

Economic utilisation of Biogas as a Renewable Fuel for Fuel Cell

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In recent years focus has been changed towards using of biomass derived fuels in the fuel cells such as usage of syngas derived from gasification, coal mine gas derived from abandoned coal mines, biogas derived from biomethanation, methanol produced from renewable biomass feed stock and etc., in combination with the process of reforming. The problem lies in the poisoning effect of some of these components of syngas and biogas and other gases that are stated above onto the catalyst and other components of fuel cell. Identification of these components in the gas to the required level is a difficult task and once identified, using an appropriate method in removing these components, is also of the same order of difficulty.

Economic utilisation of Biogas as a Renewable Fuel for Fuel Cell application intends to answer some of these problems and gives an idea to the usage of biomass derived fuels in the fuel cells for power production. In this study, worked out a gas clean-up mechanism and established a layout plan, where almost all the unwanted components are removed from biogas. Thrust was also given onto the production of hydrogen from biogas by the process of reforming for low temperature fuel cell applications and stated about various techniques that exists currently in the market. This study also illustrates that how fuel cells could attain the position of decentralised power plants and also as Combined Heat and Power (CHP) systems with their typical characteristics such as high efficiency and fuel flexibility. The conclusion of the study states that the cost of fuel cell technology itself is very high at present when compared to the conventional CHP systems. Also biogas must be cleaned to a greater extent for its successful usage in power generation through fuel cell application.