



bioenergy2020+

IEA FORSCHUNGS
KOOOPERATION

Austrian contributions to Task 32: Combustion and Cofiring

Highlights of Bioenergy Research

Christoph Schmidl

Graz, 20. January 2017



FFG

bm  

Biomass Combustion and Cofiring





Content

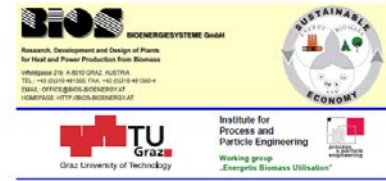
- Retrospect past triennium (2013-2015)
- World Energy Outlook Special Report: Energy and Air Quality
- Nanoparticle Conference 2016, Zürich
- Bioenergy Success Stories from Austria
- Task 32 Workshop CEBC 2017, Graz
- Current Efforts:
 - Best practise report on decentralized biomass fired CHP plants and status of biomass fired small- and micro scale CHP technologies
 - Real-life oriented test methods for stoves and boilers

Biomass Combustion and Cofiring





Retrospect past triennium (2013-2015)



- Advanced Characterisation Methods for Solid Biomass Fuels (Obernberger and Brunner, 2015)
- Techno-economic evaluation of selected decentralised CHP applications based on biomass combustion with steam turbine and ORC processes (Obernberger et al., 2015)
- Workshop on Highly Efficient and Clean Wood Log Stoves, Berlin, November 2015
 - 3 Presentations from AT

IEA Bioenergy Task 32 project
Advanced characterisation methods for solid biomass fuels

Project Coordinator: Prof. Univ.-Doz. Dipl.-Ing. Dr. techn. Ingwald Obernberger
 Senior Researcher: Dipl.-Ing. Dr. Thomas Brunner

Graz, June 2015

IEA Bioenergy Task 32 project
Techno-economic evaluation of selected decentralised CHP applications based on biomass combustion with steam turbine and ORC processes

Project Coordinator: Prof. Univ.-Doz. Dipl.-Ing. Dr. techn. Ingwald Obernberger
 Senior Researcher: Dipl.-Ing. Alfred Hammerschmid
 Junior Researcher: Dipl.-Ing. Michaela Forstinger

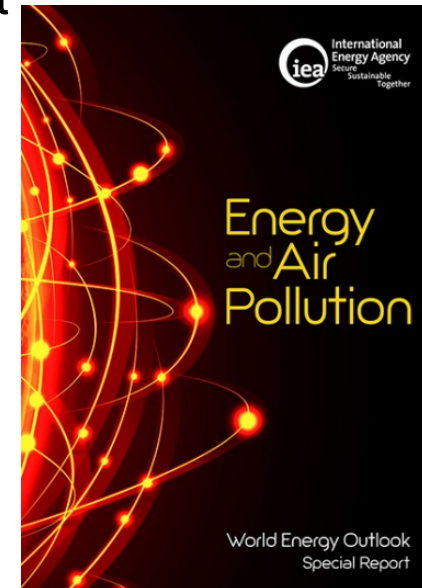
Graz, December 2015

Biomass Combustion and Cofiring



World Energy Outlook Special Report: Energy and Air Pollution

- Participation at Consultation Forum for World Energy Outlook Special Report on Energy and Air Pollution with 100 Experts on 10 March 2016 in Paris
- Thereby Invitation for Personal Peer Review of the Draft Report
- 36 Comments on the draft report were sent to IEA
 - Almost all comments were considered in the final version of the report
- Report was published → separate Presentation and Download of full report under:
www.worldenergyoutlook.org



Biomass Combustion and Cofiring





Nanoparticle Conference 2016, Zürich

- Task 32 Session on Emissions from Biomass Combustion
- Austrian Contribution: *Real-life Emission of Automatically Stoked Biomass Boilers (Christoph Schmidl)*
- 3 Publications about the Workshop in Switzerland
- Download of Presentations: http://nanoparticles.ch/2016_ETH-NPC-20.html



Biomasseerzeugung: Holzheizung nach dem Typen-Charakteristik generaler Biomasseheizwerke vom 1.6.2010 an der ETH Zürich
Gut verbrannt heisst sauber verbrannt

Nachhaltigkeiten leisten einen wesentlichen Beitrag zur Substitution fossiler Energieträger und tragen damit zu einer nachhaltigen Energieversorgung bei. Die Verbrennung von Holz ist CO₂-neutral, solange alle atmosphärischen, bodenständigen Kohlenstoff-Emissionen durch die Verbrennung von Holz mit geeigneter Technik und richtigen Verfahren

Energie, Umwelt und Technik / Feinstaub

Gut verbrannt heisst sauber verbrannt

Nachhaltigkeiten leisten einen wesentlichen Beitrag zur Substitution fossiler Energieträger und tragen damit zu einer nachhaltigen Energieversorgung bei. Die Verbrennung von Holz ist CO₂-neutral, solange alle atmosphärischen, bodenständigen Kohlenstoff-Emissionen durch die Verbrennung von Holz mit geeigneter Technik und richtigen Verfahren



BRANNT HEISST SAUBER VERBRANNT

Nachhaltigkeiten leisten einen wesentlichen Beitrag zur Substitution fossiler Energieträger und tragen damit zu einer nachhaltigen Energieversorgung bei. Die Verbrennung von Holz ist CO₂-neutral, solange alle atmosphärischen, bodenständigen Kohlenstoff-Emissionen durch die Verbrennung von Holz mit geeigneter Technik und richtigen Verfahren



Biomass Combustion and Cofiring





Selected Austrian contributions to ERA-NET Bioenergy

- **Clean and flexible use of new difficult biomass fuels in small medium scale combustion (BIOFLEX!, <http://bioflex-eranet.eu>)**
 - Austrian partners: BIOS BIOENERGIESYSTEME GmbH, KWB Kraft und Wärme aus Biomasse GmbH, POLYTECHNIK Luft- und Feuerungstechnik GmbH
- **Resource-efficient fuel additives for reducing ash related operational problems in waste wood combustion (REFAWOOD, <http://refawood.com/>)**
 - Austrian partners: Bioenergy 2020+ GmbH, Fritz Egger GmbH & Co. OG, LASCO Heutechnik GmbH(A)
- **Development of innovative small(micro)-scale biomass-based CHP technologies (Small-scale BM based CHP, <http://www.minibiochp.eu>)**
 - Austrian partners: BIOS Bioenergiesysteme GmbH (coordinator), RIKA Innovative Ofentechnik GmbH
- **Development of next generation and clean wood stoves (Wood Stoves 2020)**
 - Austrian partners: BIOS Bioenergiesysteme GmbH, RIKA Innovative Ofentechnik GmbH

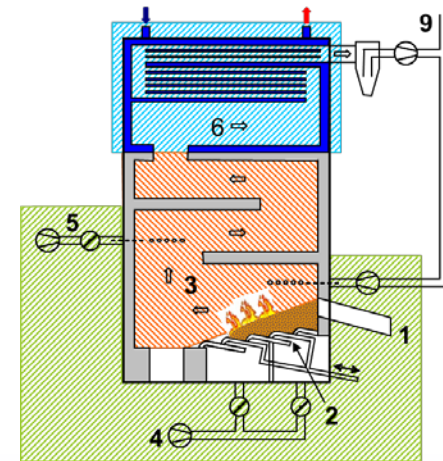
Biomass Combustion and Cofiring





3 Proposals for IEA Bioenergy Intertask Project “Bioenergy Success Stories” from Austria

- “With the power of the sun and the earth – The biomass heating plant Krumpendorf”
 - **Success of District Heating in Austria**
- “Development of a new low emission technology for medium-scale biomass grate combustion systems”
 - **Success of Extreme Air Staging Concept**
- “Model based control strategy for biomass steam boilers”
 - **Success of novel control concepts for emissions and efficiency**



Biomass Combustion and Cofiring



Task 32 Workshop CEBC 2017: Practical Test Methods for small-scale Furnaces

Workshop: IEA Bioenergy TASK 32

Room 12, 01:30 - 05:00 pm

Practical test methods for small-scale furnaces

Language English 

Thursday
19
January



„Technological progress requires suitable test methods to become visible. At the same time test methods are important tools to stimulate and guide technological progress. The workshop provides an overview of new evaluation methods for domestic biomass combustion systems. One focus of the event will be on the real-life oriented „beReal“ test methods for firewood and pellet stoves.“

Chairman: Christoph Schmid, Bioenergy 2020+ GmbH

- 04:00 pm **The EN-PME method**
Michael Sattler, Ökozentrum Langenbruck, Switzerland
- 04:20 pm **Load cycle test for biomass boilers**
Elisa Carlon, Bioenergy 2020+ GmbH, Austria
Markus Schwarz, Bioenergy 2020+ GmbH, Austria
- 04:40 pm **Emissions from small-scale pellet boilers**
Lukas Sulzbacher, Josephinum Research, Austria
- 05:00 pm **End**

01:30 pm Welcome & Introduction

- Jaap Koppejan, Procede Biomass BV, Netherlands
- Hans Hartmann, TFZ Straubing, Germany
- Christoph Schmid, Bioenergy 2020+ GmbH, Austria

Session 1: The „beReal“ project

- 01:40 pm **The firewood method**
Marius Wöhler, University of Applied Forest Sciences Rottenburg, Germany
- 02:00 pm **The pellet method**
Hans Hartmann, TFZ Straubing, Germany
- 02:20 pm **Scientific highlights**
Gabriel Reichert, Bioenergy 2020+ GmbH, Austria
- 02:40 pm **Labelling concept**
Christoph Schmid, Bioenergy 2020+ GmbH, Austria

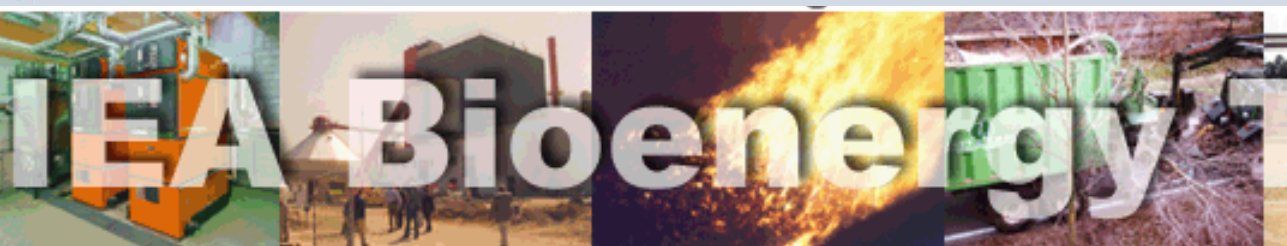
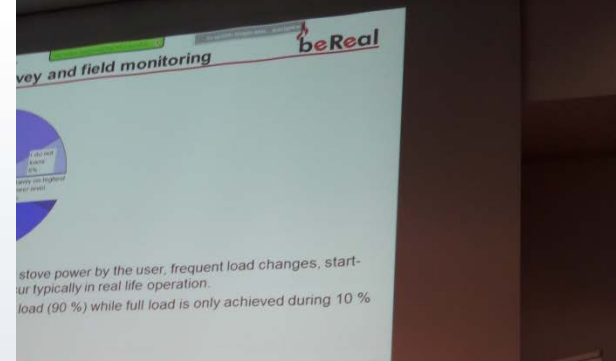
3:00 pm Coffee break

Session 2: Current method developments

- 03:40 pm **Current developments of US testing protocols**
Lisa Rector, NESCAUM, United States of America



© BIL Merseburg





Current Efforts:

- **Best practise report on decentralized biomass fired CHP plants and status of biomass fired micro scale CHP technologies**
 - Best-practice examples for biomass based CHP plants (<1Mwe)
 - New installations and optimisation of existing plants
 - State of technology / research of micro scale CHP technologies (<50kWe)
- **Report on novel testing methods for residential biomass combustion systems**
 - Part 1: Direct heating systems (stoves)
 - Part 2: Hydronic heating systems (boilers)

Biomass Combustion and Cofiring





bioenergy2020+

IEA FORSCHUNGS
KOOPERATION

Thank you for your kind attention

Christoph Schmidl

christoph.schmidl@bioenergy2020.eu

+ 43 (0) 7416 52238-24



FFG

bm   

Biomass Combustion and Cofiring

