

## **PERFORMANCE ANALYSIS OF SOYABEAN AND SUNFLOWER OILS AS C. I. ENGINE FUEL BY REDUCING VISCISITY THROUGH HEAT EXCHANGER**

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### **Abstract**

The use of vegetable oils as a source of energy has been known for a long time since the very first creation of the diesel engine. Major hurdle in use of straight vegetable oils as a replacement fuel for C.I. engine is it's high viscosity. The kinematic viscosity of vegetable oils is however several times higher than that of diesel. Since straight vegetable oils are not suitable as fuels for diesel engines, they have to be modified to bring their combustion related properties closer to mineral diesel. This fuel modification is mainly aimed at reducing the viscosity to get rid of flow/ atomization related problems. The main objective of this project work is to have some additional modification in supplementary to the existing set up of diesel engine so as to make use of direct vegetable oil by reducing it's viscosity without affecting the engine performance. For this, a heat exchanger is developed which will utilize the heat of exhaust gases to increase the temperature of vegetable oil before passing it to engine. Tests were carried out to measure performance parameters such as brake power, brake specific fuel consumption, brake thermal efficiency for standard fuel that is diesel and vegetable oils namely soya bean and sunflower oils. Also emission characteristics particularly smoke opacity is measured during trials on C.I. engine using diesel fuel, soya bean and sunflower oils respectively.

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