Plasma Gasification as a Sustainable Way for Energy Recovery from Scrap Tyre

Authors : Gloria James, S. K. Nema, T. S. Anantha Singh, P. Vadivel Murugan

Abstract : The usage of tyre has increased enormously in day to day life. The used tyre and rubber products pose major threat to the environment. Conventional thermal techniques such as low temperature pyrolysis and incineration produce high molecular organic compounds (condensed and collected as aromatic oil) and carbon soot particles. Plasma gasification technique can dispose tyre waste and generate combustible gases and avoid the formation of high molecular aromatic compounds. These gases generated in plasma gasification process can be used to generate electricity or as fuel wherever required. Although many experiments have been done on plasma pyrolysis of tyres, very little work has been done on plasma gasification of tyres. In this work plasma gasification of waste tyres have been conducted in a fixed bed reactor having graphite electrodes and direct current (DC) arc plasma system. The output of this work has been compared with the previous work done on plasma pyrolysis of tyres by different authors. The aim of this work is to compare different process based on gas generation, efficiency of the process and explore the most effective option for energy recovery from waste tyres.

Keywords : plasma, gasification, syngas, tyre waste
Conference Title : ICEST 2019 : International Conference on Environmental Science and Technology
Conference Location : Venice, Italy
Conference Dates : April 11-12, 2019