



The biobased economy in the Ghent region: Opportunities and challenges in East Flanders

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POM East Flanders

The Development Agency of the Province East Flanders

- External agency of the Province
- Supports socio-economic development in the region
 - (Re-) Development of industrial estates
 - Business centers & incubation centers
 - Sustainable industrial estate management
 - Implementing Smart Specialisation Strategy of the Province
 - Logistics
 - Biobased economy
 - Cleantech
 - Eco-design

Short overview

Where are we at present?

- the Rodenhuizedok Biorefinery cluster

How did we get there ?

- Regional driver GBEV

Where do we go from here ?

- New challenges

RODENHUIZEDOK BIOREFINERY CLUSTER



The largest integrated production site for bio-energy in Europe:

- Alco Biofuel: 220 000 m³ bio-ethanol
- Bioro: 350 000 ton biodiesel
- Electrabel: 240 MW bio-electricity
- Eurosilo: 650 000 tons storage capacity

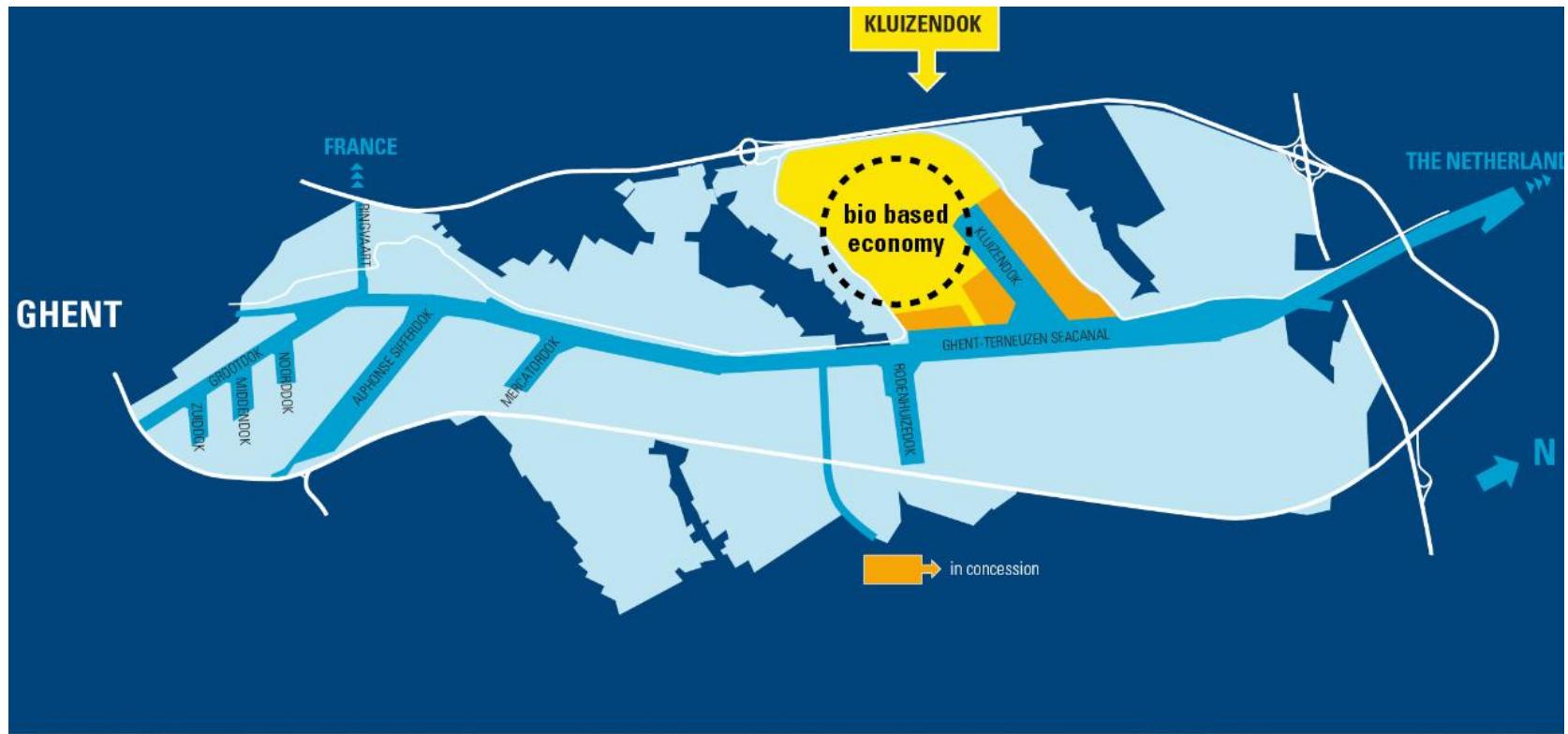
RODENHUIZEDOK BIOREFINERY CLUSTER



Alco Bio Fuel , Messer Benelux and Ijsfabriek Strombeek
(industrial gasses) :

- 100 000 ton green CO₂ recycled
- Investment 15 Mn Euro

Kluizendok : 80 ha for biobased activities



Kluizendok – Port of Ghent



Regionale driver: GBEV

2005: Public –private partnership : **Ghent Bioenergy Valley**

- 
**UNIVERSITEIT
GENT**
- 
- 
- And **companies**
- Political nature : **80% of the Flemish quotum** for biofuels in October 2006,
- Investment : 120 Mn Euro

GBEV: a highly active platform

2008 : GBEV acquires legal identity as non-profit organisation

- Membership organisation
- initiates Biobase Europe Pilot Plant & Trainingscenter

2010 : Biobase Europe Pilot Plant becomes operational

2013 : Ghent Bioenergy Valley changes into **Ghent Bioeconomy Valley**

2016 : Flanders BioBased Valley



GBEV: Building technological expertise

2008



2016

PROJECTS

The image shows a collage of project cards under the heading 'PROJECTS'. The projects include:

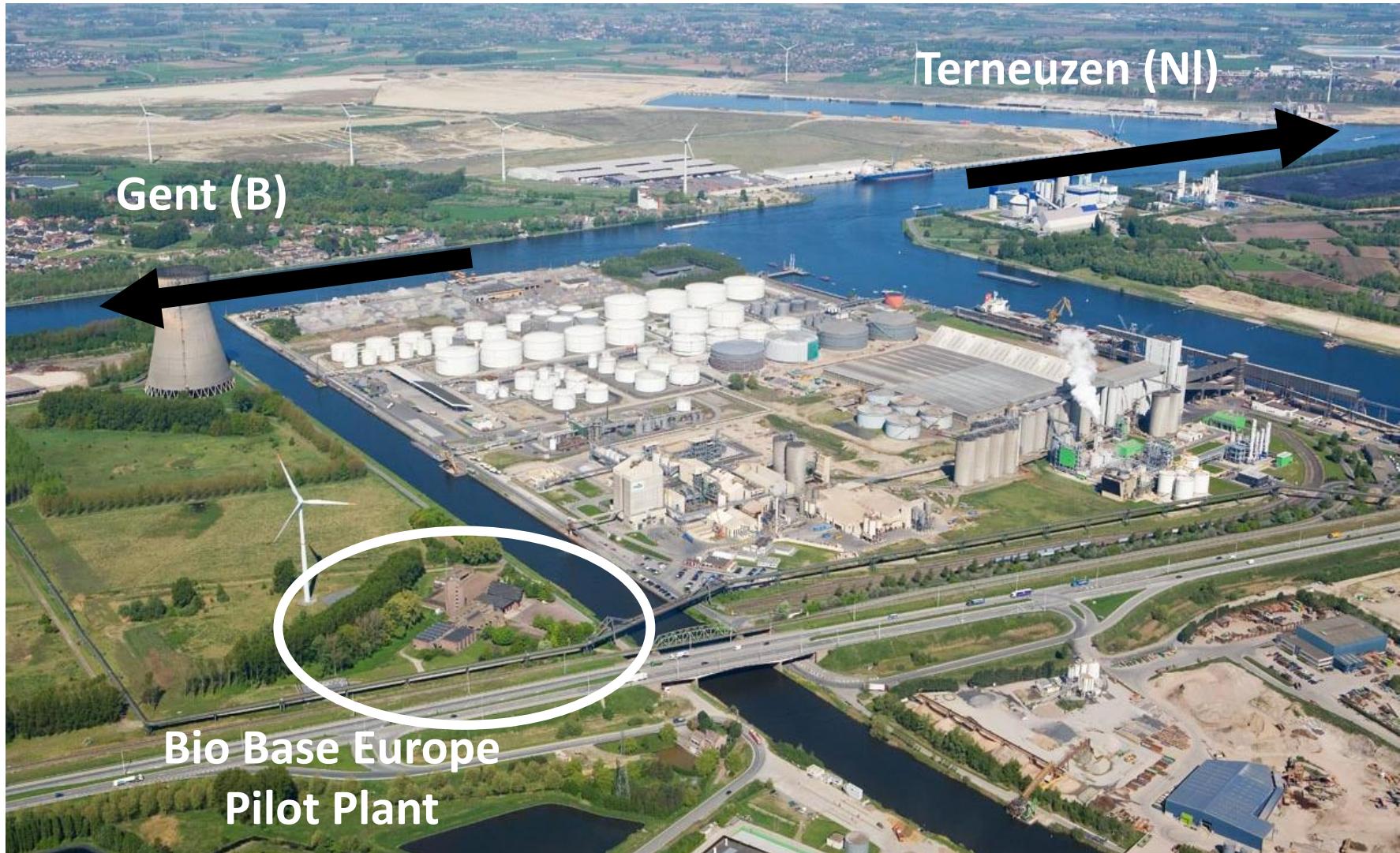
- CINBIOS: Advice on Industrial Biotech
- Bio Base Europe: Creation of Bio Base Europe
- Generates II & III: Renewable energy
- Ghent Syngas Cluster: Creation of new syngas cluster
- SUPERBIO: Creating new EU biobased value chains
- DEMOPROBIO: Biobutanol production
- BIOKATALYSE: Introducing biocatalysis to the chemical industry
- CiViTAS ELAN: Cleaner cities
- BIOBASE4SME: Support innovation by SME's in the biobased economy
- BIOCLUSTER: Creating new biobased value chains
- Bio Base NWE: Bridging the innovation gap
- KET-IB Roadmap
- VISIONS: Valorisation of sidestreams

Supported by:

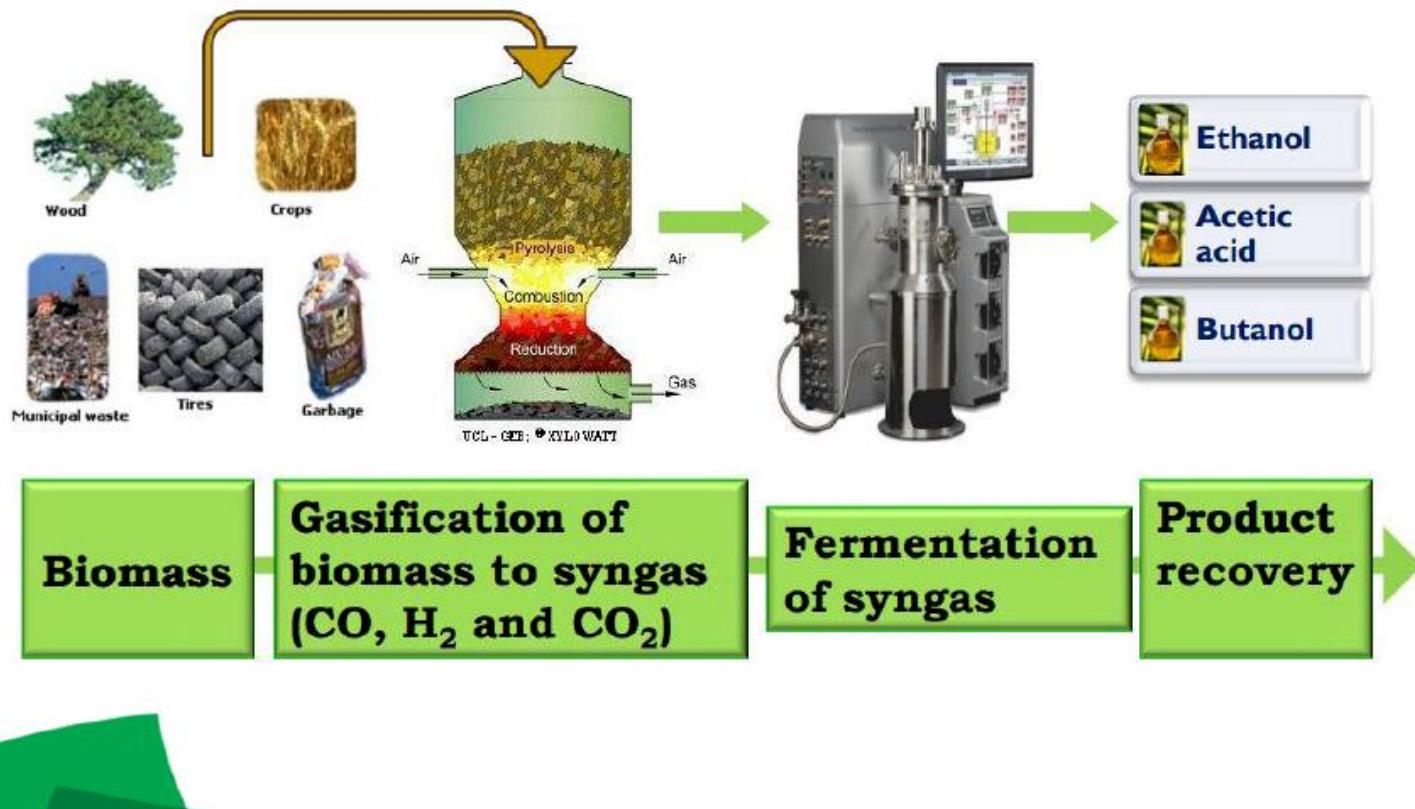
- AGENTSCHAP INNOVEREN & ONDERNEMEN
- Interreg North-West Europe
- Europese Unie
- Ministerie van Economische Zaken en Klimaat
- HORIZONT 2020
- FLANDERS BIOBASED VALLEY

> 1,000 companies involved

Driver for innovation:



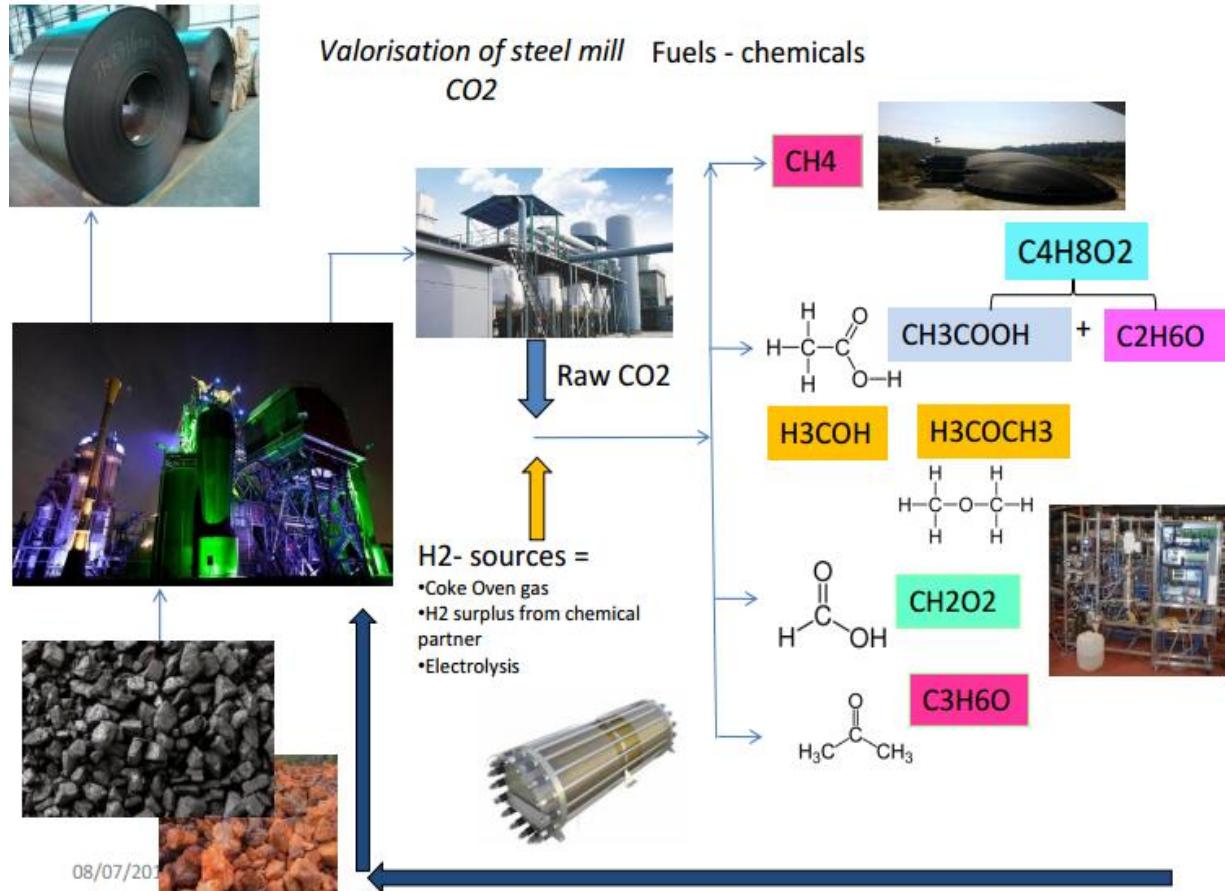
1. Vision : Gasification of (bio-)waste



2. Vision : THE ZERO EMISSION PLANT



The steel mill of the future will sell CO₂ - derivates

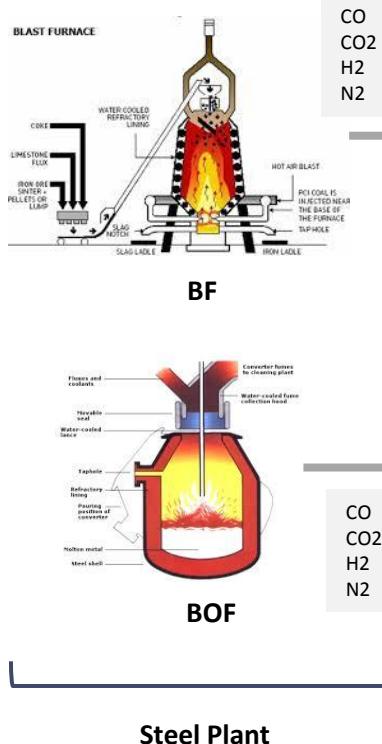


Steelanol process

Making Ethanol from steel waste gases with LanzaTech



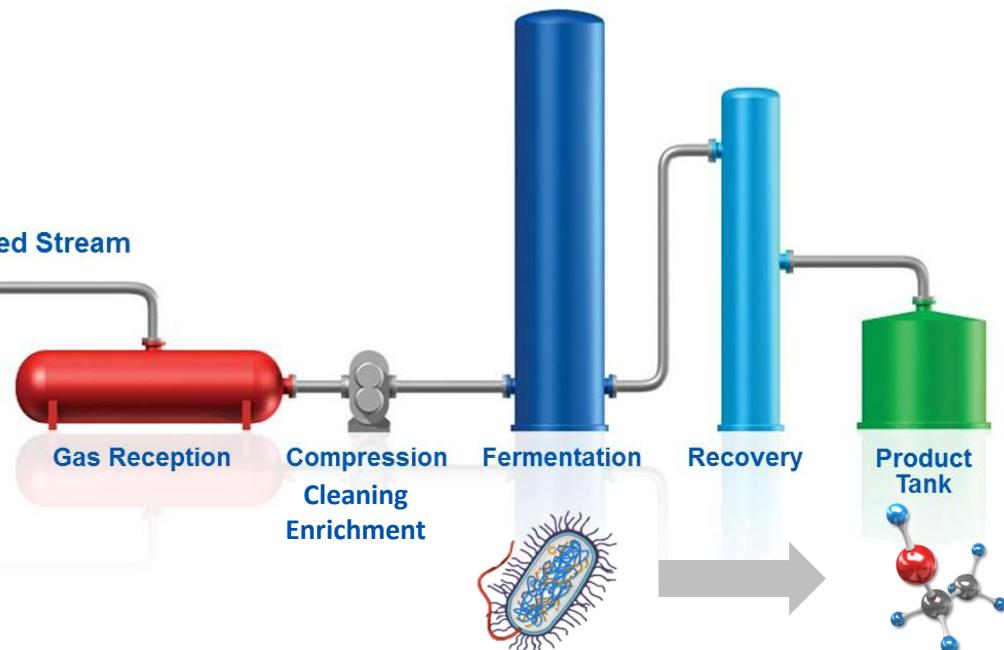
Gas fermentation is an innovative option for further valorization of steel process gases, complementary to the current power plant use of the gases for internal thermal energy production.



CO	25.0 vol%
CO ₂	26.4 vol%
H ₂	5.5 vol%
N ₂	43.1 vol%

CO	58.0 vol%
CO ₂	16.1 vol%
H ₂	1.0 vol%
N ₂	24.9 vol%

Gas Feed Stream



Non-genetically modified *Clostridium* bacteria selectively producing ethanol

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 654325.





3. Regional policy aspects on rCCU

Creation of new value chains (steel industry, waste managers, chemical industry, food/feed)

Renewable Power to Chemicals (electricity -> H₂ -> chemicals)

Waste reduction

Job creation

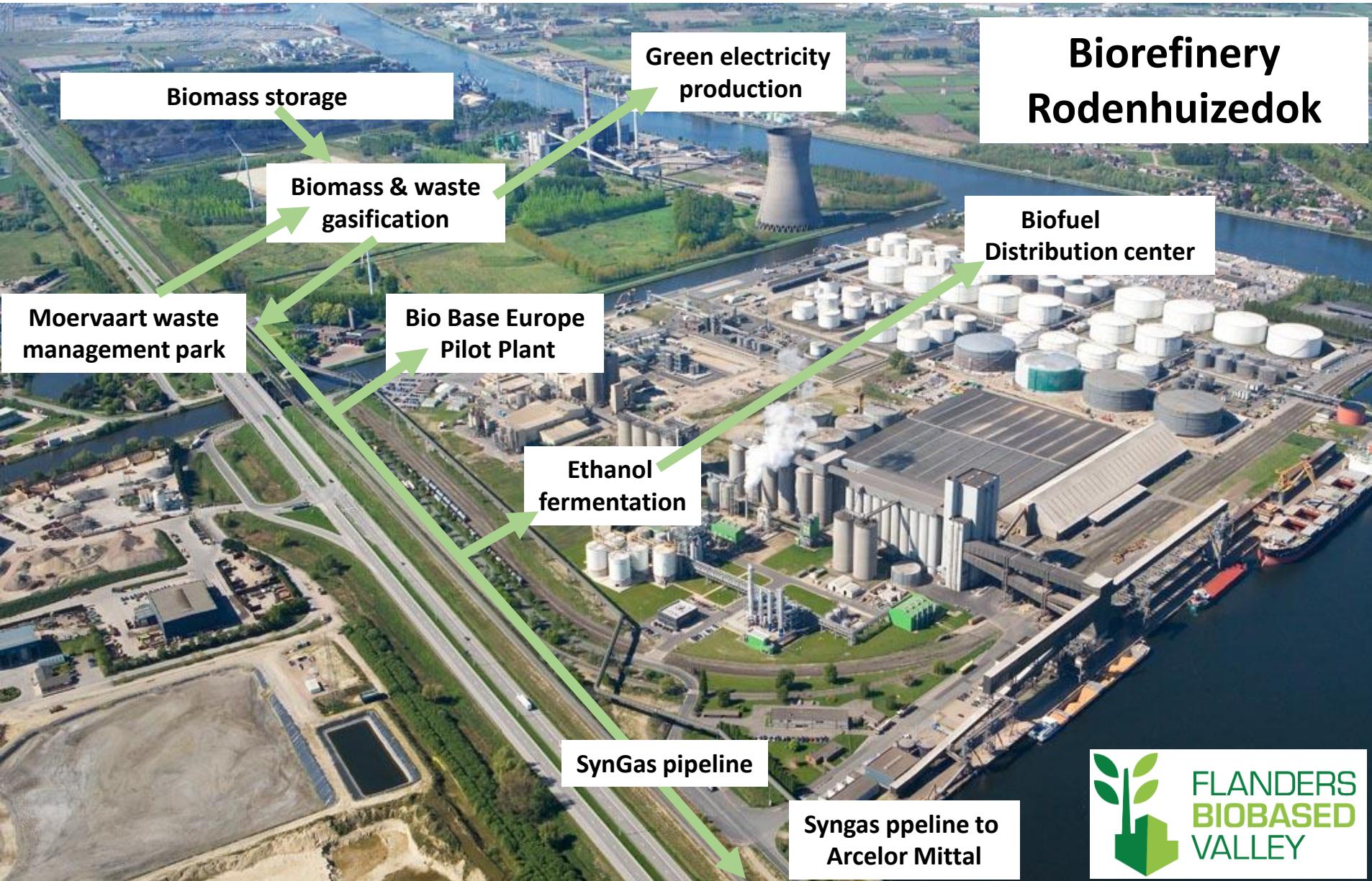


6 MW



en.paperblog.com
www.conserve-energy-future.com

4. Expanding - integrating the cluster



Thank you for your attention

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