Characterization of biomass producer gas as fuel for stationary gas engines in combined heat and power production - DTU Orbit (03/01/2019)

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The aim of this project has been the characterization of biomass producer gas as a fuel for stationary gas engines in heat and power production. More than 3200 hours of gas engine operation, with producer gas as fuel, has been conducted at the biomass gasification combined heat and power (CHP) demonstration and research plant named “Viking” at the Technical University of Denmark. The plant and engine have been operated continuously and unmanned. Producer gas properties and contaminations have been investigated. No detectable tar content was observed in the gas that goes to the engine; this was confirmed by three different measuring methods. Likewise, no particles were detected in the gas. Considerable amounts of NH3 were measured in the produced gas. An analysis of engine operation at varying load has been carried out. Standard emissions, load and efficiency have been measured at varying operating conditions ranging from 50% to 90% load. Biomass producer gas is an excellent lean burn engine fuel: Operation of a natural aspirated engine has been achieved for 1.2

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