

ABSTRACT

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PYROLYSIS MACHINE DESIGN IN PROCESSING PLASTIC WASTE INTO ALTERNATIVE FUEL

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(xv + 61 + Attachment)

Processing plastic waste into alternative fuels through the pyrolysis process has become a major concern in an effort to reduce the negative impact of plastic waste on the environment. This research was conducted with the first stages of potential identification, data collection, equipment design and calculation, design validation, testing and feasibility testing of tools. In the process of testing and testing the feasibility of the tool, namely by inserting plastic waste into the pyrolysis process reactor, then heating it to a temperature of 180 ° C and the evaporation process occurs, the vapor obtained is then condensed into fuel oil. The design of the spiral groove condenser that has been made with a length of 3 m, a diameter of 30 cm and a height of 34 cm using 304 stainless steel and a plate thickness of 1.2 mm, the cooling water circulation process uses a 304 ¼ inch stainless steel pipe spiral, with the temperature of the steam entering the condenser 180 ° C and the water temperature in the condenser 40 ° C, from 1000 grams of plastic waste can be produced as much as 100 ml of fuel oil. The recommendations and findings from this research are expected to be a guide for further development in pyrolysis technology to reduce the environmental impact of plastic waste and produce an efficient and more sustainable alternative energy source.

Bibliography (2018-2021)

Advisor : Drs. Rudi Irawan, Ph.D., M.Sc.