Automotive Thermoelectric Generator (Design and Building)

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This paper presents an experimental research using so called "Automotive Thermoelectric Generator; Design and Building" which replaces the traditional alternator as an alternative electrical energy. Other goal of such device is primarily to reduce the amount of fuel consumed by the vehicle, through the exploitation of thermal energy generated by fuel combustion in the engine to generate electrical energy that can be used to power the electrical devices in the vehicle.

To achieve the main goals of this paper, a system was built using 58 thermoelectric generators (TEG) fixed and installed around the vehicle exhaust pipe. This system converts waste thermal energy from the engine (relied on temperature differences) into electrical one by 52 amperes and 14.2 volts. The electric power generated is sufficient to dispense the traditional generator in most of the operating conditions of the engine and vehicle, charge the battery and power the other vehicle electrical devices.

The measurement results indicated that the fuel consumption was reduced by 2%.