Executive Summary

THERMOELECTRIC CATALYTIC POWER GENERATOR

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Produces electricity from the waste heat in the exhaust of a gasoline or diesel powered vehicle by utilizing the exothermic reaction in the catalysis bed of the catalytic converter (CC), as well as any available sensible heat from the hot gases. Thermoelectric generators convert the waste thermal heat into usable electric power which can replace the alternator in highway driving while powering other on-board electrical devices, including replacing passenger compartment vapor compression air conditioning with an all-electric cooling system.

Research shows that 85% of the energy available for recovery in the tailpipe of gasoline IC-powered engines is inside the CC from the exothermic reactions when the hot gases' sensible heat recovery ΔT is considered 10C.

Depending on driving habits and engine size, the CC electrical power generator will increase vehicle overall mileage an estimated 15-36%, saving fuel and reducing pollution.

Minimal design changes to existing CCs and converter systems reduce installation costs. Existing electrical system changes are minimal with the CC electrical power generator. The waste heat charger can be used with 12Vdc and future 42Vdc systems.

The cost to manufacture the CC with the power generator, and make other electrical equipment changes on the vehicle, is estimated to be $600. By increasing average gas mileage from an expected 25 MPG to 35 MPG, at $2.25 per gallon, the cost for the additional equipment would be paid for in approximately 9,345 miles of highway driving.

Ten to twelve million vehicles are sold in the US annually with CCs. The market potential with the fuel savings is phenomenal.

The patented preheat portion of the system to hasten catalyst heat-up, and use of the ECO valve to restrict mass flow rate of pollutants exiting the vehicle to meet EPA requirements, would require further investigation when a prototype is available. However, the addition of the ECO valve is a minimum expense to meet FTP certification for EPA requirements. Technically, there are few challenges to incorporating the electrical power generator in the catalytic converter with minimal changes.

The electric power producing CC has two issued US patents, Nos. 5,968,456, and 6,986,247, and a third Patent Pending for the device.

Will license/sell technology or sponsored support is requested to build a prototype thermoelectric catalytic power generator and test effectiveness of ECO valve.

[2 References]

ELECTRICAL POWER FROM AUTOMOBILE EXHAUST

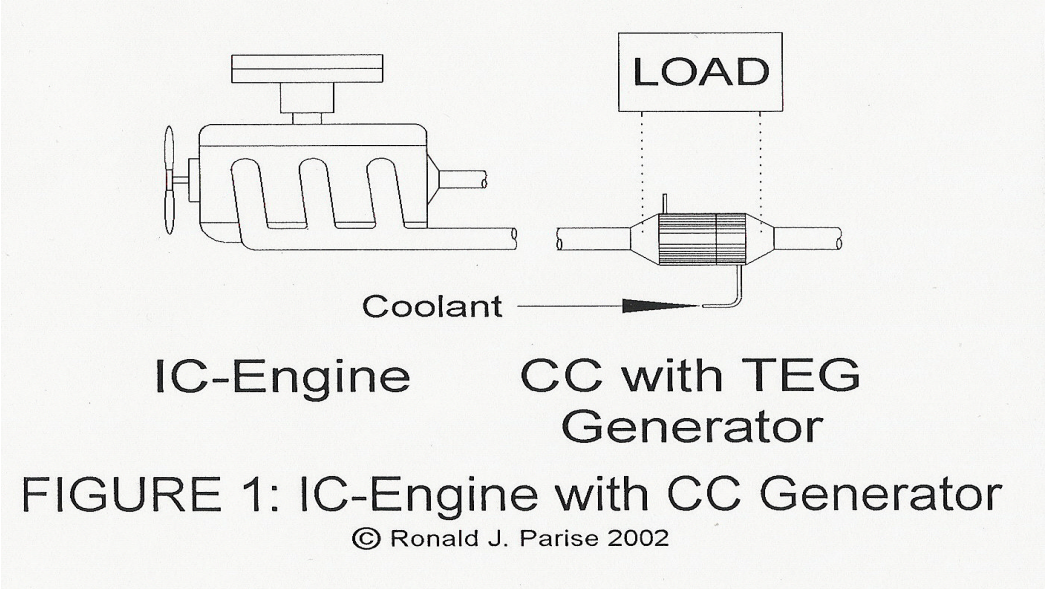

FIGURE 1: IC-Engine with CC Generator