

# Engine and Auxiliary Systems

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Edited by  
Prof. Dr. A.K.M. Mohiuddin



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# **Engine and Auxiliary Systems**

*Edited by Prof. Dr. A.K.M. Mohiuddin*



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A study of an aftermarket voltage stabilizer for its performance and emission on passengers vehicle

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### **Abstract**

Heavy electrical load in a vehicle will consume more electrical power from the battery. Thus will affect the performance of the vehicle and voltage stabilizer is created to cater this problem. This chapter shows the experimental investigation of the performance and the emission effect on the vehicle using aftermarket voltage stabilizers. The experiment is mostly carried out in laboratory and few experiments were carried out by test drive. All data are recorded and compared with the data found from the MATLAB analysis. Chassis dynamometer test shows on certain value of capacitors it does have an increase of torque and power by 5%. From emission result by using Gas Analyzer, it shows that the voltage stabilizer could reduce some of the hazardous gases especially hydrocarbon which contributes to the global warming. Fuel consumption from 160 km test drive shows a 5% mileage increase from the ordinary vehicle setting. From all experiments conducted, the best capacitor value needed to be equipped in voltage stabilizer is between 100 mF to 120 mF using 16 volt or 25 volt. With a proper value of capacitors size, the authors hope this voltage stabilizer can be equipped in all consumer vehicles for good engine performance, better mileage and most importantly to reduce global warming by producing less harmful emissions.

*Keywords:* voltage stabilizer, battery storage, performance, fuel consumption, emission

### **Introduction**

Global warming is such an issue that needs to be focused by all researchers in all kinds of industry to minimize the effect on human beings living on the planet. "The growing concern over CO<sub>2</sub>, a product of burning fuel, contributes in a major way to global warming, which spurred the appearance of governmental regulations aimed at reducing CO<sub>2</sub> emissions" (Anderman 2004). In the automotive development, the major target in the latest technology is to reduce emission and fuel consumption. "However, novel vehicle concepts, now under development, must comply with the stringent demands of lower fuel consumption and CO<sub>2</sub> emission reduction."