



IEA Bioenergy

Technology Collaboration Programme



Task 33 Country report The Netherlands

May 2022

Berend

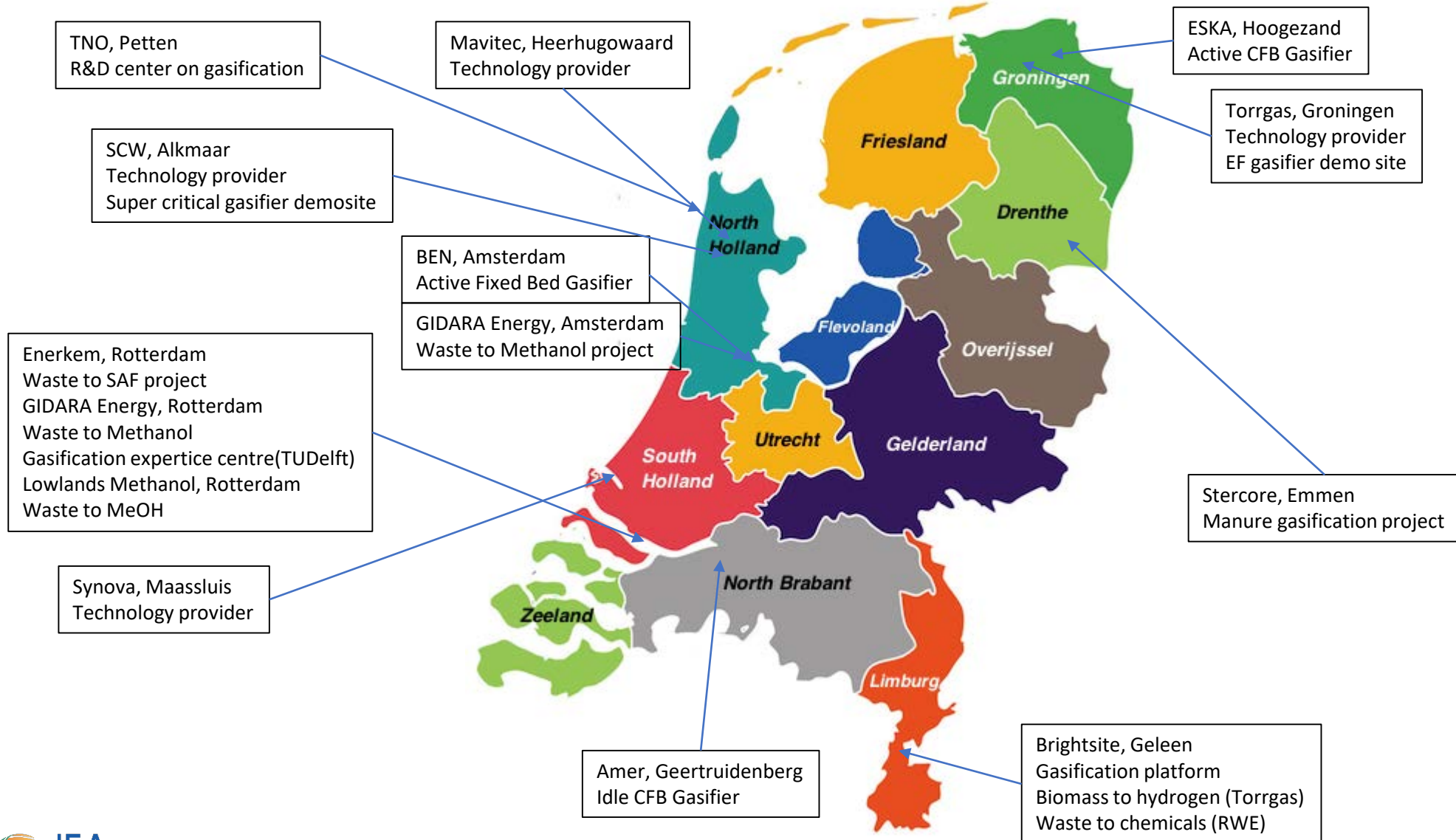
Online via Teams

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Technology Collaboration Programme

by **iea**

Gasification locations in the Netherlands



Updates on:
 GIDARA
 Stercore
 TUDelft
 Synova
 ESKA
 RWE

SYNOVA

Update



IEA Task 33
May 2022
Bram van der Drift



POLYSTYRENE DEPOLYMERIZATION for TRINSEO

<https://investor.trinseo.com/home/news/news-details/2022/Trinseo-Chemical-Recycling-Plant-on-Track/default.aspx>



MILENA for PS-depolymerization:

- 2 ton/h polystyrene-rich waste input capacity
- Trinseo, Tessenderlo (Belgium)
- Start construction late-2022
- Recycled PS (rPS) production

- MILENA technology prevents over-cracking and maximizes styrene liquid yield



TRINSEOTM

Collaboration GIDARA and TU Delft



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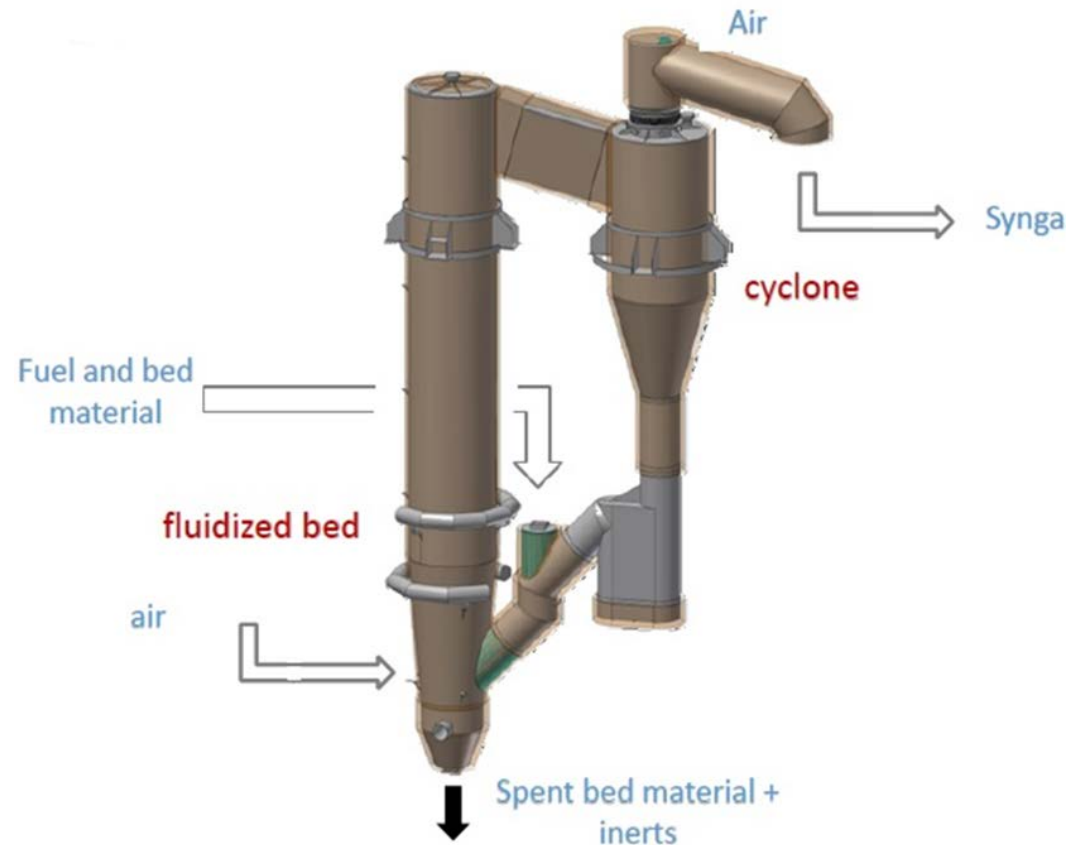
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GIDARA Energy is to build a Gasification Innovation Centre in Rotterdam together with TU Delft. The centre will have a pilot-scale gasification island where, from mid 2023, mutual research can take place on the 'third generation' of HTW® gasification technology, with which biofuels can be produced from pure biomass/waste streams.

Next

"The circular mattress is no longer a dream, the circular polyester textile chain is becoming reality" →

ESKA - CFB gasifier on paper rejects



- CFB technology supplied by Leroux & Lotz (TPS technology)
- 10 - 13 MWth input CFB gasifier, depending on LHV rejects
- Boiler produces 5 - 16 ton/h steam (196°C, 13,6 barg)
- Fully automatic operation
- Build in 2016, in operation since Oct-2016

Good availability

Minor modifications planned

Stercore

- Economic Due Dilligence finished (KplusV)
- Technical Due Dilligence finished (DNV)
- Technical detailed design and building design finished together with Emmtec Engineering as EPC
- Off take agreement for the Bio-LNG with a UK/NL oil major agreed upon as a fuel guarantee not depending on the SDE++ scheme
- In compliance with first court ruling, expecting final verdict in December
- Start building expected Q2-2022
- First stage investment approx. 32Meuro
- Final verdict in the court case expected before end of May

Torrgas - the process

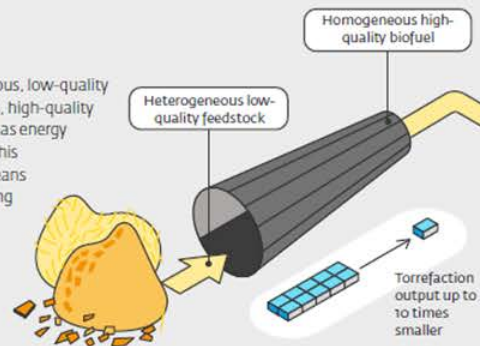
Waste streams as feedstock



Torrefaction processes use a wide range of waste streams that would otherwise be burned or left to perish. This greatly increases the amount of waste that can be reused.

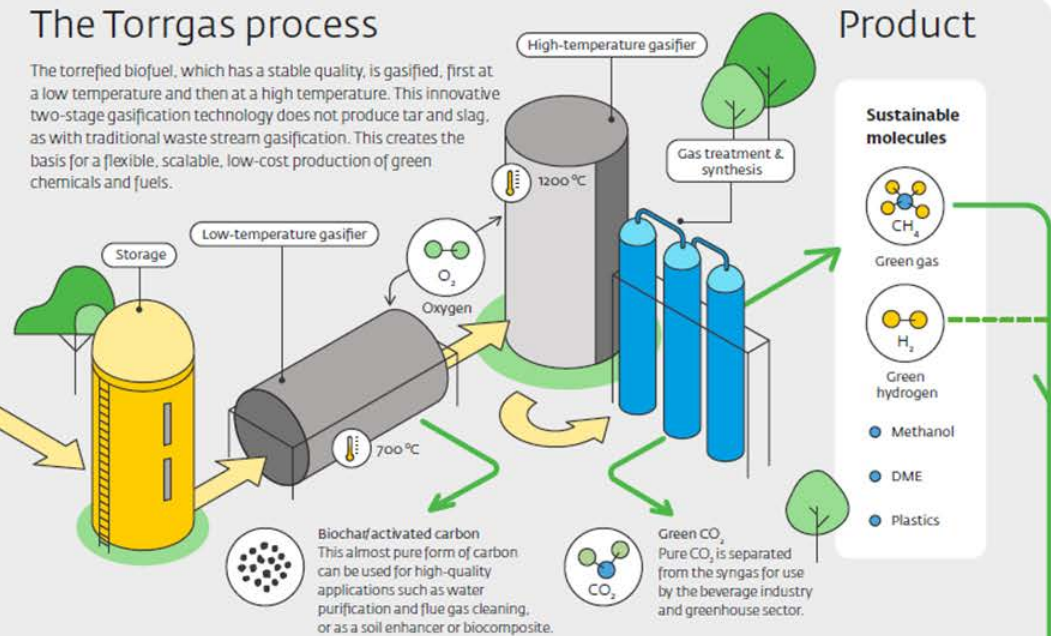
Torrefaction

Torrefaction converts heterogeneous, low-quality waste streams into homogeneous, high-quality biofuels that are around ten times as energy dense as the original feedstocks. This enables efficient transport and means torrefaction is a vital link in enabling large-scale reuse of problematic waste streams.



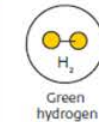
The Torrgas process

The torrefied biofuel, which has a stable quality, is gasified, first at a low temperature and then at a high temperature. This innovative two-stage gasification technology does not produce tar and slag, as with traditional waste stream gasification. This creates the basis for a flexible, scalable, low-cost production of green chemicals and fuels.



Product

Sustainable molecules



Uses of green gas

The Torrgas process produces green gas from syngas. This gas is transported through gas infrastructure to users in the industrial domain (for use as a feedstock and for process heating) and to the built environment.



Industry & chemistry



Built environment



Transport & mobility

Benefits of the Torrgas process



Scalable
A Torrgas plant can be scaled up to 100 MW.



Affordable
Activities such as the scaling up and marketing of biochar and green CO₂ make it increasingly cheaper to produce syngas. So much so, in fact, that it can even compete with fossil alternatives on price.



Fully circular
Low-quality waste streams are fully converted into high-value molecules (syngas and green CO₂) and products (biochar).



CO₂ reduction
Waste streams are converted into usable products. This prevents combustion and carbon emissions, effectively removing CO₂ from the atmosphere.

torrgas | gas4the
crossing borders in energy

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