직렬형 하이브리드 자동차에서의 폐열 회수에 대한 연구

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Study on the Heat Recovery System in Series Hybrid Electric Vehicle

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In recent, there are tremendous requirements to improve the fuel economy of vehicle. For satisfaction of requirements, Hybrid Electric Vehicle or other technologies are suggested and implemented. However, it should be noted that almost 35% energy loss is occurred in the shape of exhaust gas as ever. For increase the efficiency of vehicle, it is certain that the exhaust gas energy should be recover, and generate energy. In previous studies, the technologies such as turbo-compound, thermoelectric and rankine cycle are suggested to recover the exhaust heat energy in vehicle. But, they focus on the conventional vehicle or parallel Hybrid Electric Vehicle. Series Hybrid Electric Vehicle has advantage that the engine and drive shaft are de-coupled. It means that the engine can be operated in high efficiency area regardless with vehicle states. Therefore, if rankine cycle is applied to series hybrid electric vehicle, operating condition of that becomes almost steady. So, in this study, theoretical analysis on the efficiency of rankine cycle applied to series hybrid electric city bus is carried and the energy recovered from exhaust gas during vehicle drive cycle is calculated.

Key words : Heat Recovery System(폐열회수시스템), Rankine Cycle(증기동력사이클), Series Hybrid Electric Vehicle(직렬형 하이브리드 자동차), Cycle Analysis(사이클 해석)

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