

## Application of Series Hybrid Power System to Urban Traffic Vehicles

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1) Recently, studies and developments have been underway in many countries to introduce a new type of car (hereinafter referred to as "Commuter car"), characterized by ultra smallness, energy saving and low pollution, for short-range purposes, for example commutation, in urban areas. Therefore, a new simulated series hybrid commuter car that uses a high-power AC motor and a high-efficiency power generator was set on the bench. By acceleration/deceleration bench tests, selection of the reduction gear ratio and optimization of power supply from the generator were investigated in order to achieve both the performance necessary and sufficient for the city driving and power management. Moreover, an evaluation of the energy efficiency and the energy consumption was attempted.

2) The driving conditions of urban transit buses were investigated with a chartered bus. As a result, the series hybrid system was thought to be the most suitable for transit buses from the viewpoint of the acceleration performance and the energy saving. In order to estimate the regeneration and losses of electric energy, the dynamometer bench tests and the static simulated experiments were carried out with different storage devices. It has been clarified, for example, the combination of the super capacitor and the small battery is associated with a 10% increase in regenerative energy and a 20% decrease in charge-discharge loss compared with the medium battery only.