

Optimal Driving Strategies for a Hybrid Street Type Motorcycle: Modelling and Control

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Abstract : This work presents an optimal driving strategy proposal for a 125 c.c. street-type hybrid electric motorcycle with a parallel configuration. The results presented in this article are complementary regarding the control proposal of a hybrid motorcycle. In order to carry out such developments, a representative dynamic model of the motorcycle is used, in which also are described different optimization functionalities for predetermined driving modes. The purpose is to implement an off-line optimal driving strategy which distributes energy to both engines by minimizing an objective torque requirement function. An optimal dynamic contribution is found from the optimization routine, and the optimal percentage contribution for vehicle cruise speed is implemented in the proposed online PID controller.

Keywords : dynamic model, driving strategies, parallel hybrid motorcycle, PID controller, optimization

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