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# Biomass Gasification in Switzerland

Ruedi Buehler, U+E

- Policy
- Programs
- BMG Industry + BMG projects
- Research: PSI



# Programs

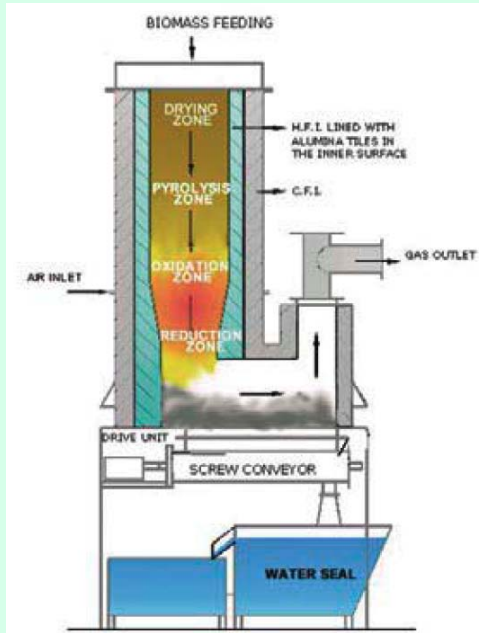
- Cost-covering remuneration for feed in the electricity grid, CRF
  - Objective: + 5'400 GWh/a from renewables (10% of total) by 2030
  - Biomass: Large increase of power production with combined heat and power
    - ✓ Steam cycle
    - ✓ ORC
    - ✓ Gasification



# Woodpower, Wila

## Main features:

- 450 kW<sub>el</sub> + waste heat utilisation.
- dasagren: IISc-Netpro gasifier
- Biomass: 15% moisture content
- Producer gas cleaning system with cyclone separation, quenching, scrubbing and filtering.
- 1 Jenbacher engine
- Commissioning January 2007





# Woodpower, Wila

## Experience:

- No news since spring meeting
  - ✓ Some wrong design details
  - ✓ Fire, twice
  - ✓ Changes, improvement in plant design during 2007, 2008 and 2009
    - Changes May to July 2009: New treatment of charcoal: post-combustion on the site



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# New company: XyloPower

founded by

- former subcontractors of dasagren
- former partners / shareholders of dasagren
- dasagren = manufacturer of Wila



# New company: XyloPower

- Advanced design of dasagren - Wila gasifier
- Project: Gasifier for brickworks to replace heavy oil
- 2010: Test
  - ✓ 1 : 1 scale gasifier
  - ✓ demolition wood
  - ✓ side stream: small brickwork unit with producer gas burner



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## Slide from XyloPower

# XyloPower

Activities worldwide in cooperation with  
challenging partners

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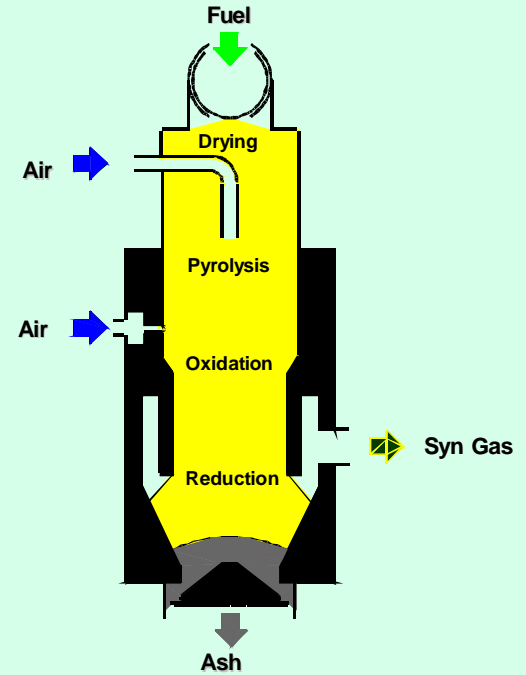
# BMG industrial project (3)



## PYCON

P Y R O F O R C E  
C O N Z E P T E A G

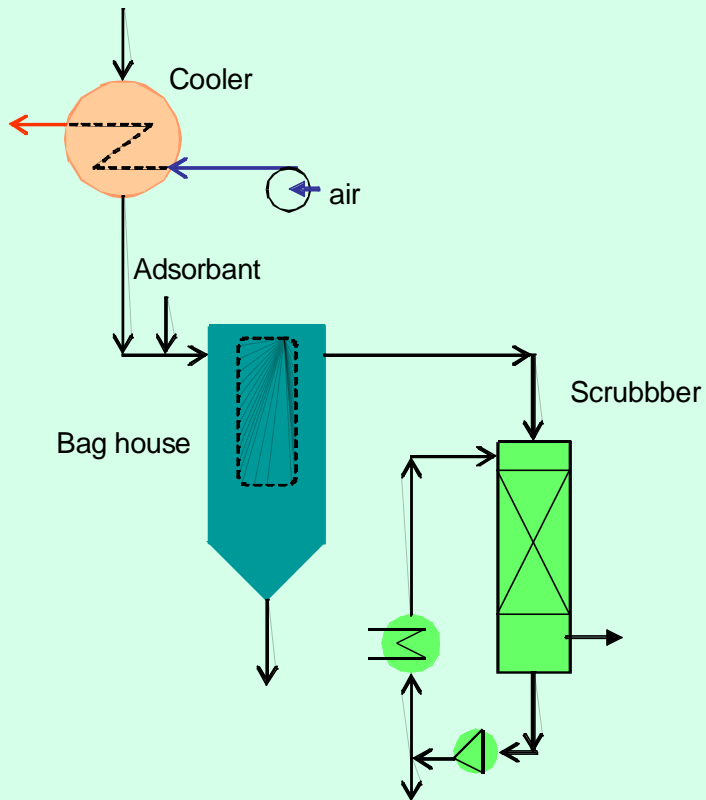
W. Gemperle : initiator, founder of Pyroforce passed away last week



Pyroforce 2-zone gasifier



# Pyroforce System



- 2-zone downdraft gasifier
- Gas cooler (to 150°C)
- Bag house filter
- precoating (adsorbant for contaminants + tar reducing)
- Washing column (water or solvent)
- Jenbacher engine.



# Commercial Plant Guessing, AT

- 300 kW<sub>el</sub>, 2 gasifiers + coolers
- 1 Bag house filter
- 1 Jenbacher engine
- commissioning phase 2007
- actual information:
  - new control system
  - problems with slag, reason not known



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# Commercial Plant Nidwalden, CH

PYCON

P Y R O F O R C E  
C O N Z E P T E A G

- 1'200 kW<sub>el</sub>, 8 gasifiers + coolers
- 2 Bag house filters
- 2 Jenbacher engines
- commissioning 2007



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## Holzstrom Nidwalden: actual situation

PYCON

P Y R O F O R C E  
C O N Z E P T E A G

- Problems:
  - ✓ availability not sufficient
    - ✓ quality of demolition wood
  - ✓ extension of upper part of reactor successful
  - ✓ gas cooler are replaced
  - ✓ control system will be replaced (based on experience at Guessing)