Study of Hybrid Pneumatic Power System

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ABSTRACT

The Hybrid Pneumatic Power System (HPPS) is introduced in this study. The system not only stores “ Flow Work ” instead of storing electrochemical energy, but also manages and optimizes energy. The innovative power system can make the internal combustion engine always running at the optimal condition, and can recycle the exhaust flow to improve the effic iency of the whole system. A simulation software (ITI-SIM) is used to simulate the dynamic behavior of the HPPS according to the European emission certification of light duty vehicles (ECE47). The simulation result is examined with the experimental measurement. This study shows that the system can meet the reguirement of ECE47, and also proves that the device of exhaust gas recycling can compensate the defection of low energy density of gas and then increase the whole system efficiency substantially.

Keywords : Hybrid Pneumatic Power System (HPPS), Engine Optimization, Exhaust Energy Recycling.

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