Contents

ABSTRACT 3

PREFA CE 4

OVERVIEWS 7

Overview of EU Thermie gasification projects 9
  K. Maniatis
An overview of the U.S. Department of Energy’s Biomass Power Program 35
  R. Costello
PROGAS - Gasification and Pyrolysis R&D Programme 1997 - 1999 57
  E. Kurkela
Shell's views on biomass to power 63
  I. Hazlewood

BIOMASS IGCC PROJECTS 71

Experiences from the Värnamo IGCC Demonstration Plant 73
  K. Siidh & M. Neergaard
The Battelle/FERCO Biomass Gasification Process 87
  M. Farris, M. A. Paisley, J. Irving & R. P. Overend
Update on Project ARBRE: wood gasification plant utilising short rotation coppice and forestry residues 103
  E. Rensfelt & D. Everard
The use of biomass-derived fuel in a gas turbine for the Energy Farm Project 119
  R. Naccarati & H. de Lange
Minnesota Agri-Power Project (MAP) 141
  K. Salo & A. Horwath
CFB gasification of low-grade fuels 151
  J. Albrecht & K. P. Schelhaas
Biomass conversion: prospects and context 163
  N. A. Holt & M. J. van der Burgt

ATMOSPHERIC GASIFICATION FOR PC BOILER APPLICATIONS 179

Biomass CFB gasifier connected to a 350 MWth steam boiler fired with coal and natural gas - THERMIE demonstration project in Lahti, Finland 181
  J. Nieminen
Operation experiences in the CFB Gasification Project BioCoComb for biomass with co-combustion of the gas in a PF boiler at Zeltweg Power Plant, Austria 195
  H. Anderl & A. Mory
CFB gasification of biomass residues for co-combustion in large utility boilers - studies on ash control and gas cleaning 213
  E. Kurkela, A. Moilanen & M. Nieminen
SMALL-SCALE CHP AND HEAT PRODUCTION, CHALLENGES

FOR GASIFICATION AND PYROLYSIS

Engine use of producer gas, experiences and requirements
G. Herdin & M. Wagner
Status and prospects of small-scale power production based on Stirling engines - Danish experiences
H. Carlsen
Overview of Canadian thermochemical biomass conversion activities
E. Hogan
Perspectives for pyrolysis oil production and market in Scandinavia
K. Sipilä, A. Oasmaa, Y. Solantausta, V. Arpiainen & T. Nyrönen
Pyrolysis oil as clean city fuel
E.-K. Lindman & L.-E. Hägerstedt
Pyrolysis oil as a heating fuel
S. Gust

OTHER EVALUATIONS AND APPLICATIONS

Combustion and gasification of straw. Activities in Denmark
H. Mosbech & P. Ottosen
Feedstock versatility for Texaco Gasification
P. F. Curran
Gibros PEC process: a powerful solution for sustainable waste management
J. H. O. Hazewinkel & H. A. Zanting

EXTENDED POSTER PRESENTATIONS

Conversion of biomass and biomass-coal mixtures: gasification, hot gas cleaning and gas turbine combustion
J. Andries, W. de Jong, P. D. J. Hoppesteyn & Ö. Ünal
Thermal ash behaviour of different biomass samples under various pretreatment techniques
S. Arvelakis, B. Georgali & E. G. Koukios
Gas cleaning for biomass gasification
P. Hasler, R. Buehler & Th. Nussbaumer
Waste water treatment for biomass gasifiers
P. Hasler, Ph. Morf & Th. Nussbaumer
WWW expert system on producer gas cleaning
E. J. Schouten, G. Lammers & A. A. C. M. Beenackers
Dimensionless cost for an economic assessment of heat and power plants
Th. Nussbaumer & P. Neuenschwander
Fuel oil quality of pyrolysis liquids
A. Oasmaa, K. Sipilä & S. Gust

APPENDIX A: Participants