

PowerCrops

Electrical and heating energy from grass-like crops
by cost effective feedstock production, thermochemical
conversion and gas-engine process

Crops to electricity

contents of short presentation

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Deliverables (selection)

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PowerCrops

Electrical and heating energy from grass-like crops
by cost effective feedstock production, thermochemical
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Coordinator: Technische Universitaet Dresden

Type of activity: Medium to longer-term research **STREP**,
SUSTDEV-1.2.5

Preparatory activities:

March 2004: Submission of EOI (No.38, "GrassGas")

July 2004: Meeting of the consortium at TU Dresden.

FP6 work programme target

Decrease the cost of electricity
production with biomass

to 0.05 €/kWh

by 2015-2020

work programme chapter 6.1.3.2.3.

Research topic:

Energy from crops

PowerCrops characteristics:

- low cost feedstock production system aimed to electricity generation by gas-engine
- based on thermochemical conversion (especially gasification)
- Crops specification: central to northern Europe, grass-like plants, 2 or 3 species, e.g.
 - Miscanthus (with sub-species)
 - reed canary grass (with sub-species)

Issues to be addressed

- Finding minimum-cost pathway through **feedstock** production
 - crops cultivation (fertilisation, irrigation, harvesting)
 - crops logistics (handling, storing, transportation)
 - pre-treatment (mechanical, chemical, physical)

starting (amongst others) from results of Agro-Industrial Research (AIR)

- Finding minimum-cost pathway through crops **gasification** and gas-engine **power** generation

Conflict of aims:

- **Achievement of long-time permanent operation of engines inspite of tars, chlorine corrosion and ash melting**
- **reduction of capital cost by reduction of equipment cost**
- reduction of operating cost by decrease of maintenance level and increase of overall energetic efficiency

*starting from concentrated experiences in **wood gasification** and first European experiences with straw combustion and gasification*

Different process chains

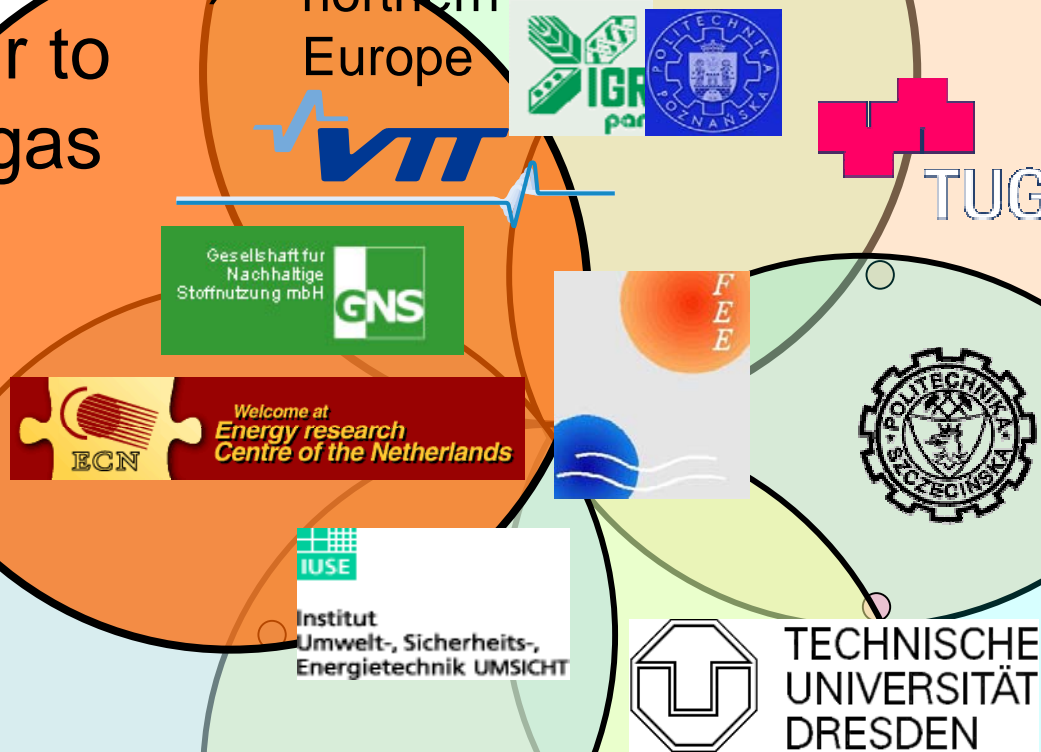
- Comparison of whole process chains belonging to
 - 1 MW th (order of magnitude)
 - 10 MW th (order of magnitude)
- Process chain calculator

PowerCrops

Thermal conversion to gas (gasification) and further to electricity (gas engine) below 10 MWth

Crops cultivation in central to northern Europe

Feedstock characterisation



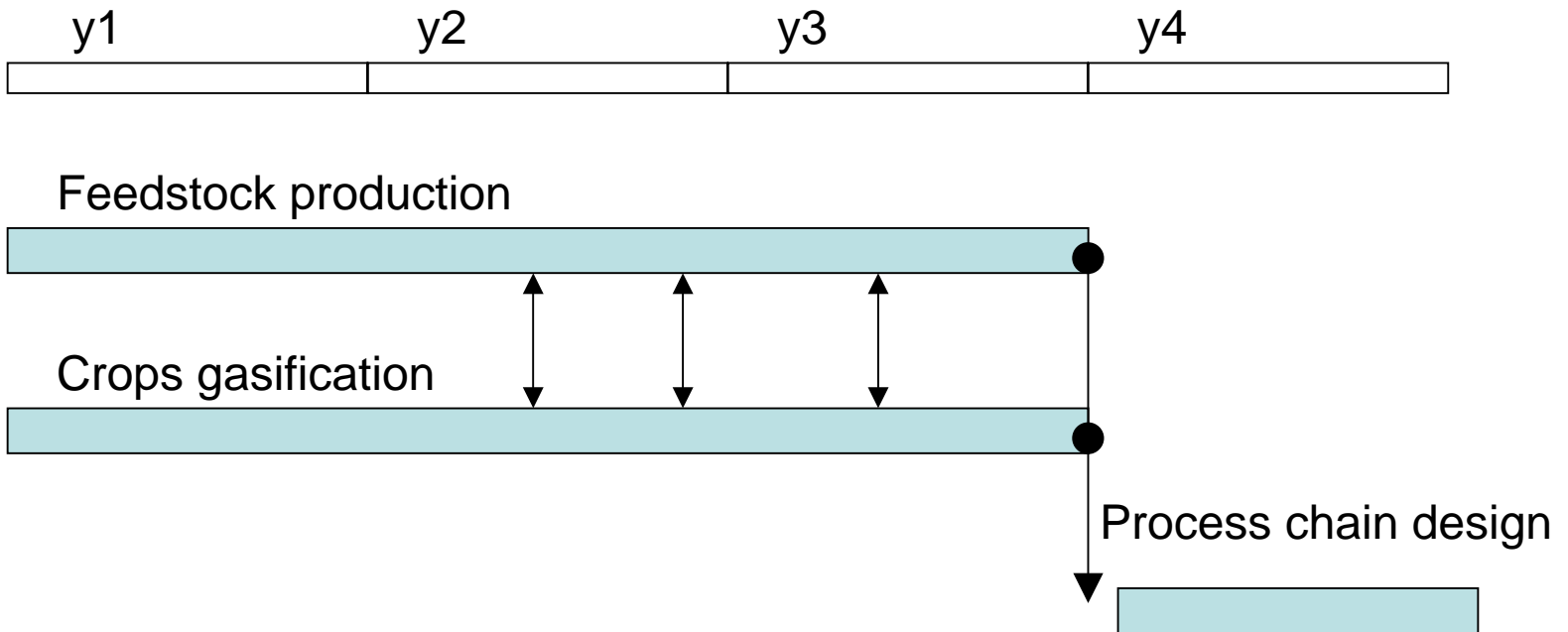
Feedstock pre-treatment

logistics

Economical and ecological assesment ⁷

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basic schedule



PowerCrops

deliverables (selection)

- At least one crops gasification technology proposed for further development
- Crops yield database including influences of cultivation and logistics on fuel characteristics
- Conversion path database
- Process chain calculator

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