

Modeling and Performance Evaluation of Three Power Generation and Refrigeration Energy Recovery Systems from Thermal Loss of a Diesel Engine in Different Driving Conditions

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Abstract : This paper investigates the possibility of using three systems of organic Rankine auxiliary power generation, ejector refrigeration and absorption to recover energy from a diesel car. The analysis is done for both urban and suburban driving modes that vary from 60 to 120 km/h. Various refrigerants have also been used for organic Rankine and Ejector refrigeration cycles. The capacity was evaluated by Organic Rankine Cycle (ORC) system in both urban and suburban conditions for cyclopentane and ammonia as refrigerants. Also, for these two driving plans, produced cooling by absorption refrigeration system under variable ambient temperature conditions and in ejector refrigeration system for R123, R134a and R141b refrigerants were investigated.

Keywords : absorption system, diesel engine, ejector refrigeration, energy recovery, organic Rankine cycle

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