



IEA Bioenergy - Task 33

Thermal Gasification of Biomass

18.März 2016

Fachgespräch Bioenergie

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Leitung

Operating Agent:

U.S. Department of Energy
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Task Co Leader:

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TU Wien, Austria

Task Leader:

Mr. Kevin Whitty, Ph.D.
University of Utah, USA

Task Secretary:

Dr. Jitka Hrbek
TU Wien, Austria



Länder (2016)

- Participating countries for new Triennium

Austria

Italy

Sweden

Denmark

The Netherlands

Switzerland

~~Finland~~

Norway

USA

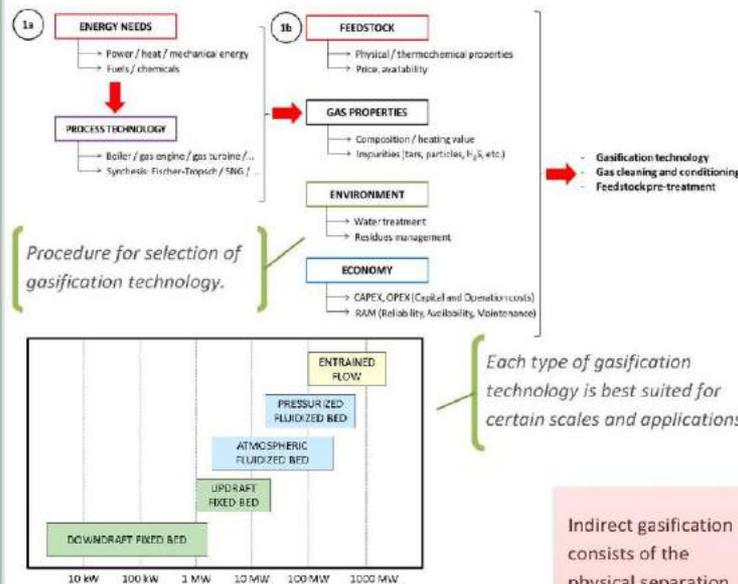
Germany

Highlights: Gasification

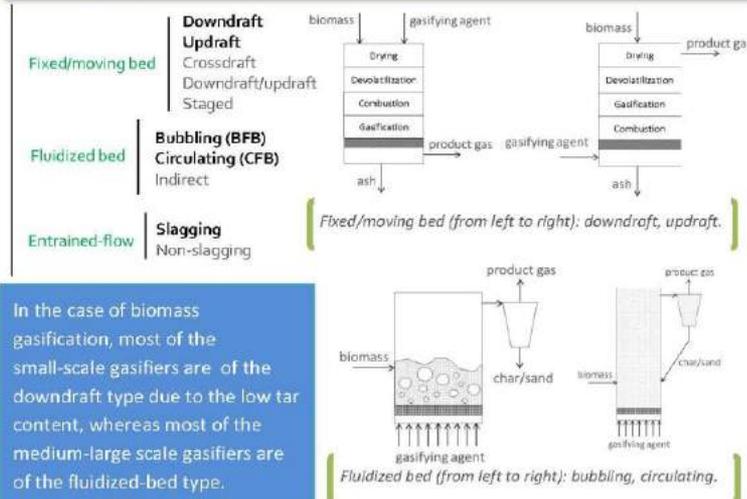
- Completed fact sheets
 - What is biomass gasification
 - Gasification in numbers
 - Gasification technologies
 - Biomass as gasification feedstock
 - Gas cleaning and tars
 - Gas engines
 - Co-firing
 - New developments
- Fact sheets now available on the IEA Bioenergy website
- Complete spring 2014

Differences between gasification technologies refer to the contact of fuel and gasifying agent, temperature, pressure, scale, or heat supply. The selection of the most appropriate gasification reactor depends on the properties of the available feedstock, the final application of producer gas, and other environmental and economic factors.

SELECTION OF GASIFICATION TECHNOLOGY



MAIN GASIFICATION TECHNOLOGIES



In the case of biomass gasification, most of the small-scale gasifiers are of the downdraft type due to the low tar content, whereas most of the medium-large scale gasifiers are of the fluidized-bed type.

Indirect gasification consists of the physical separation of the gasification and combustion stages. Heat is transferred between both reactors. Indirect gasification allows the production of N₂-free gas with total conversion of the biomass. Some examples of indirect gasification technologies are SilvaGas (Batelle, USA), FICFB (TUV, Austria) and MILENA (ECN, Netherlands).



Highlights: Performance Test Protocol for Small Scale Gasifier

- White Paper elaborated 2015 under IEA Bioenergy, Task 33 Thermal Gasification of Biomass
 - By Martin Rügsegger, ETECA GmbH, Fahrni, Switzerland
 - Finished in November 2015
- For the last years appeared more commercial available gasifier units on the market. As a guideline during a project for a Gasifier CHP unit this white paper can help to improve the project quality and the successful proof of performance after commissioning. The handover of a gasifier CHP unit from supplier to the client will be easy and successful, if there is accurate PTP existing.
- Available at the Homepage



Highlight: Gasification Facilities Database and Report

Company (Project)
ARBRE Energy Limited (AEL) (IGCC-ARBRE Energy Eggborough)
Abengoa ()
Ace Bhand (Sweetwater) ()
Aerri Prattoch (CHP Prattoch)
Agron Technologies GmbH (CHP Agron Biomasse Heizkraftwerk Pfaffenholten)
Algend ()
ALBIR Fuels ()
American Process ()
American Process ()
Andritz-Carbora (Sluice CHP plant)
ArboCultura GmbH (Urbas Berlin)
Aurogesnorð ()
Azienda Agricola Isca di Calvello (Urbas Calvello)
Azienda Agricola San Vittore ()
Azienda Tessile Ramenise (GAS 1000)
Azienda agricola Camerdo ()

Database auf der Task Homepage und nun auch auf der IEA Bioenergy Homepage.

Report wird in den nächsten Wochen veröffentlicht

Highlight: Organisation nationale Anwenderkonferenz

8. INTERNATIONALE ANWENDERKONFERENZ BIOMASSEVERGASUNG

MANAGEMENT
CENTER
INNSBRUCK
2. DEZ 2015

FEE DAS INNOVATIONSNETZWERK
Fördergesellschaft
Erneuerbare Energien e.V.



Actual Triennium: Task Meetings and Workshops

- 24th to 26th May 2016, Trondheim, Norway
Workshop: Aviation Biofuels through Biomass Gasification
 - Presentation of Austrian Project GreenFly
- 25th to 27th October 2016, Switzerland
Workshop : Gas sampling and analysis in thermal gasification processes



Special Projects im Triennium 2016-2018

- **SP1: Gasification of waste.** Interest in gasification of municipal solid waste is increasing worldwide and several new gasification-based waste-to-energy projects are under development in member countries. A report describing opportunities, waste gasification technologies, and practical considerations of waste gasification will be developed and disseminated via the website and other channels. A fact sheet on waste gasification will also be developed and made available through the Task website. Task 36 (Integrating Energy into Solid Waste Management) is also interested in waste gasification and will provide input to the project.
- **SP2: Fuel pretreatment for gasification.** This project represents Task 33's contribution to the joint project "Fuel pretreatment of biomass residues in the supply chain for thermal conversion," which is being led by Task 32, includes Tasks 32, 33, 34, 36, 40 and 43, and is described in detail in a separate strategic project proposal. Task 33's scope involves fuel pretreatment in the context of gasification.
- **SP3: Biomass gasification for CCUS.** This project aims to provide an initial overview of the potential of biomass and waste gasification to contribute to carbon capture, utilization and sequestration (CCUS). This information will be useful for the Task 41 Strategic Project "Bio-CCS and bio-CCUS in climate change mitigation and extended use of biomass raw material," and for Task 38's evaluations of Climate Change Impacts of Biomass and Bioenergy.



Special Projects im Triennium 2016-2018

- **SP4: Biomass gasification success stories.** This project will involve identification and summary of biomass gasification projects that have been particularly successful, and preparation of a short report detailing these. This information will be Task 33's contribution to the inter-task project "Bioenergy Success Stories" coordinated jointly by Tasks 33, 34, 36, 40 and 43.
- **SP5: Gasification-based renewable energy hybrid systems.** Gasification is a very flexible system in terms of production and consumption of power, steam, heat, hydrogen and fuel gas, and lends itself well to integration with other renewable energy systems. A vision for biomass or waste gasification would be that it serves as a central processing system accepting and producing renewable energy, including liquid fuels, from and to other systems, such that the entire integrated facility benefits from synergy. This project will provide an evaluation of biomass gasification's potential to contribute to hybrid energy systems, which will be useful for the Task 41 Strategic Project on Bioenergy and RES Hybrids.



Special Projects im Triennium 2016-2018

- **SP6: Hydrogen production through biomass gasification.** Hydrogen demand for e.g. oil upgrading and stabilization and industrial hydrotreating continues to increase, and bio-based hydrogen offers an attractive alternative. A report outlining technical options and economics of hydrogen production will be developed.
- **SP7: Status of biomass gasification report.** This report, which will be delivered at the end of the triennium, will provide an update on the status of biomass gasification development and commercialization in member countries. Input for the report will come from individual member country reports and NTL's, and the report will be managed and compiled by the task secretary.



Thanks for your attention
and feedback