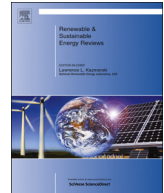




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A review of compressed-air hybrid technology in vehicle system

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ABSTRACT

The aim of this paper is to present a comprehensive review of the compressed-air hybrid technology in a passenger and commercial vehicle since the beginning of its discovery to date. Hybrid technology has become popular in the automotive industry since the technology proven to improve the vehicle efficiency, saving in fuel use and green environmental. The well-known hybrid technology is hybrid electric. Nevertheless, the price of the hybrid electric automobile is high, the arrangement is complex, and it is not completely green. These disadvantages have triggered innovation in a hybrid technology called compressed-air hybrid technology. The compressed-air hybrid technology uses a combination of ICE and fluid power components as a propulsion unit and compressed-air energy as a power source. The energy stored in the tank/accumulator. Once the energy in the storage is low, the system utilizes energy losses in braking and recovers into useful energy. This article concentrates on the hybrid compressed-air design, components, latest finding, technology breakthrough, benefit and drawback of the system. The review also encompasses the most recent prototype that has been tested. Based on the study, the literature has shown that the compressed-air hybrid system is proven to work. Nevertheless, further research needs to extend out to resolve a few topics such as amending the energy capability and lightweight system design. The two-sub-system are promising, but nevertheless far from the point of commercialization. However, the three-sub-system has been proven in saving energy and fuel consumption. Although it still needs to be further refined, it has a huge potential to get into the market. The compressed-air hybrid technology in a passenger car is still new. There is a huge room to explore. If the hybrid compressed-air technology is successful, clearly it will benefit the future in the aspect of energy efficiency, cost saving, and reduce the pollution.

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