ALTERNATIVE ENERGY SOURCES FOR USE IN AN ELECTRIC CAR

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ABSTRACT

The electrochemical batteries or fuel cells in electric vehicles, at present, need to be charged frequently and the charging could only be done at charging stations. This means that the vehicle has to be temporarily not on the move. Could it be possible to charge, if not all, some portion of the batteries or cells requirements? Could it be done while on the run? This work investigates two possible techniques of providing such "on-the move" charging. One is by making use of the wind opposing the vehicles' thrust and the other is by employing heat difference available in the vehicle; that is by principle of thermocouple. Several schemes of tapping the energy sources were investigated in this work.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Electric vehicles powered by electrochemical batteries or fuel cells, even though both systems hold promise for the future, neither seem capable of replacing internal combustion engines within the next twenty years. Research on low emission full power heat engines such as gas turbines and hybrid engines offer a feasible short-term alternative. One of the advantages of such engines is that the complete reconstruction of the supporting infrastructure is not required.

Wind and heat energy have been subjected in many research works as they are viewed as alternatives to the present energy forms employed in electric vehicles. This work investigates the feasibility of harnessing these energy forms for employment in electric vehicles.

Wind energy has been employed for practical purposes like generating electricity, charging batteries, pumping water or grinding grain. The wind is the fuel source for wind energy. Large, modern wind turbines operate together in wind farms to produce electricity for utilities. Small turbines are used by homeowners and remote villages to meet some of their energy needs. Wind energy is considered a green power technology because it has only minor impacts on the environment. Wind energy plants produce no air pollutants or greenhouse gases. However, any means of energy production impacts the environment in some way, and wind energy is no different.

Heat is often defined as energy in the process of being transferred from one object to another because of the temperature difference between them.