IEA Task 33 Meeting

Piteå, Sweden

2011-10-18-20

Workshop Summary

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Biomass Potential

- Global biomass technical potential
  - The same scale as current world energy uses, 500 EJ
  - 500 EJ ~16 000 000 MW
  - Biomass realistic potential 100-300 EJ
  - 1/3 of world energy demand 2050

- GHG
  - Biomass sourcing has larger GHG impact than conversion
  - Indirect land-use key for GHG impact assessment
  - Numerous assumptions and schemes for certification etc. gives a fierce debate of how much GHG savings there are.

Biomass Potential

- Current energy demand in Sweden 400 TWh
- Growth 100 miljons m^3 ~ 100 Mton *pa.* 200TWh
  - logging 61 Mton.
  - half remains in the forest.
  - Paper and pulp, wood products
  - 40 TWh of by-products as energy
  - potential for replacing 45% of transport fuels

Biomass Potential

- ”More for more”
  - bioenergy demand increases
  - price increases
  - supply increase ⇨ 30% ⇨ 50% ⇨ 100 %
    - new species plant development
    - forest management
    - new assortments
  - increase overall conversion efficiency
  - sustainability limitations
  - logistics
    - production area distinct from consumption area
    - new intermediate products
  - new conversion technologies

BLG geograhy

USA

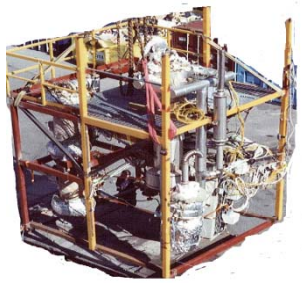
- Electricity generation
- Focus on meeting mill steam demand
- Gasification entails technical developments
- Priority on solid biomass gasifier
- Low-temp. gasifier ”in operation”

Finland

- Active program in the 80-90´s
- Electricity generation
- Leading manufacturers of recovery boilers
- Recovery boilers state-of-the-art, BMG development
- For BTL, similar synergies are achievable with solid biomass

Development path

1-10 kg/hr



LDU

Laboratory development

100-1 000 kg/hr

Pilot plant

Proof of concept

Main process units

1-10 tonnes/hr

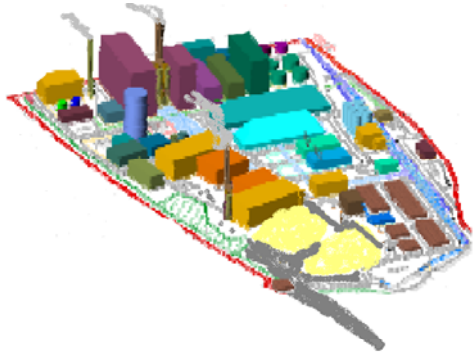
Demonstration Plant

Scale-up intermediate

Non-fully integrated

Fully Integrated

10-100 tonnes/hr

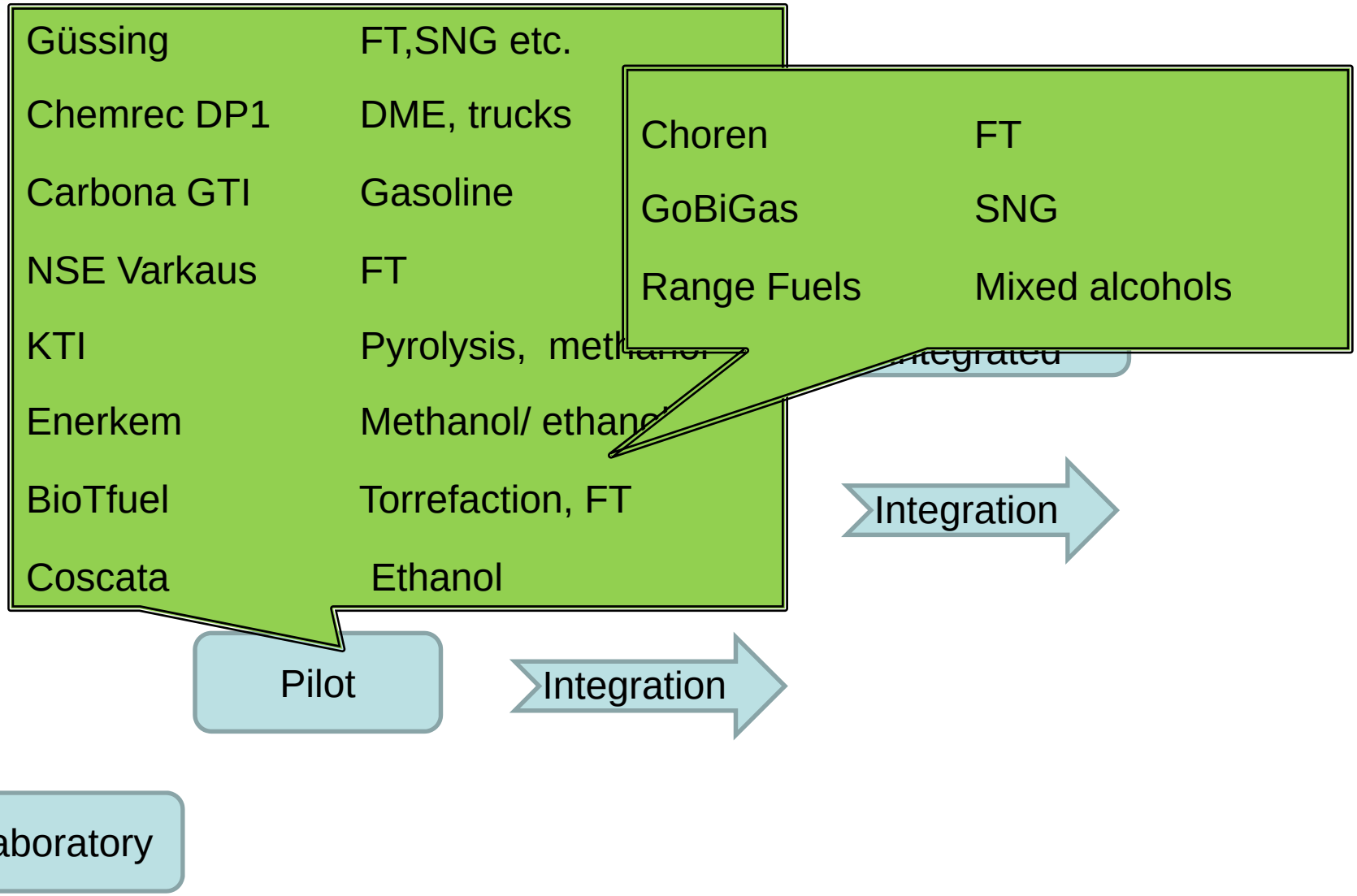


Industrial Prototype

Fully integrated

At industrial scale

More Integration Early in Development



Gasification future

- Scale-up, demonstration, deployment
  - pilots in operation, including integration
  - first demonstrations on the way
  - optimization
  - learning curve
  - synergies with P&P mills
- R&D
  - support demos's and deployment
  - capacity building
  - new applications
  - process optimisation, value engineering, modelling
  - understanding the gasifier
    - reactivity
    - ash, trace components
    - CFD and other forms of modelling

Gasification Status

www.ieatask33.org

Bus leaves tomorrow 0830