



Sustainability at Suiker Unie

**Suiker Unie**

# ***From residues to natural gas***

**IEA Congress 's-Hertogenbosch  
4 November 2010**

**Ad Backx**

# 1. Profile Suiker Unie

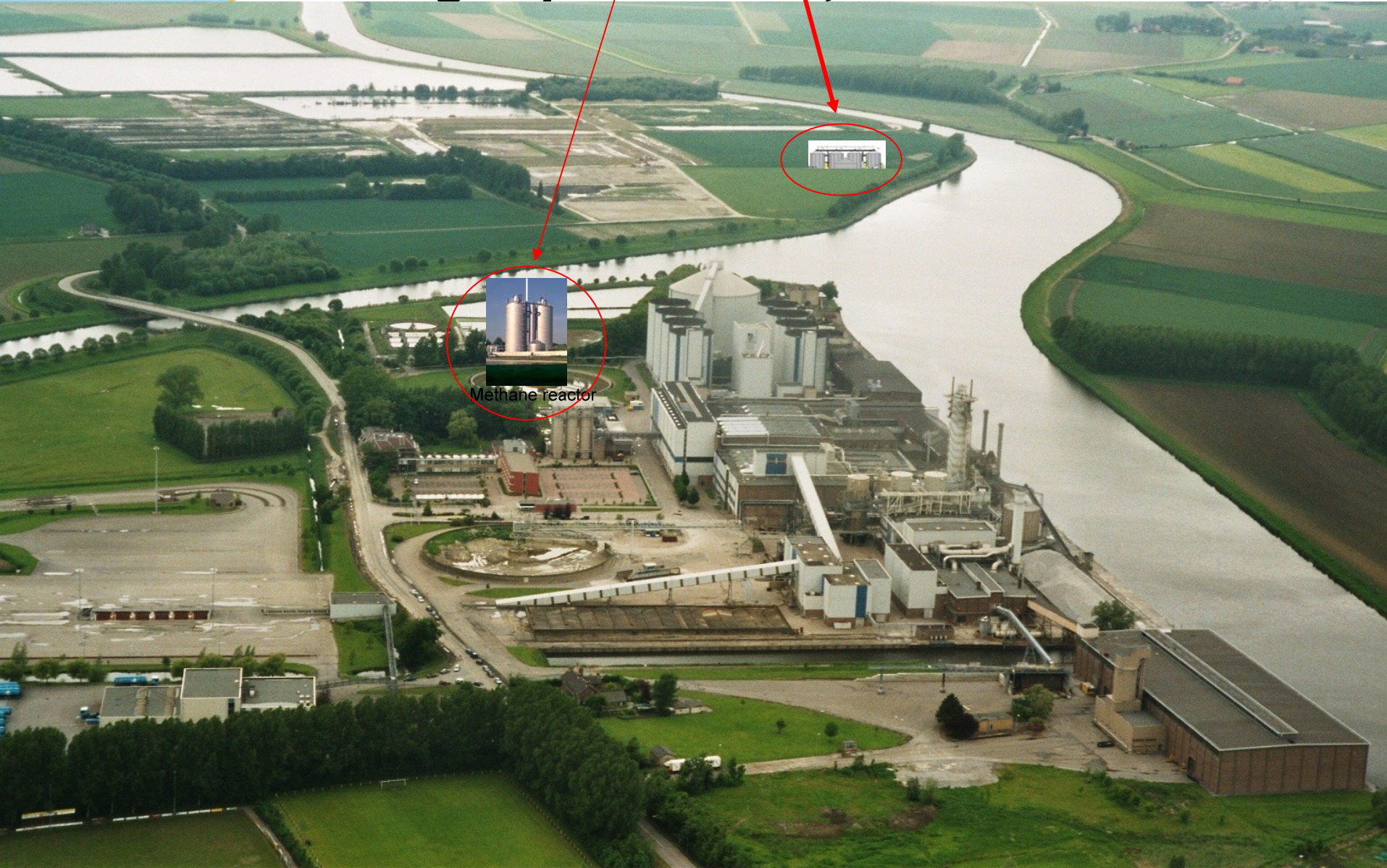
- Producer of sugar and other products
  - About 950.000 ton sugar/year
- Businessgroup of Royal Cosun, Breda
- Production sites:
  - Sugar factories:
    - Dinteloord, Vierverlaten and Anklam (Germany)
  - Specialties factories
    - Puttershoek and Roosendaal
- Headoffice: Dinteloord
- Turnover € 750 million

## 2. Digesters Suiker Unie

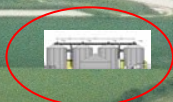
- Dinteloord
  - Methane reactor 2009
  - Digester 2011
  - From biogas tot natural gas (both) 2011
- Vierverlaten
  - Methane reactor (to 1,5 MWe) 2010
  - Digester (like Dinteloord) 2012



# 2. Digesters Suiker Unie *Green gas production, Dinteloord*



Methane reactor





## 2. Digesters Suiker Unie

### *Methane reactor, Dinteloord*

- Operational from 2009
- Digestion:
  - organic matter from washing water from sugar beets (campaign, 135 days)
- IC (Internal circulation) reactors: Paques
  - 2 x 900 m<sup>3</sup>
- Biogas
  - 85% methane content
  - 4,5 million m<sup>3</sup>/campaign

## 2. Digesters Suiker Unie

### *Digester Dinteloord*

- Operational from 2011
- 100.000 ton raw material:
  - Sugar beet tails, pressed beetpulp
  - Residues/products from other food and also agricultural companies
    - Potato industry, agricultural products
- Biogas:
  - 50-55% methane content
  - 16 million m<sup>3</sup>/year

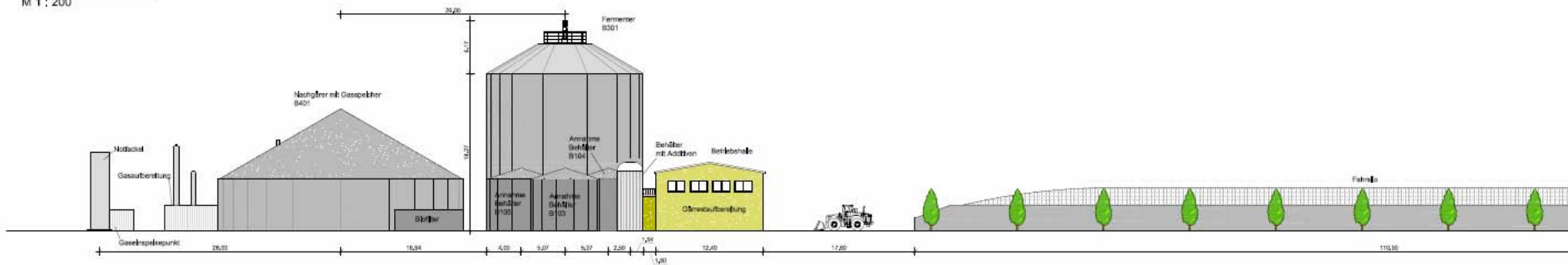
## 2. Digesters Suiker Unie

### *Digester Dinteloord*

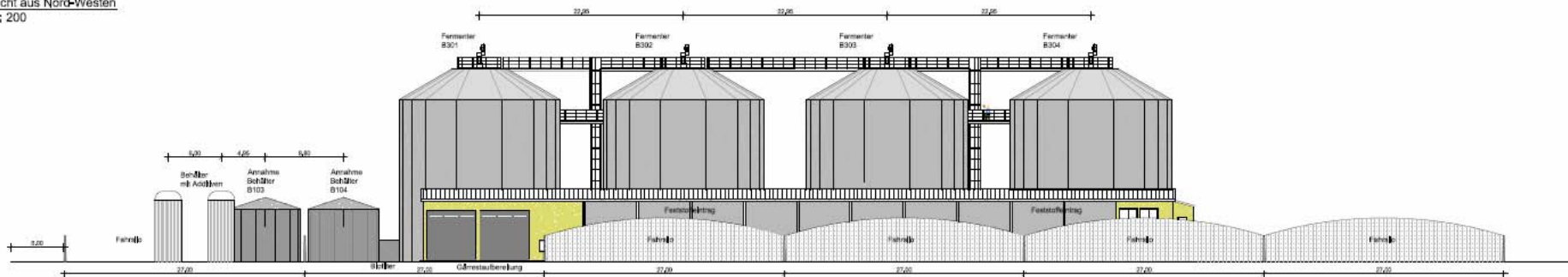
- Mesophilic digestion
- 4 Digesters: 4 x 4.500 m<sup>3</sup>
  - Residence time: 45 days
  - Organic load: 4,4 kg ods/m<sup>3</sup>/day (design)
- 1 Secondary digester: 1 x 3.000 m<sup>3</sup>
  - Residence time: 12 days
- Separation digestate to wet and dry
  - Decantor
  - Liquid: water purification, fertiliser
  - Solid: fertiliser (compost)

# 2. Digesters Suiker Unie *Digester Dinteloord*

Ansicht aus Nord-Osten  
M 1 : 200



Ansicht aus Nord-Westen  
M 1 : 200





### 3. From biogas to natural gas *Dinteloord*

- In million m<sup>3</sup>/year:

	Biogas	Nat. gas
• Methane reactor	4,5	3,5
• Digester	16	9,0
• Total natural gas		12,5

- ***For 9.000 households***

# 3. From biogas to natural gas

- Biogas compressed to 8 bar
- Biogas from both projects to water scrubber
- Scrub with excess water
- Methane content in gas to 89%
- Online quality analyser for natural gas
- Natural gas to public grid
  
- Recycled water from scrubber:
  - Decompress to 1 bar: CO<sub>2</sub> escape
  - Recompress to 8 bar

## 4. Injection natural gas in grid

- Public grid:
  - National grid                      40 Bar
    - Gasunie
  - Regional grid                      8 Bar
    - Enexis                      300 m from site
    - Intergas                      4 km from site
- Requirements natural gas to grid:
  - Quality natural gas
  - Capacity grid



# 4. Injection natural gas in grid

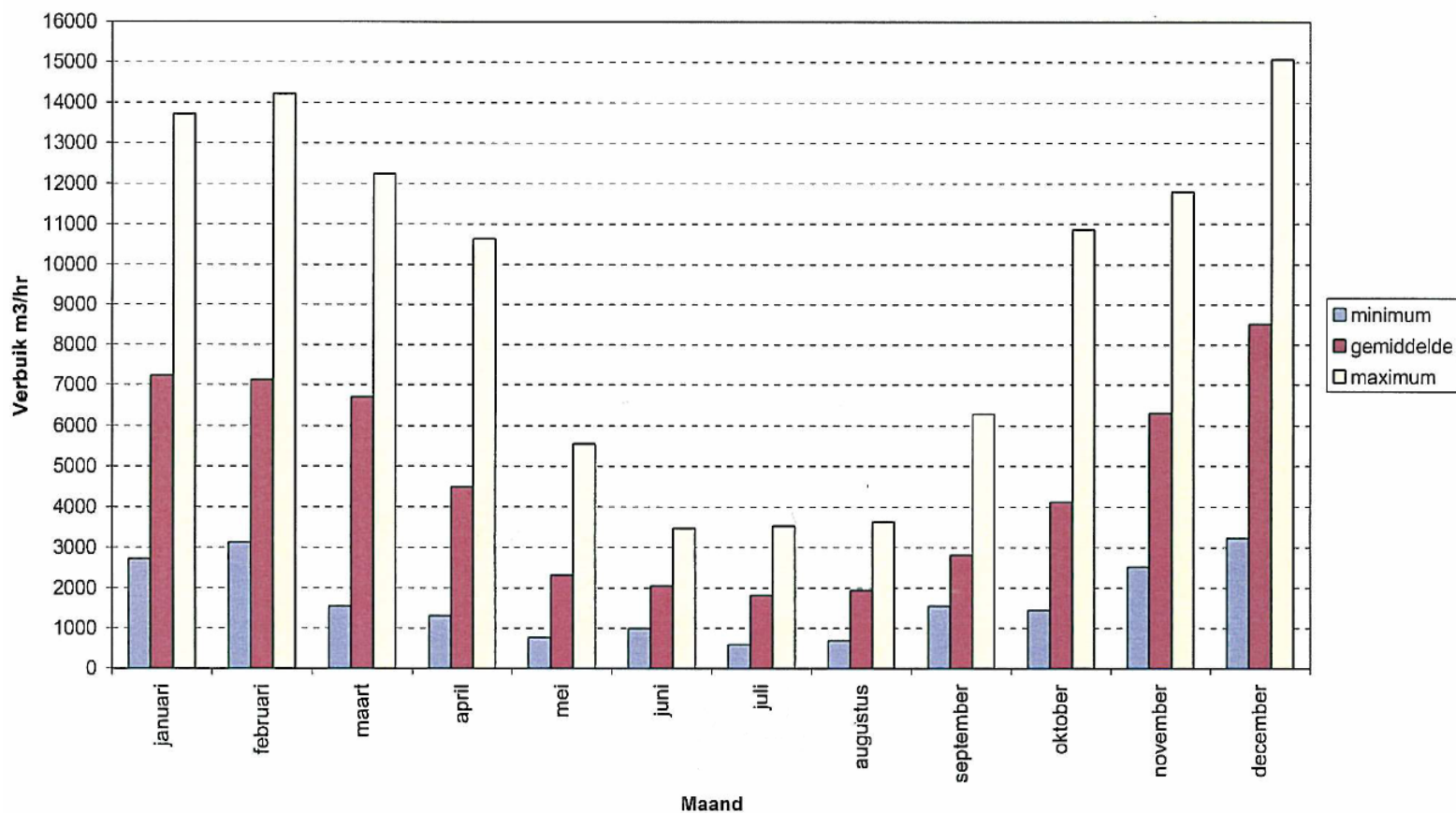
## *Requirements*

- Natural gas quality
  - CH<sub>4</sub> content (Wobbe-index)
  - Water dew point, water content
  - Major, minor and trace elements
- Capacity of regional grid

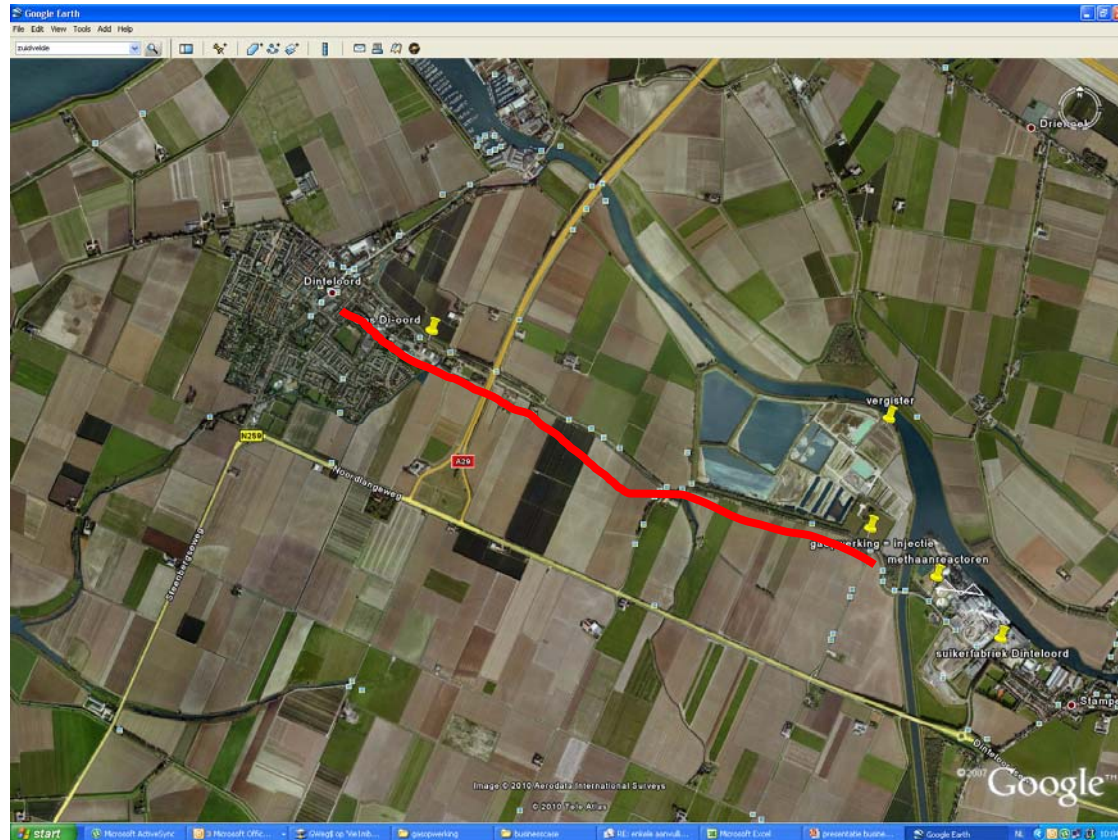
# 4. Injection natural gas in grid

## Consumption regional grid Intergas

Verbruik PGOS Moerdijk



# 4. Injection natural gas in grid *Connection to regional grid Intergas*





## 5. Financial aspects

- Without subsidy: digester project not achievable
- Goal sustainable energy in the Netherlands:
  - 14% in 2020 (EU Directive)
- SDE: subsidy sustainable energy production:
  - Category green gas, biomass
  - Price natural gas guaranteed for 12 years
    - € 0,583/Nm<sup>3</sup>

## 6. Summary

- Suiker Unie has multiple projects for sustainable energy production
- Dinteloord:
  - To natural gas from 2011
  - Natural gas from two installations
- Vierverlaten
  - Green electricity from 2010
  - Digester to natural gas in 2012

***Thank you for your attention***



***Questions???***



Plant  
and  
Planet



Duurzaam ondernemen bij Suiker Unie