

Experiences of combustion and gasification of wood residues

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Highbio seminar in Piteå
2010-05-18

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Agenda

- Introduction – Powder combustion and gasification
- Material and Methods – Sampling experimental setup
- Results
- Conclusions

Introduction

Gasification, an alternative for refining bio fuels

Heat and electricity

Motor fuels



Fuel analysis

Different assortments from wood residues were analyzed for moisture, chemical composition, ash and heating value



Experimental setup

Performed at 100 kW, combustion 4- 5 % O₂ gasification lambda 0.4.

Impaktor 13 stedges for hot and cold gases, (0,033- 10) um

Reference temperature for measuring start

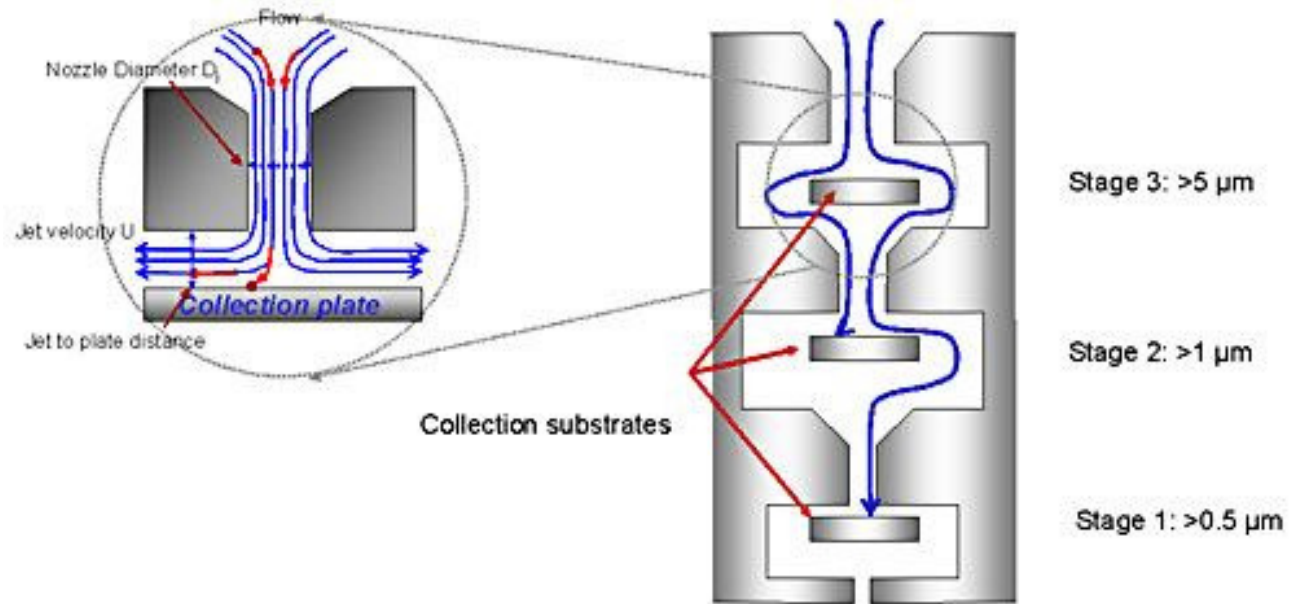
FTIR gas analyze instrument MKS

Bag sample for gasification, Gas chromatograph

Dust collection, deposit probs, bottom ash and fly ash



Aerosol particle characterisation



From;
http://www.dekati.com/cms/dlpi/operating_principle

Results

Results from experiments were present at the seminar, Piteå

Temperatures during the experiments were 900-1200 °C

The gasanalyse during gasification were analyzed with a gas chromatograph, H₂, CO, CO₂, N₂ and H₂O were the domination gases. Heating values were around 3,3 MJ/kg

Dust were collected and using low pressure impaktor the particles were measured and sized by aerodynamic diameter

Results to be published (journal, conference)

Conclusions

Combustion (stumps)

Common technology for producing heat and power
Stabile combustion, low emissions, (feeding)
Simpler plants

Gasification (stumps)

More advanced technologies, feeding
Easy to achieve a stabile gasification (feeding)
Safety risk, (poison, explosions)
Higher value, possible to make motor fuels