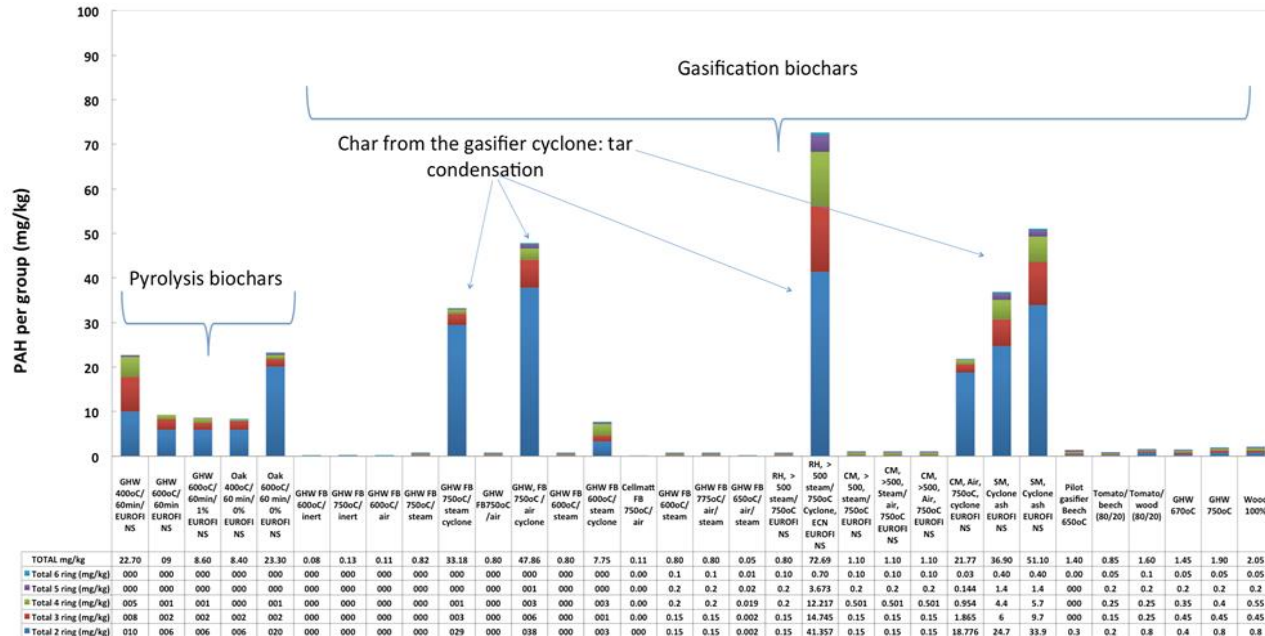
R&D developments at ECN

Bio-SNG production: GasHUB

- Improved conversion of biomass into gaseous or liquid energy carriers and chemicals.
- Deployment of generic, robust gas upgrading module.
- Testing of catalysts and sorbents.



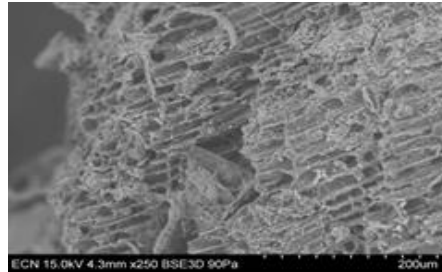
Biochar production



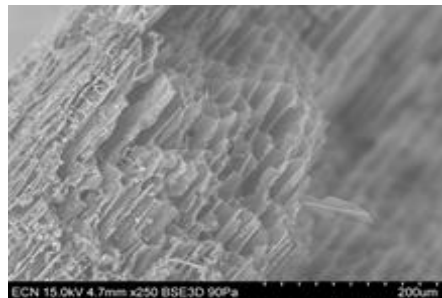
Gasification results in extremely low tar levels if harvested from the hot zone. Required activation of pyrolysis biochars to remove tars.

Biochar production: ENERCHAR project

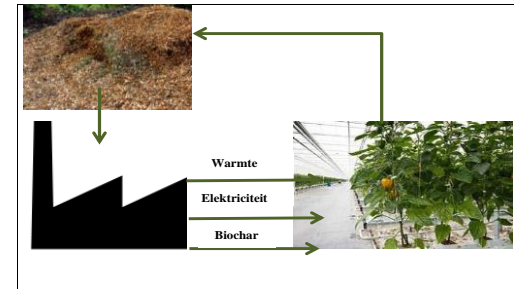
- Reduce energy prices for the greenhouse by using 10-15% agro-residues + co-production of biochar.
- Biochar used as peat replacement.



Peat particle



Biochar particle



Crysanthium pot trials with 30% biochar used as peat replacement in the potting soil.

Thanks for your attention!

ECN

Westerduinweg 3
1755 LE Petten
The Netherlands

P.O. Box 1
1755 ZG Petten
TheNetherlands

www.ecn.nl

www.ecn.nl