



**RETROFITTING OF AN
ELECTRIC POWER TRAIN IN AN
INTERNAL COMBUSTION
VEHICLE CHASSIS**



A PROJECT REPORT

Submitted by

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in partial fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

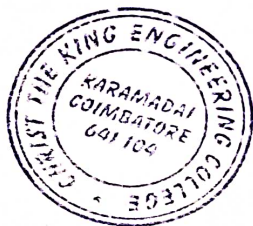
In

MECHANICAL ENGINEERING

CHRIST THE KING ENGINEERING COLLEGE, KARAMADAI

ANNA UNIVERSITY: CHENNAI 600 025

MAY 2023



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BONAFIDE CERTIFICATE

rtified that report "RETROFITTING OF AN ELECTRIC POWERTRAIN IN AN
TERNAL COMBUSTION VEHICLE CHASSIS" is the bonafide work of M ABIRAMAN
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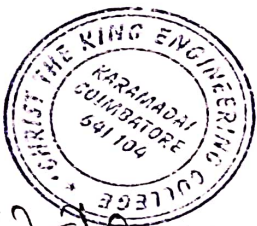
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EXTERNAL EXAMINER

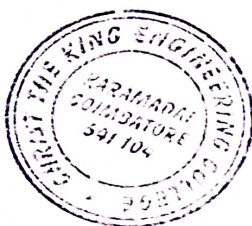
ABSTRACT

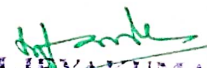
Electric vehicles are becoming increasingly important as not only do they reduce noise and pollution, but also they can be used to reduce the dependence of transport on oil – providing that the power is generated from fuels other than oil. Electric vehicles can also be used to reduce carbon emissions. Production of zero release of carbon dioxide requires that the energy for electric vehicles is produced from non-fossil-fuel sources such as nuclear and alternative energy.

The worst scenario is that we have only 40 years supply of oil left at current usage rates. In practice, of course, increasing scarcity will result in huge price rises and eventually the use of oil and other fossil fuels will not be economically viable, hence oil will be conserved as usage will decrease. Oil can also be produced from other fossil fuels such as coal. Traditionally oil produced in this way was considered to be around 10% more expensive, but with current oil prices production from coal is starting to become economic. Coal is more abundant than oil and there is in excess of 100 years of coal left, though it is still a finite resource.

Increasing worries about global warming continue. Global warming is blamed on the release of carbon dioxide when fossil fuels are burnt and it is believed to give rise to a myriad of problems including climate change and rising sea levels which could destroy many of the world's coastal cities.

Electric trains are well developed and are widely used whereas road transport has only just reached the point where vehicle manufacturers are starting to produce electric cars in quantity. Whereas small electric vehicles used in niche markets, such as electric bicycles, invalid carriages and golf buggies, are widely used, electric road vehicles are not. Electric road vehicles have not enjoyed the enormous success of internal combustion (IC) engine vehicles, which normally have much longer ranges and are very easy to refuel.




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4.1.10 Drive cycle source:

A driving cycle is a series of data points representing the speed of a vehicle versus time. Driving cycles are produced by different countries and organizations to assess the performance of vehicles in various ways, as for instance fuel consumption, electric vehicle autonomy and polluting emissions. Drive cycle that is used for validation is certified by EPA.

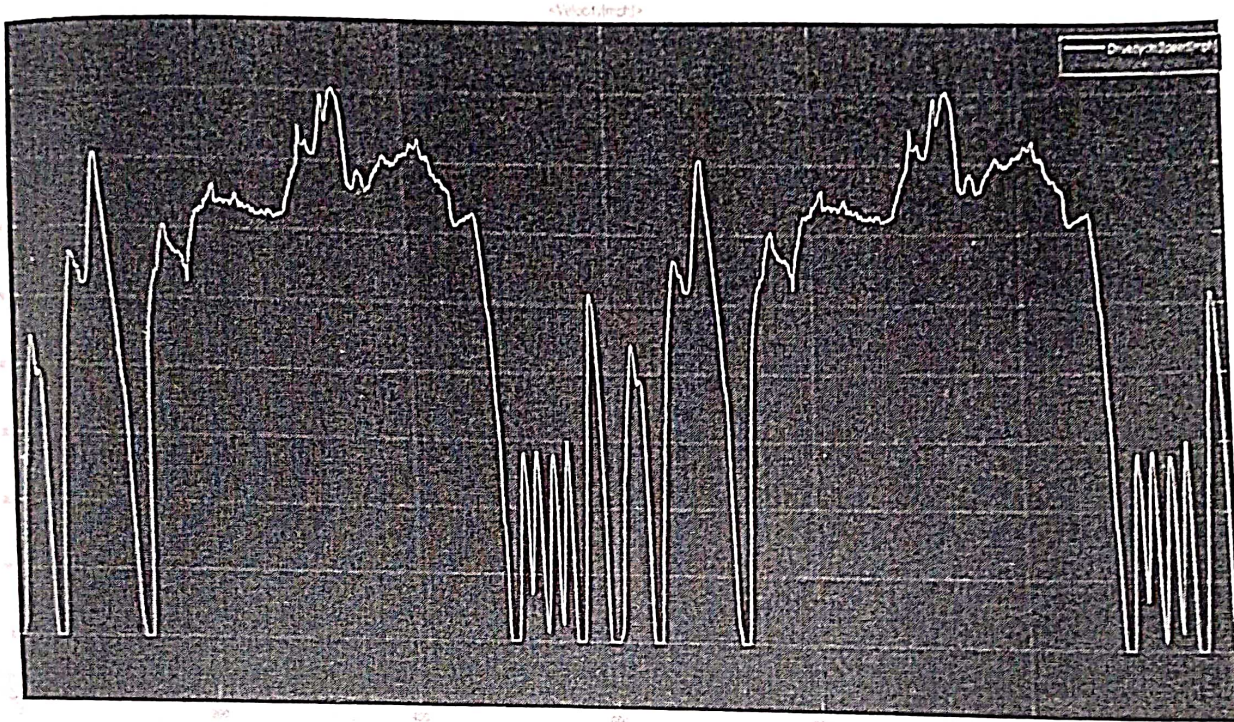


Fig. 4.1.9 Drive cycle US06

4.2 Results:

Step-by-step analytical calculation of Electric Vehicle (EV) was presented in this paper. Based on the analytical calculation, EV was modeled in MATLAB®/Simulink® environment. The simulation results are summarized. These observations can be utilized to improve the range of EV.

