

Task 33

Thermal Gasification of Biomass



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IEA Bioenergy

# IEA Bioenergy - Task 33

## Thermal Gasification of Biomass

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Fachgespräch Bioenergie

**Dr. Reinhard Rauch, Dr. Jitka Hrbek**

Vienna University of Technology  
Institute of Chemical Engineering



# Content

- Aktueller Status von IEA Bioenergy Task33  
Thermal Gasification of Biomass
- Highlights
- Ausblick

# Task 33

## Thermal Gasification of Biomass



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# IEA Bioenergy Task33

Task 33 is a working group of international experts with the aim to promote the commercialization of efficient, economical, and environmentally preferable biomass gasification processes.

Main work is:

- Networking
- Information exchange
- Standardisation
- Workshops and task meetings

<http://www.ieabioenergytask33.org>



# Leitung

## **Operating Agent:**

U.S. Department of Energy  
Washington D.C., USA

## **Task Co Leader:**

Dr. Reinhard Rauch  
TU Wien, Austria

## **Task Leader:**

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

## **Task Secretary:**

Dr. Jitka Hrbek  
TU Wien, Austria



# Länder (2014)

- Participating countries for 2014
  - Austria
  - Denmark
  - Finland
  - Germany
  - Italy
  - The Netherlands
  - Norway
  - Sweden
  - Switzerland
  - USA
- New Zealand and Turkey have not committed to T33 for 2014
- Other countries to encourage to participate?
  - Brazil
  - Canada
  - Spain
  - France



# Task 33

## Thermal Gasification of Biomass

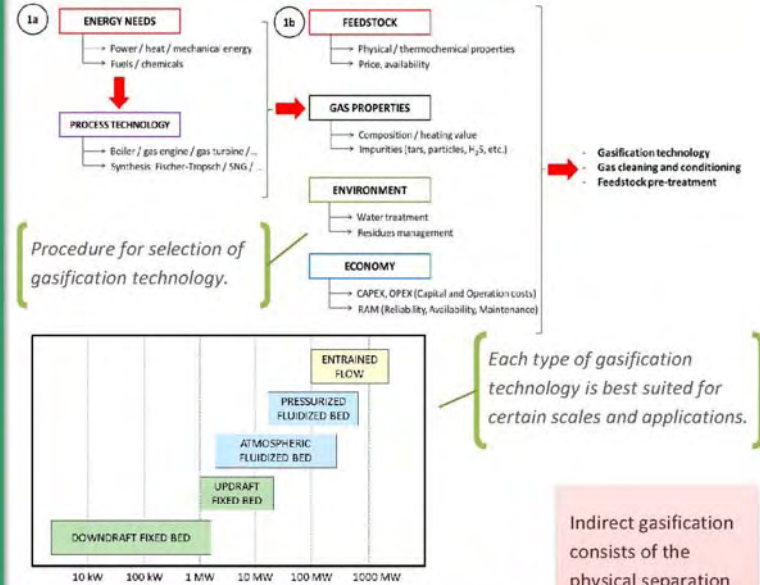
### Highlights: Gasification

- Completed fact sheets
  - What it biomass gasification
  - Gasification in numbers
  - Gasification technologies
  - Biomass as gasification feed
  - Gas cleaning and tars
  - Gas engines
  - Co-firing
  - New developments
- Fact sheets now available o
- Complete spring 2014

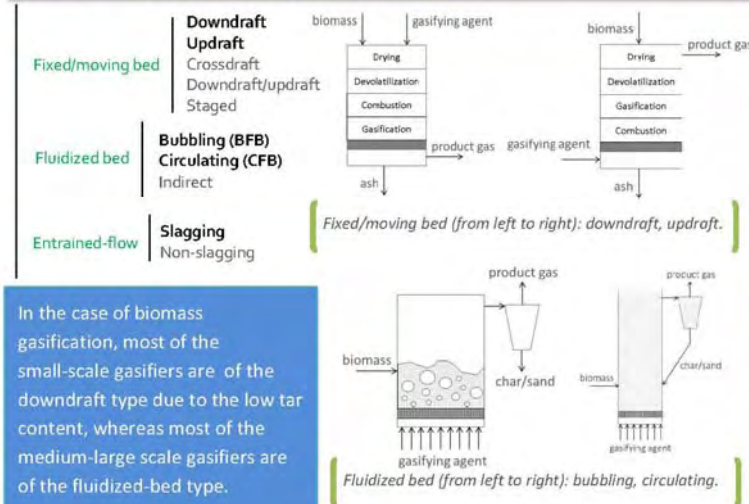
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Differences between gasification technologies refer to the contact of fuel and gasifying agent, temperature, pressure, scale, or heat supply. The selection of the most appropriate gasification reactor depends on the properties of the available feedstock,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

### SELECTION OF GASIFICATION TECHNOLOGY



### MAIN GASIFICATION TECHNOLOGIES



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 N<sub>2</sub>-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: Worldwide Biomass Gasification Facilities Status Report

- Included in 2013-15 Proposal for Prolongation
  - A biomass gasification summary report (jointly authored by Task Lead and NTLs) in 2014 addressing BMG basics, BMG applications, outstanding technical and sustainability issues, gasification specific policies in member countries, and a directory of gasifier developers in member countries (information will include company, development status, projects locations, gasifier type, primary products, patents, publications).
- Similar to report developed by Task 39 (Commercialization of Advanced Liquid Biofuels)
- Provide self-contained, comprehensive report on global status of biomass gasification, including overview and details of individual gasification plants
- Report will be prepared by Jitka Hrbek
- Complete spring 2015
- Updates from all countries regarding status of gasifiers



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# Gasification Facilities Database and Map

Technology	Type	Status
<input type="checkbox"/> co-firing	<input type="checkbox"/> pilot	<input type="checkbox"/> planned
<input type="checkbox"/> CHP	<input type="checkbox"/> demo	<input type="checkbox"/> announced
<input type="checkbox"/> synthesis	<input type="checkbox"/> commercial	<input type="checkbox"/> under construction
<input type="checkbox"/> other innovative		<input type="checkbox"/> under commissioning
		<input type="checkbox"/> operational
		<input type="checkbox"/> on hold
		<input type="checkbox"/> stopped
		<input type="checkbox"/> cancelled

Company (Project)
ARBRE Energy Limited (AEL) (IGCC ARBRE Energy Eggborough)
Abengoa ()
Ace Ethanol (Sweetwater) ()
Aerni Pratteln (CHP Pratteln)
Agnion Technologies GmbH (CHP Agnion Biomasse Heizkraftwerk Pfaffenhofen)
Algenol ()
AltAir Fuels ()
American Process ()
American Process ()
Andritz-Carbona (Skive CHP plant)
ArboCultura GmbH (Urbas Berlin)
Autogasnord ()
Azienda Agricola Isca di Calvello (Urbas Calvello)
Azienda Agricola San Vittore ()
Azienda Tessile Parmense (GAS 1000)
Azienda agricola Camardo ()





# Task Meetings and Workshops

- May 2014, Ischia, Italy Topic: Thermal biomass gasification in small scale
  - Presentation of Syncraft
- November 2014, Karlsruhe Germany Topic: Liquid biofuels
  - Presentation by Manfred Wörgetter (Task 39)
  - Visit of bioliq (KIT) and DFB gasifier in Senden/Ulm



# Ausblick auf Triennium 2016-2018

- Projects and deliverables
  - Gasification of waste / plasma gasification
  - Gasification-based RES hybrids
  - Hydrogen generation and use
  - Super- and sub-critical gasification of wet biomass
  - Analytics: Tar sampling and online tar measurements
  - Gasification of bio-derived liquids
  - Substitution of fossil fuels with biomass in gasification systems
  - Task Newsletter

# Task 33

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Thanks for your attention  
and feedback