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Produced Gases Analysis of Plastic Waste for Energy Conversion using Arduino

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Abstract: *Plastic production has been rapidly growing across the world and, at the end of their use, many of the plastic products become waste disposed of in landfills or dispersed, causing serious environmental and health issues. From a sustainability point of view, the conversion of plastic waste to fuels or, better yet, to individual monomers, leads to a much greener waste management compared to landfill disposal. In this project, we systematically review the potential of pyrolysis as an effective thermochemical conversion method for the valorisation of plastic waste. Different pyrolysis types, along with the influence of operating conditions, e.g., catalyst types, temperature, type of gases produced, vapor residence time, and plastic waste types, quality, and applications of the cracking plastic products are discussed. The quality of pyrolysis plastic oil, before and after upgrading, is compared to conventional diesel fuel. Plastic oil has a heating value approximately equivalent to that of diesel fuel, i.e., 45 MJ/kg, no sulphur, a very low water and ash content, and an almost neutral pH, making it a promising alternative to conventional petroleum-based fuels. This oil, as-is or after minor modifications, can be readily used in conventional diesel engines.*

Keywords: Plastic, Disposal, Conversion, Efficient, Fuel

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