MODELLING AN IMPROVED POWER FACTOR OF A SINGLE PHASE RECTIFIER FOR ELECTRIC CAR BATTERY CHARGING APPLICATION

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MOHD SOBRI B. IBRAHIM

FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

40450 SHAH ALAM SELANGOR

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In name of ALLAH
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Mohd Sobri b. Ibrahim
Faculty of Electrical Engineering
Universiti Teknologi Mara (UiTM)
Shah Alam, Selangor Darul Ehsan

ABSTRACT

The awareness of cleaner environment has lead to the intensity use of electric machine and battery has been developed to be used intensely in motor vehicle. For this situation, a paper for modeling a high power factor (PF) and low ripple factor (RF) for electric vehicle battery charging application has been proposed. The single stage high power factor converter will be proposed in this paper. The modeling parameters are inductance (L), capacitance (C), load resistance (R), load reactance (XC) and power factor correction circuit (PFC).– It shown that ripple factor can reduced less than 10% by varied the parameters and power factor also can be improved by using the PFC circuit. In this simulation also need to obtain the desired value of output to supply to the battery of electric vehicle.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

At the turn of the century, there is a growing dependence on imported oil and heightened concern on environment, which led major vehicle manufacturers to sponsor research into advanced transportation technologies. One of these future developments is the Electric Vehicle technology. Emissions reductions, while obtaining superior fuel economy, as well as the flexibility of using either petroleum or alternative fuels are the development goals for this progressive technology [1].

As the obliteration of fossil fuels and controlling emissions become growing concerns, there is an urgent need for the most widely used method of transportation to become more environmentally friendly. The electric vehicle stands as one of the most important inventions to date, as a means of eliminating problems such as: the dependency on foreign oil companies and overwhelming CO2 emissions. While the vehicles are currently on the market, a need for an efficient and functional charging system has arrived. The proposed idea is that a charging system placed in a garage, plugged into a standard wall receptacle, will effectively and safely charge an electric vehicle in a timely manner, while giving feedback to the consumer during the charging time.

The electric vehicle battery is low energy density, limited range and lifetime causes high cost. Another important factor, is the period of recharge and discharge life cycle. If the