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**Non Equilibrium Gliding Arc Plasma Reforming of Pyrolysis Gas Fuel** FELA ODEYEMI, ALEXANDER RABINOVICH, ALEXANDER FRIDMAN, Drexel Plasma Institute, Drexel University — This paper emphasizes plasma assisted conversion of Pyrolysis gas (Pyrogas) fuel. Pyrogas is a product of Biomass, Municipal Wastes or Coal gasification process that contains H2, CO as well as unreacted light hydrocarbons (especially CH4, C2H2 and C2H4) and heavy hydrocarbons such as tar. These undesired hydrocarbons diminish Pyrogas fuel value thereby making significant removal of the unwanted hydrocarbons necessary. Various conditions and reforming reactions were considered for the conversion of Pyrogas into Synthesis gas – a combination of H2 and CO. Non thermal plasma is an effective homogenous process for fuel reforming without using catalysts. The effectiveness of the Gliding arc plasma is demonstrated in the fuel reforming reaction processes with the aid of a specially designed low current device called GlidArc Plasmatron. Gliding arc discharge is a non equilibrium plasma discharge with multiple advantages over other reforming techniques which will be further discussed in the paper. Thermodynamic simulation results were compared with experimental results with emphasis on yield, efficiency, enthalpy at different H2O/C ratios and reaction temperatures.

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