

BIOREFINERY 2021, A THREE STAGE FEDERAL PROJECT



Bioraffinerie der Zukunft

Stage I (2009 - 12) :

New Approaches towards the Biorefinery of the Future

◆ Goals

- Focus on innovative TECHNOLOGIES
 - high pressure, supercritical fluids
 - extremophile enzymes and yeast,
 - pyrolysis ,
 - hot water hydrolysis
 - gasification
- Based on the whole lignocellulose plant
- Fully integrated and sustainable



◆ Szenario

Conversion of an existing bioethanol production plant in Zeitz/Saxony into a 2nd generation biorefinery

◆ Modules

- I. Process optimization
- II. Integration of Lignocellulosic feedstock
- III. High value products from lignocellulose
- IV. Integrated concepts



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of Education
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Stage I (2009-12) Consortium with 16 Partners

Industry and SMEs

- CropEnergies AG
- Südzucker AG
- Linde Engineering Dresden GmbH
- Clariant Produkte (D) GmbH
- Evonik Industries AG
- Agraferm Technologies AG
- TuTech Innovation GmbH

Academia

- Hamburg University of Technology (TUHH)
with 6 Institutes
- German BiomassResearchCentre (DBFZ)
- Johann Heinrich von Thünen-Institute
- Goethe University Frankfurt

Stage II (2013-15) Bioraffinerie der Zukunft

High Value Products from Lignocellulose

Goals

Focus on APPLICATIONS

- wheat straw to xylose and lignin
- use of the studied processes from
Stage I, Module II

Szenario

New crude and pyrolyzed bulk material
for the production of adhesives

Partners

- Hamburg University of Technology (TUHH)
with 3 Institutes
- tesa SE
- Johann Heinrich von Thünen-Institute
- TuTech Innovation GmbH
- Mothes Hochdrucktechnik (D, SME)



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Stage III (2016-17) Extension of Usable Biomass Resources

Goals

Focus on APPLICATIONS

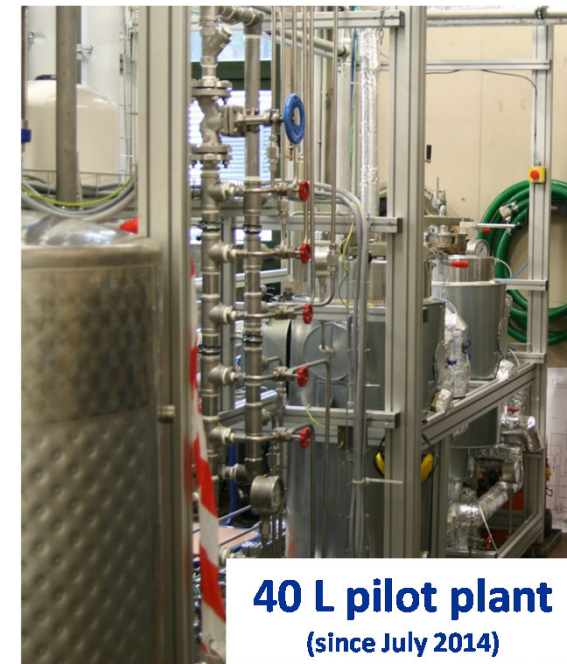
- Other biomasses for valorization
 - ❖ Biogas digestate, sugarcane bagasse, softwoods
- Modification of lignin for wider spectrum of applications
 - ❖ Pharmaceutical, cosmetical, petro-chemical, etc.

Szenario

Choice of biomass substrate and tailoring of value stream properties to target specific product needs

Partners

- Hamburg University of Technology (TUHH) with 3 Institutes
- tesa SE
- Verbio AG
- Johann Heinrich von Thünen-Institute
- TuTech Innovation GmbH
- Mothes Hochdrucktechnik (D, SME)



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