Biomass gasification cogeneration – A review of state of the art technology and near future perspectives

Biomass is a renewable resource from which a broad variety of commodities can be produced. However, the resource is scarce and must be used with care to avoid depleting future stock possibilities. Flexibility and efficiency in production are key characteristics for biomass conversion technologies in future energy systems. Thermal gasification of biomass is proved throughout this article to be both highly flexible and efficient if used optimally. Cogeneration processes with production of heat-and-power, heat-power-and-fuel or heat-power-and-fertilizer are described and compared. The following gasification platforms are included in the assessment: The Harboøre up draft gasifier with gas engine, the Güssing FICFB gasifier with gas engine or PDU, the LT-CFB gasifier with steam cycle and nutrient recycling and finally the TwoStage down draft gasifier with gas engine, micro gas turbine (MGT), SOFC, SOFC/MGT or catalytic fuel synthesis.

General information
Publication status: Published
Organisations: CHEC Research Centre, Department of Chemical and Biochemical Engineering, Thermal Energy, Department of Mechanical Engineering
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Pages: 1407-1417
Publication date: 2013
Peer-reviewed: Yes

Publication information
Journal: Applied Thermal Engineering
Volume: 50
Issue number: 2
ISSN (Print): 1359-4311
Ratings:
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 3.31 SJR 1.466 SNIP 2.457
Web of Science (2013): Impact factor 2.624
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
Original language: English
Keywords: Fertilizer, Bio-MeOH, Bio-SNG, Co-generation, CHP, Gasification of biomass, Harboøre, SOFC, Bio-fuels
Electronic versions:
Ahrenfeldt_2013_Biomass_gasification_cogeneration_pre_press_version.pdf
DOIs:
Source: orbit
Source-ID: 317827
Research output: Contribution to journal › Journal article – Annual report year: 2012 › Research › peer-review