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The SNG Technology Platform in Güssing, A

Status report of Bio-SNG project

Wood

1 **FICFB-Gasification** CGE*: 70-80%

20-30% heat — **Raw gas** 70-80%

2 **Gas Conditioning** CGE*: 100%

S, Cl, Particles — **Clean raw gas** 70-80%

3 **Methanation** CGE*: 74-90%

10-25% heat — **Raw SNG** (CH_4,CO_2) 52-72%

4 **Gas upgrading** CO_2-separation CGE*: 95-98%

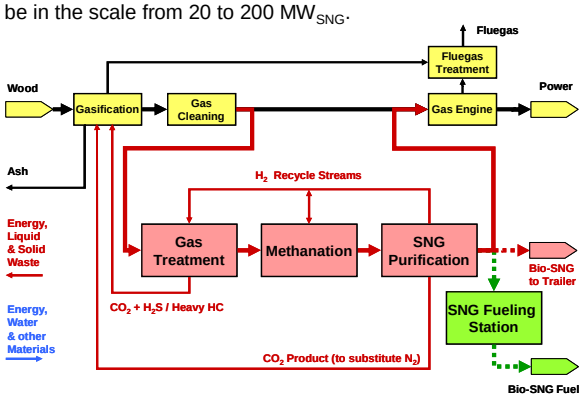
2-5% loss of CH_4 during CO_2-separation — **SNG** 49-70%

CGE*$_{Wood-SNG}$: 55-65% is realistic

* CGE: cold gas efficiency
LHV: lower heating value
SNG: synthetic natural gas

SNG technology platform

In this case study **Synthetic natural gas** (SNG) or bio-methane from woody biomass is the end product. For the complete value chain demonstration from woody biomass to SNG a 1 MW_{SNG} demonstration plant has been built up in Guessing, Austria by a Swiss-Austrian consortium. Commercial plants are expected to be in the scale from 20 to 200 MW_{SNG}.



Gasification

In the initial conversion step i.e. in the biomass gasification process wood chips are converted into a syngas or more general into a product gas. The FICFB gasification process is operated in Güssing since 2002 for a combined heat and power (CHP) plant and has reached meanwhile more than 40'000 h of operation. The product gas is delivered at ambient pressure, has a high content of CH_4 and low contamination by higher hydrocarbons and tars making this product gas suitable for Synthetic Natural Gas (SNG) or bio-methane production.

Conversion of product gas to SNG

The final conversion step consists of three individual steps, i.e. gas conditioning, SNG synthesis and gas upgrading. R&D work over the past 8 years was focused on gas conditioning and SNG synthesis. On pilot scale it could be proven, that fluidized bed SNG synthesis is possible. Based on the data of this pilot plant, the 1 MW_{SNG} demonstration plant has been designed with wider operating conditions for the demonstration plant than tested in lab scale. The entire process chain reaches high conversion efficiencies and has the potential for lower investment and lower operating cost than conventional SNG synthesis, i.e. fixed bed methanation as well as BtL technologies.

Status and Outlook

Tests on the demonstration plant are currently carried out in Guessing to confirm the findings of the pilot plant and prepare commercialization of the technology. A consistent data base for the assessment of this technology and a comparison with other biofuels options will be generated with the bio-SNG technology platform in Güssing.

8 MW_{th} FICFB Gasification Plant

1 MW_{SNG} Demonstration Plant

Partner of EU DG-TREN Project „Bio-SNG“

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