

ABSTRACT

The diploma project comprises: 123 pages, 59 figures, 40 tables, 1 list of elements and the grafical part on 6 pages A1.

In this dissertation the main automated electromechanical systems of electric bicycles, their types and schemes of arrangement are considered. A brushless DC motor in the rear motor wheel of a bicycle hybrid was selected for the research.

The selection of equipment for the implementation of system control is made, the schematics of electrical principles are developed. The mathematical description of the BLDC engine in rotary and stationary coordinate systems was performed, and a simulation program was created in Simulink environment. The test results meet the requirements for light electric vehicle EP and confirm that the BLDCM-based bicycle system is properly configured.

The results obtained can be applied to the design and development of electromechanical systems for two-wheeled electric vehicles, including electric mopeds, e-bikes and electric scooters.

The graphic part is taken from the following drawings: schematic representation of an electric bicycle, skhematic diagram of the electrical power and control part of the EMS of an e-bike, BLDCM model and its components, structure of the inverter and regulators, graphs of transient processes of BLDCM dynamics study.

ELECTRIC DRIVE, E-BIKE, BRUSHLESS DIRECT CURRENT MOTOR, CONTROLLER, STORAGE BATTERY, SIMULINK.

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Checked	O.Tolochko						7		
N. Contr.	S.Buryan					<i>NTUU «KPI», FEA Department AEMS-ED gr. EP-81mp</i>			
Approved.	S Peresada								