

Department: IKGPTU Hoshiarpur Campus

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Patents Published/Awarded

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1.	E-copies of the letters of award of patents



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(19) INDIA

(21) Application No 201911041108 A

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(54) Title of the invention : INFLUENCE OF BIOGAS MASS FLOW RATE AND RICE BRAN BASED BIODIESEL WITH DIESEL ON A DUAL FUEL ENGINE

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(57) Abstract :

Current energy requirement majorly depends on fossil fuels but, ambiguous matter like abating petroleum products and expanding air pollution has enforced the experts to strive for another fuel which can be used as an alternative or reduce the applications of fossil fuels. Considering the issues, the main objective of the present study is to find the feasibility by using blends of rice bran oil biodiesel and diesel are used as pilot fuel by blending 10% and 20% biodiesel in fossil diesel and biogas, introduced as gaseous fuel by varying its mass flow rate in a dual fuel engine mode. An experimentation study was carried out and to find the performance and emission parameters of the engine relative to pure diesel. The results were very much similar to majority of researchers who used biodiesel and gaseous fuels in a dual fuel engine. BSFC of the engine was noticed to have increased while BTE was on the lower side in dual fuel mode in comparison with regular diesel. In relation with conventional diesel, it was noticed that combined effect of rice bran methyl esters and varying mass flow rate of biogas showed a decrement in NOx and smoke emissions, whereas HC and CO exhalations were on higher side when biogas and biodiesel were utilized collectively in dual fuel engine. Hence, it was concluded that combination of blends of biodiesel and diesel, and introduction of biogas in the engine can be a promising combination which can be used as a substitute fuel for addressing future energy needs. Keywords: Biogas, Rice bran biodiesel, Dual fuel engine.

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(54) Title of the invention : A SYSTEM FOR GENERATION AND OPTIMIZATION OF BIOENERGY IN DIESEL GENERATOR FOR RURAL ELECTRIFICATION USING ARTIFICIAL NEURAL NETWORK (ANN)

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(57) Abstract :

The present invention relates to Generation and optimization of Bio-energy in Diesel generator for rural electrification using ANN. Electrical power is credibly the most multipurpose form of energy and is a key driver of economic growth and prosperity for any developing nation. Consumption of electricity is an important index of advancement of the country & standard of living. Per capita global energy consumption and demand are rapidly increasing in the last few decades due to industrialization and increase in population of the world. The critical phase of population explosion is being faced by many of the countries in the world including India and the increasing population demands more energy inputs.

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PATENT APPLICATION PUBLICATION
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4) Title of the invention : A SYSTEM OF PRODUCTION OF BIODIESEL FROM RICE BRAN OIL BY
TRANSESTERIFICATION AND PROCESS OPTIMIZATION

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(57) Abstract :
 The present invention is conducted to reveal the effect of compression ratio on the performance and emission characteristics of a raw biogas run dual fuel diesel engine using rice bran biodiesel as pilot fuel. The experiments were performed in a single cylinder, DI, water cooled VCR diesel engine. The CR was varied from 16 to 18 at standard FIT of 230 BTDC. At full load, the thermal efficiency under dual fuel mode is found to 19.33%, 20.7%, 22.4% respectively and for compression ratio of 16, 17 and 18, respectively as compared to 24.76% for diesel mode. As far as emission characteristics, At full load, there is a reduction of CO and HC emissions by 33% and 27% for the change of CR from 16 to 18. On an average, there is an increase of CO₂ and NO_x emissions by 11.43% and 52.85% when CR is changed from 16 to 18. Based on the results of this investigation, it can be concluded that the high compression ratio exhibits better results in terms of performance-emissions trade-off relationship for a biogas-rice bran methyl ester operated dual fuel diesel engine. Based on performance and emission characteristics, compression ratio of 18 can be found to be optimum on the in terms of better results without sacrificing the thermal efficiency-emissions trade-off in diesel engine under biogas-rice bran methyl ester dual fuel mode diesel engine

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