

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM
KARNATAKA -590014**



**PROJECT WORK REPORT ON
“INVESTIGATION ON CONVERSION OF MUNICIPAL PLASTIC WASTES INTO LIQUID FUEL
COMPOUNDS, EVALUATION OF ENGINE PERFORMANCE AND EMISSION
CHARACTERISTICS” (No: 35S_B032)**

Submitted in the partial fulfillment of the requirement for the award of

**MASTER OF TECHNOLOGY
IN
THERMAL POWER ENGINEERING**

Submitted by

RAVIKUMAR. R
(4BD10MTP10)

UNDER THE GUIDANCE OF

Dr. S. KUMARAPPA

Professor & PG Co-ordinator
Dept. of Mechanical Engineering
B.I.E.T, Davangere.

Dr. B. M. KULKARNI

Professor
Dept. of Chemical Engineering
B.I.E.T, Davangere



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**DEPARTMENT OF MECHANICAL ENGINEERING
BAPUJI INSTITUTE OF ENGINEERING & TECHNOLOGY
DAVANGERE-577004
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ABSTRACT

The present rate of economic growth is unsustainable without saving of fossil energy like crude oil, natural gas or coal. Thus mankind has to rely on the alternate/renewable energy sources like biomass, hydropower, geothermal energy, wind energy, solar energy, nuclear energy, etc.

On the other hand, suitable waste management strategy is another important aspect of sustainable development. The growth of welfare levels in modern society during the past decades has brought about a huge increase in the production of all kinds of commodities, which indirectly generate waste. Plastics have been one of the materials with the fastest growth because of their wide range of applications due to versatility and relatively low cost, easy processability, light-weight, durability etc.

There is a vast plastics waste stream that reaches each year to the final recipients creating a serious environmental problem. Again, because disposal of post-Consumer plastics is increasingly being constrained by legislation and escalating costs, there is considerable demand for alternatives to disposal or land filling. Advanced research in the field of green chemistry could yield biodegradable/green polymers but is too limited at this point of time to substitute the non-biodegradable plastics in different applications. Plastics have become a major threat due to their non-biodegradability and high visibility in the waste stream. Littering also results in secondary problems such as clogging of drains and animal health problems. The waste management methods such as landfill disposal, incineration, and recycling have failed to provide opportunities for the complete reuse of plastic waste.

The Polymer Energy system uses a process called pyrolysis to efficiently convert plastics in to liquid fuel compounds. The system provides an integrated plastic waste processing system which offers an alternative to landfill disposal, incineration, and recycling-while also being a viable, economical, and environmentally responsible waste management solution.

In this experimental analysis an attempt has been to investigate the conversion of municipal plastic wastes into liquid fuel compounds by using pyrolysis process, the performance studies on CI engine and to evaluate emission profiles HC, CO, NO_x and smoke for selected blends of Diesel-Plastic liquid fuels.