VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELGAUM-590014

A PROJECT REPORT ON

A NOVEL STUDY ON THE USE OF STRAIGHT VEGETABLE OILS IN DIESEL ENGINES

Submitted in partial fulfilment of the requirements for the award of

Bachelor of Engineering
IN
MECHANICAL ENGINEERING

Submitted by

Jayanth Mohan Kumar	1MV06ME039
Nikhil Kumar Vagge	1MV08ME062
Niranjan RaviKumar	1MV08ME064
Nitin A	1MV08ME065

Under the Guidance of

Prof. M C Math

DEPARTMENT OF MECHANICAL ENGINEERING

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY,

BANGALORE

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ABSTRACT

Straight vegetable oils (SVOs) are currently the best alternative energy options for tropical and sub-tropical countries such as India. However, the high viscosity of SVOs often causes blockages if it is used in the engine at room temperature.

It has been proven in repeated studies that the viscosity of SVOs can be brought to very nearly that of diesel by heating them to a sufficient temperature (around 160°C). This has lead to the development of inline-heaters. All currently available inline-heaters however, only heat the oil up to about 60°C which is ineffectual in bringing down the viscosity sufficiently. Inline-heaters that attempt to heat the oil to beyond this temperature either consume enormous amounts of energy that make them inefficient or use exhaust heat, which involves complicated heat exchangers, to prevent the oil temperature from exceeding its cracking point (around 200°C for most oils).

This project aims to design and develop an insulated fuel tank for use in stationary and low-speed diesel engines such that the temperature and therefore the viscosity of the externally heated SVO fuel may be maintained during the period of operation.