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.

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