

CAL UNIVERSITY
-590014



A Project Report
on

**“Performance and Emission Analysis of Diesel Engine by Injecting
Diethyl Ether with and without EGR Using DPF”**

Submitted in partial fulfillment of the requirements

for the award of degree of

Bachelor of Engineering
In
Mechanical Engineering

Submitted by

Malleshappa Badiger	1KS11ME409
Devappa H.S	1KS10ME034
Manjesh .A	1KS10ME056
Harish .N	1KS10ME039

Under the Guidance of

Mr. Nagaprasad K.S

Assistant professor

Department of Mechanical Engineering

KSIT, Bangalore



Department of Mechanical Engineering

K.S.INSTITUTE OF TECHNOLOGY

No. 14, Raghuvanahalli, Kanakapura Main Road, Bangalore - 560062

2013 – 2014

ABSTRACT

The automobile industry has faced numerous challenges. one of the most compelling tasks has been the reduction of emissions and increase in the efficiency of engines. Since, the market share of diesel engine is increasing predominantly in many countries; the problem with diesel engines is to be identified. Diesel engine is widely used globally and can be found in almost every conceivable application. Diesel engines are energy efficient, but their NO_x, particulate emissions and the high exhaust gas temperature present major obstacles to engine development.

The main aim of this project work is to reduce the exhaust gas temperature and to compare the performance characteristics of diesel engine by injecting **“Di-Ethyl Ether (C₄H₁₀O)”** at different injection pressure using optimum Exhaust Gas Recirculation. The performance study indicates that the injection of Di-Ethyl Ether (C₄H₁₀O) using optimum Exhaust Gas Recirculation in a compression ignition engine requires no major modifications in the existing engine, except for the fuel.

There is no magnitude of de-rating of engine performance. The brake thermal efficiency of the engine has considerably increased after injecting the blend Di-Ethyl Ether and pure diesel at different ratios in to the engine for various openings of the exhaust gas recirculation valve. Also, the exhaust gas temperature has decreased by recirculating the exhaust gas.

diesel engine manufacturers have been working extensively to develop after treatment technologies that are capable of significantly reducing the emission levels of each of the primary pollutants which are considered to be a risk to the environment and public well being. The majority of these after treatment technologies have been designed with the most consideration being given to compounds such as particulate matter (PM), oxides of nitrogen (NO_x), carbon monoxide (CO), and hydrocarbons (HC). One primary after treatment technology commonly used to reduce the PM emission levels of diesel exhaust is the diesel particulate filter (DPF)