



Combining industrial scale biosynfuel production with economic biomass logistics

Funded by:



Bundesministerium für
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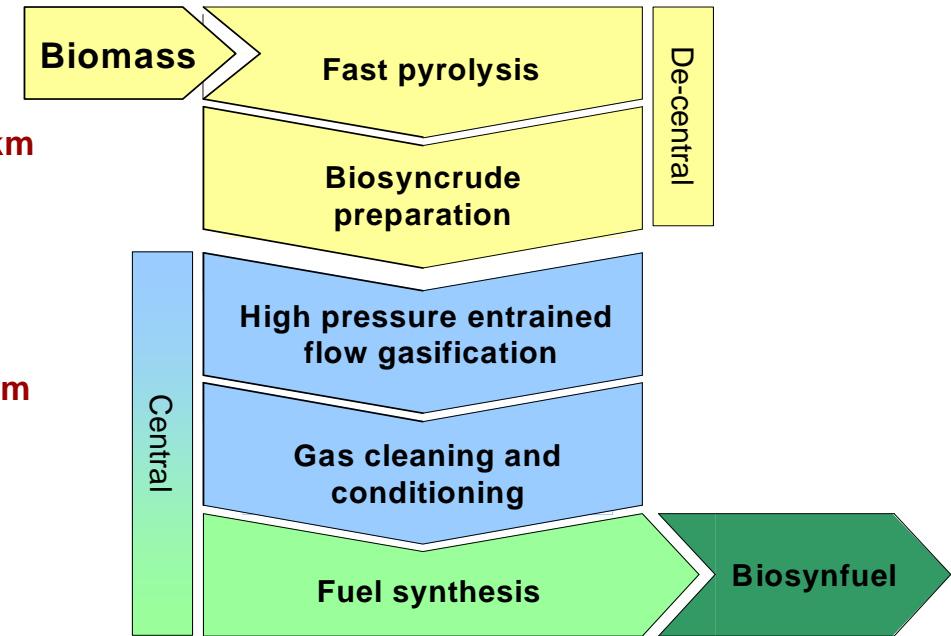
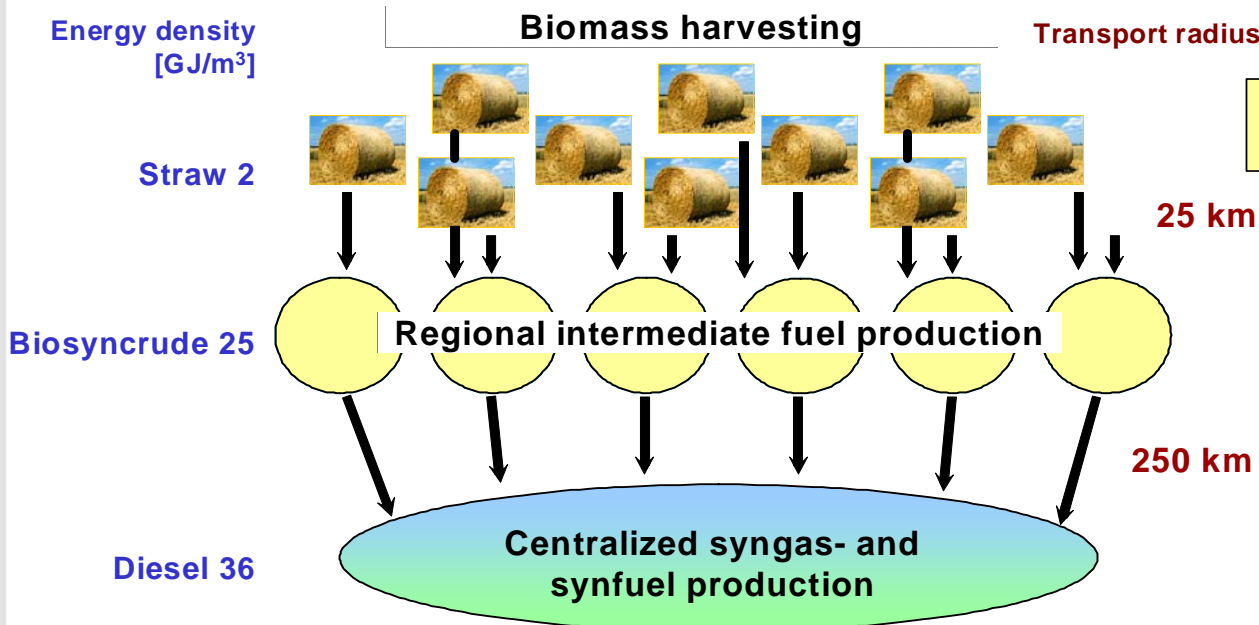


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Sustainable biofuels „From Pilot to demonstration: case studies“

THE CONCEPT:

THE TECHNOLOGY:



MAIN FEATURES:

- Large biosynfuel production capacities possible
- Agriculture and forestry participate in the value chain
- Use of any kind of dry lignocellulosic material
- Technologies already demonstrated/commercialized utilizing fossil fuels
(e.g. LR Coker, MPG, Rectisol, Megamethanol, GTL.F1.....)

CRITICAL and CORE TECHNOLOGIES:

The principle technical feasibility of the critical process steps has been proven:

- Fast Pyrolysis in Process Development Units (15 kg/h)
- Entrained Flow Gasification in a 3-5 MW pilot gasifier (26 bar)
- With biosyncrudes prepared from a variety of biomass feeds

CORE TECHNOLOGIES and CHALLENGES:

- Fast pyrolysis to make it a
 - simple (cost and energy efficient)
 - robust (broad feedstock range)
- Pre-treatment: MOST CRITICAL!
- multi-feed (changing feedstocks)

- High Pressure Entrained Flow Gasification up to 80 bars based on MPG technology
 - with hot gas cleaning
 - high pressure atomization of slurries containing solids
 - increasing energy efficiency, heat integration and recovery
 - slag recovery and recycling
- Synfuels via Fischer-Tropsch (GTL.F1...) are commercially available. Bioliq aims at the production of Biosynfuels via the methanol/DME route.
- R&D is to be performed for all processes!

The bioliq® – PILOT PLANT:

- Fast pyrolysis with twin screw mixing reactor (500 kg/h, 2 MW)
- Subsequent mixing of pyrolysis products by colloidal mixing
- High Pressure Entrained Flow Gasification up to 80 bar (2-5 MW)
- High pressure high temperature gas cleaning and conditioning
- Methanol/DME synthesis followed by Methanol /DME to Synfuel synthesis (2 MW, ~100 L/h biosynfuel)



Actual project cost plan

Approved

Applied for

Pilot plant	Stage 1	Stage 2	Stage 3	Stage 4
Process	Fast pyrolysis	High pressure entrained flow gasification	Gas cleaning + Synthesis I	Synthesis II
Product	bioliqSynCrude®	Synthesis gas	Methanol DME	Synthetic Fuel
Realization	2008	2011	2012	2013
Cost (Inv.)	8,2 Mio.€	24,8 Mio.€		

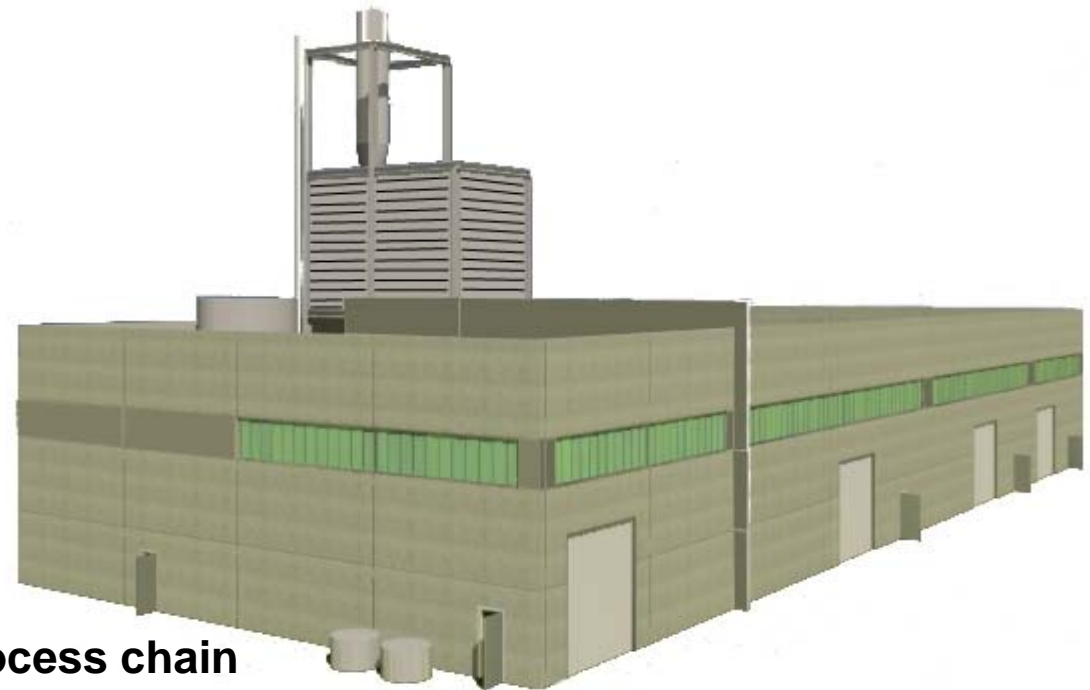
Road map for Pyrolysis Demo:

- Process demonstration first of all required for Fast Pyrolysis (10 t/h, 50 MW)
- Alternative Biosyncrude utilization options
- Planning and basic engineering demonstration unit
- Contracting and logistics for 50.000 t/a biomass and biosyncrude
- Detailed engineering and demo plant construction
- Commissioning

PARTNERS:

- Engineering and construction
- Feedstock supplier
- Plant investors / operator
- Product off-take / delivery

Lurgi



Conclusion:

- Demonstration of the complete bioliq-process chain
- Provide single process steps as modular units for other process chains as contribution for advanced decentralized / centralized solutions for large B-XTL industrial plants