

V.I. Tkachuk, I.Y. Bilyakovskyy, V.I. Zhuk
department of EMA

AC ELECTRONIC MOTOR FOR THE ELECTRIC DRIVE OF THE TROLLEYBUS WHEELS

Today the opportunity to reduce load of the city motor transport and to improve an ecological state by expansion of trolleybus networks has promoted the revival of interest to the trolleybus. The most perspective among many types of engines in modern adjustable electric drives of average power are permanent magnet synchronous motor (PMSM).

To improve the use of PMSM they increase electromagnetic loadings and an active zone of alarm sector of the sensor rotor position (SRP). The half-wave switchboard with parallel connection of the accumulative condenser allows to improve power indicators and to reduce pulsations of current of the SRM with a passive rotor. U-similar stator structure with almost no electromagnetic ligaments between the sections, which increases the resistance of electronic components and energy performance due to a shorter length of magnetic field lines, and hence the losses in the steel is used in the PMSM.

The PMSM designing for the electric trolleybus wheels through the use of developed at the department of electrical machinery and apparatus (DEMA) for the electric motor trolley wheels put the theory of electromechanical energy conversion in the SRM of capacitive energy storage (CES), and comparative analysis of the moment and electromagnetic loads of SRM with capacitive energy storage with traction electric motors.

Mechanical and adjusting characteristics served as optimality criteria of selected engine variants. The engine was investigated with use of automated study subsystem of switched reluctance motor with capacitive energy storage, developed at the department of electrical machinery and apparatus of Lviv Polytechnic.

Results of studies with use of automated system show that the electric drive designed on the of designed motor, provides the necessary speed of the trolleybus 90 km / h on the horizontal section. The power developed by the engine per unit weight (ton), is about 7 kW / t, and the angle at which the trolleybus can move up without acceleration at a speed of 25 km / h is 11.2°, which approximately corresponds to modern foreign and domestic trolleybuses.