Catalytic pyrolysis of Multilayer Plastic Waste (MLP) to Value Added Products – A Circular Economy Approach

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Name of the Funding Agency
Ministry of Petroleum and Natural Gas

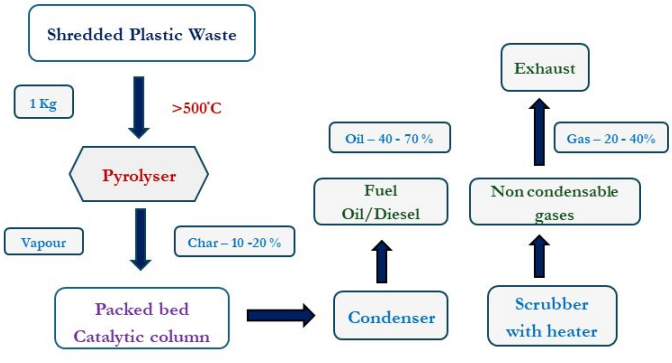
Name of the Scheme
Alternate and Non conventional Energy

Sanctioned Amount (in Rupees)
Rs. 32,68,000

Duration of the Project (years)
2

Graphical Abstract/ Lavout

Multilayer plastic wastes



Project Description

The primary objective of this proposal is to assess the viability of transforming multi-layer plastic (MLP) waste from packaging materials into a more valuable resource. This approach would not only address the issue of waste management but also create alternative revenue streams. The feasibility of the catalytic pyrolysis process to convert the flexible packing waste to fuel oil was explored, with the aim of enhancing the value of pyrolysis oil through feedstock optimization, process modification and post-processing of oil. The pyrolysis experiments will be conducted with MLP-based plastic waste and zeolite catalyst in various ratios.The optimum feed input composition, and process conditions determined through bench scale trials will be used in pilot plant of 500 kg/day capacity to produce bulk quantities of pyrolysis oil for various boiler and engine applications. The results indicate that the pyrolysis oil obtained from the processing of MLPs can be used as a low grade furnace oil, despite having high calorific value and low sulphur content. The oil properties seem to be varying less for different MLP which shows its potential end use boiler applications.

Products/ Instruments/ Results/ Outreach Activities