



TECHNISCHE
UNIVERSITÄT
WIEN
Vienna University of Technology

IEA FORSCHUNGS
KOOPERATION

Country Report Austria

IEA Bioenergy Task33 Meeting

13. May 2014

Ischia Island, Italy

Dr. Reinhard Rauch, Dr. Jitka Hrbek

Institute of Chemical Engineering

Working Group Zero Emission Technology

Prof. Hermann Hofbauer

Participation in IEA Bioenergy Task 33 is financed by



Content

- Research organisations
- Companies
- Implementations

Austrian Research Organisations

Graz University of Technology – Institute of Thermal Engineering

- Heat pipe reformer (former Technical University Munich, Prof. Jürgen Karl changed to University of Erlangen, Germany, work is still going on in Graz)
- Small scale CHP with heat pipe reformer
- Distributed SNG production
- Health, Safety and environmental issues for gasification systems

Joanneum Research Graz - Department of Energy Research

- Life Cycle Assessment
- Microchannel FT technology

MCI – University of Applied Sciences for Environmental-, Process- and Biotechnology, Innsbruck

- Multi-staged fixed bed gasification systems

Bioenergy 2020+ (location Wieselburg)

- 1st and 2nd generation biofuels
- Representative of Austria in IEA Bioenergy Task 39 liquid biofuels
- Secretary of IEA Advanced Motor Fuels

Austrian Research Organisations

Bioenergy 2020+ (location Güssing) together with TU Vienna

- ~~Pressurised gasification~~
- ~~Usage of product gas from biomass CHP Güssing in a SOFC~~
- Production of FT liquids
- Production of Hydrogen (as polygeneration in Oberwart and full conversion in Güssing)
- Mixed alcohols
- BioSNG
- Waste gasification in FICFB gasifier

Vienna University of Technology, Institute of Chemical Engineering

- R&D in dual fluidised bed steam gasification (G-volution)
- Production of Fischer Tropsch fuels
- Production of hydrogen for refineries
- Scientific Partner in Bioenergy 2020+
- Representative of Austria in IEA Bioenergy Task 33 Thermal Gasification of Biomass

Austrian companies

- **Andritz including AE&E** (Andritz Energy & Environment)
 - Activities with FICFB unclear, has still patent, but no real activities
 - Involved in Skive (over Carbona)
 - www.andritz.com

- **AGT Agency for Green Technology**
 - Low Temperature Conversion (LTC) is a thermo catalytic decomposition process operating without air supply
 - <http://www.agt-international.eu/>

- **Austrian Enviro Technologies**
 - <http://www.austrian-enviro.com>

- **Cleanstgas** (Clean staged gasification)
 - joint venture between EBNER Industrieofenbau and KWB Biomasseheizungen
 - affordable, decentralized, efficient power plants to supply the base load of heat and power
 - www.cleanstgas.com

- **GE Jenbacher**
 - <http://www.jenbacher.com>

- **Güssing Renewable Energy (GREG)**
 - <http://www.gussingrenewable.com/>

Austrian companies

- **Ortner Anlagenbau**
 - builds FICFB gasifiers for CHP applications (Oberwart, Villach), **stopped their activities in gasification**
 - <http://www.ortner-anlagen.at>

- **Repotec**
 - Engineering of FICFB gasifiers for CHP, BioSNG and other synthesis (Güssing, Ulm, Göteborg)
 - <http://www.repotec.at>

- **SynCraft Engineering GmbH**
 - <http://www.syncraft.at>

- **Urbas**
 - fixed bed gasification
 - <http://www.urbas.at>

- **Xylogas**
 - fixed bed gasification
 - <http://www.xylogas.com>

- **ZT Lettner**
 - <http://www.zt-lettner.at>

Commercial FICFB gasifiers

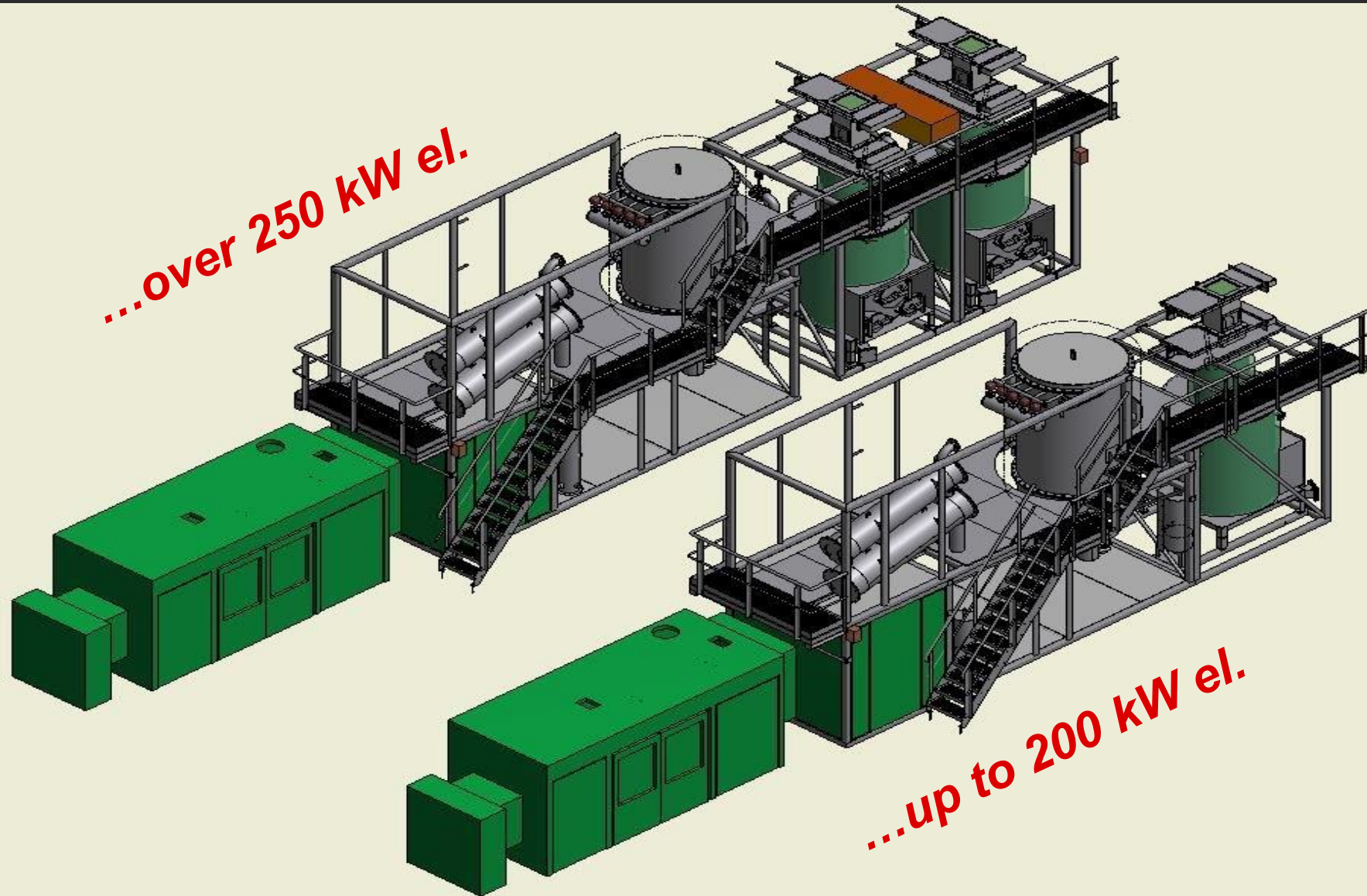
Location	Usage / Product	Fuel / Product MW, MW	Start up	Supplier	Status
Güssing, AT	Gas engine	8.0 _{fuel} / 2.0 _{el}	2002	AE&E, Repotec	Operational
Oberwart, AT	Gas engine / ORC	8.5 _{fuel} / 2.8 _{el}	2008	Ortner Anlagenbau	Operational
Villach, AT	Gas engine	15 _{fuel} / 3.7 _{el}	2010	Ortner Anlagenbau	On hold/ insolvent
Senden/Ulm DE	Gas engine / ORC	14 _{fuel} / 5 _{el}	2011	Repotec	Operational
Burgeis, IT	Gas engine	2 _{fuel} / 0.5 _{el}	2012	Repotec	Commissioning
Göteborg, Sweden	BioSNG	32 _{fuel} / 20 _{BioSNG}	2013	Metso/Repotec	Operational
California	R&D	1-2 MW _{fuel}	2013	Greg	Construction

Commercial CHP gasifiers



Commercial CHP gasifiers

Location	Product kW	Start up
Ruden, AT	150el./300th. 70el./150th.	Development since 2001
Eberndorf, AT	2x120el. + 70el./650th.	2006-2008
Neumarkt, AT	2x120el./580th.	2008
Sulzbach-Laufen, DE	130el./280th.	2009
Neukirchen, AT	2x140el./600th.	2011
Konstanz, DE	140el./300th.	End of 2011
Mallnitz, AT	250el./550th.	11/2013
Balingen, DE	150el./280th.	12/2013
Berlin, DE	2x150el./560th.	04/2014
Cogen Srl., Terni, IT	199 el./350th.	07/2014
Calvello, IT	199el./350th.	09/2014



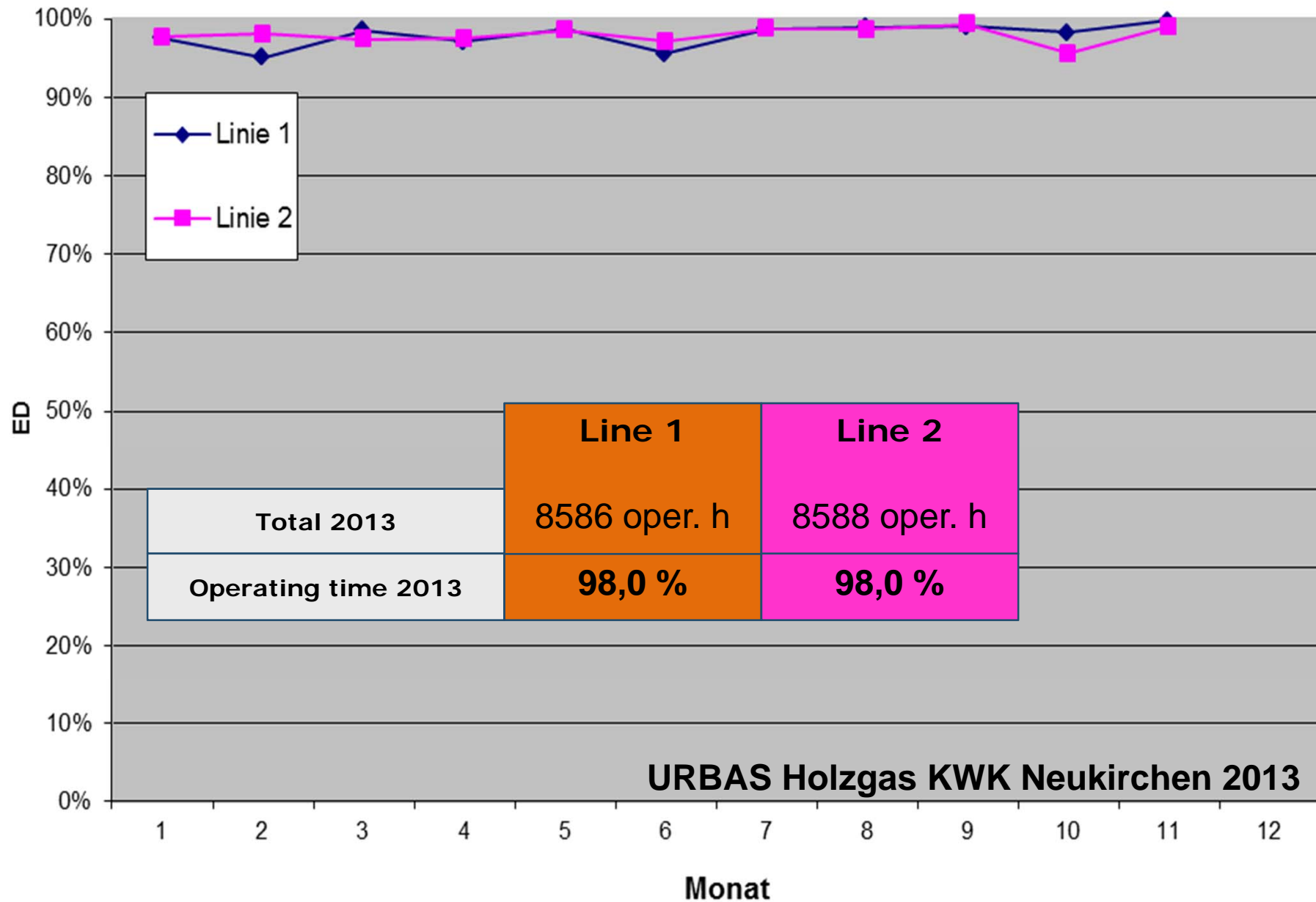
Holzstrom GmbH – Neukirchen (A)

2x140 kW_{el.}

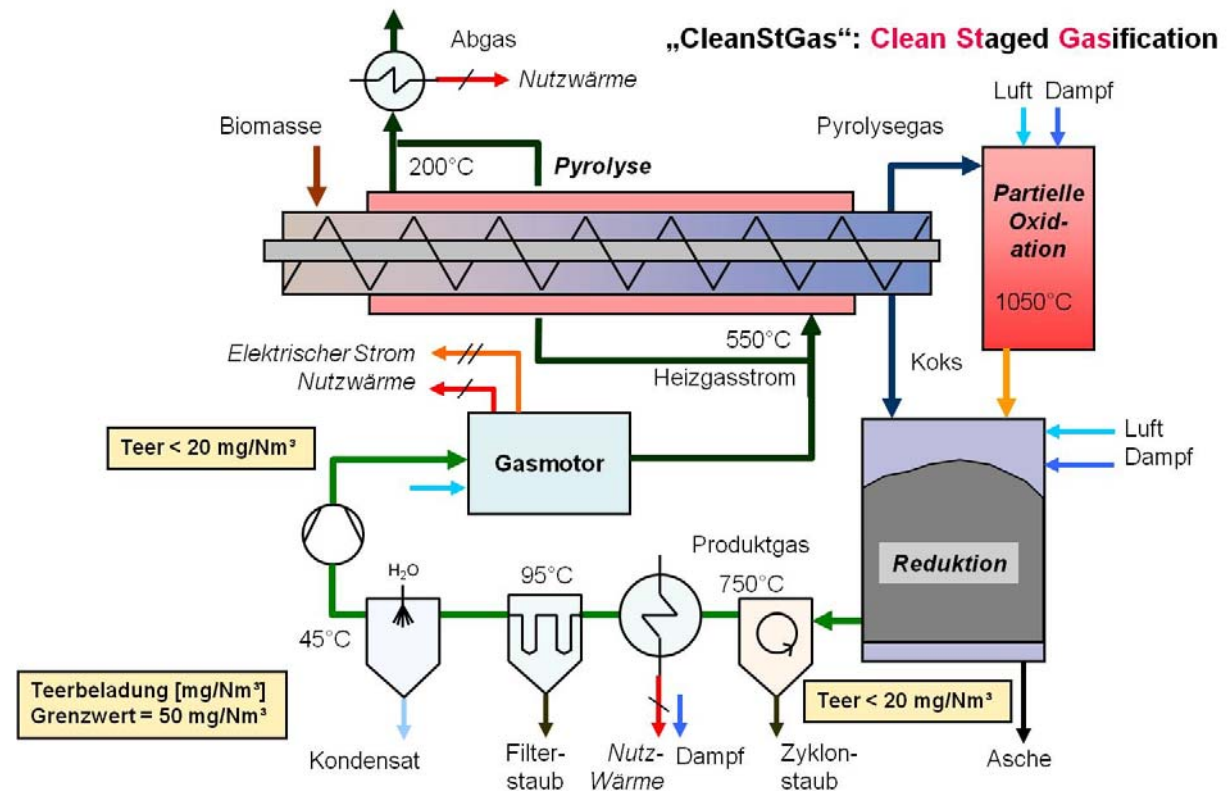
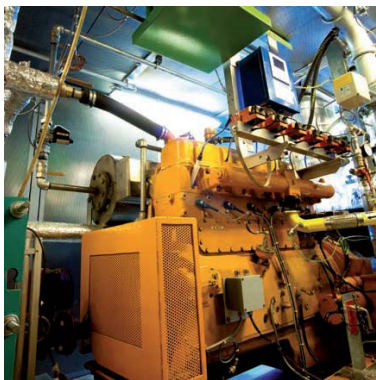
2x300 kW_{th.}

*District
heating*

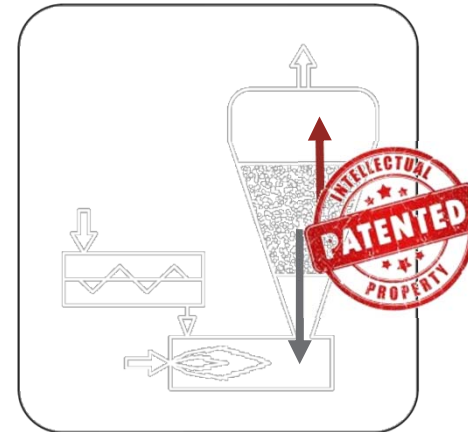




Biomass gasification plant St. Margarethen/Raab



About the company



- Founded in 2007
- Development, Planning and Realization of biomass gasification plants called CraftWERK
- Spin-off MCI / tyrolean university of applied sciences
- **MORE information in the workshop**