ABSTRACTS
OF PH.D. THESES

*Selected abstracts of Ph.D. theses
submitted at Russian University
of Transport*

Chekan, G. V. Improvement of the topological method and development of a software complex to assess the reliability of electric power facilities [*Sovershenstvovanie topologicheskogo metoda i razrabotka programmnogo kompleksa dlia otsenki bezotkaznosti elektroenergeticheskikh ob'ektov*]. Abstract of Ph.D. (Eng) thesis. Moscow, Russian University of Transport, 2018, 24 p.

The thesis basing on the comprehensive approach suggests a modified variant of the topological method of evaluation of the failure-free operation of the power facilities. The functioning there-of is described by multiply connected graphs. The method considerably simplifies computation procedures. The algorithm of using the method, a set of mathematical models for numerical estimation of the level of reliability, taking into account the integral criterion which is the figure-of-merit characteristic (calculation error) of the probability of failure, secured by the target normalization, were created.

Gulyamov, K. H. Power unit of electric vehicle with multi-channel DC voltage conversion system [*Energeticheskaya ustanovka elektromobilya s systemoy mnogokanal'nogo preobrazovaniya postoyannogo napriazheniya*]. Abstract of Ph.D. (Eng) thesis. Moscow, Russian University of Transport, 2018, 24 p.

The rational structure and circuit of reversible converter of DC voltage for the electric drives of transport vehicles has been defined, the method of calculation of parameters of basic components of reversible converter of DC voltage for the traction power system has been developed. The mathematical model of the reversible converter for this unit of electric vehicle has been designed. The estimation of efficiency of high-voltage electric drive with the use of reversible converter of DC voltage in power unit of electric transport vehicles is suggested which is based on calculation and experimental research data.

Popov, Yu. I. Increase of the life resource of traction electric machines of electric locomotives, operated under extreme natural and climatic conditions [*Povyshenie resursa tyagovyh elektricheskih mashin elektrovozov, ekspluatiruemyh v slozhnyh prirodno-klimaticheskih usloviyakh*]. Abstract of Ph.D. (Eng) thesis. Moscow, Russian University of Transport, 2018, 24 p.

The study analyzed reliability of traction units of electric locomotives operated at Trans-Siberian railroad, identified the influence of operation, natural and climatic factors on the reliability of insulation, specified features of insulation aging, substantiated the process of decrease in electric stability of insulation elements of traction electric machines. Methods and tools of providing the necessary temperature and humidity mode of operation of the insulating system of traction electric units of electric locomotives operated at the networks with complex natural and climatic conditions were developed. The economic expediency of the suggested option of increasing resource efficiency was calculated.

Subkhanverdiyev, K. S. Development and enhancement of algorithms of selective and non-selective systems of protection of traction power AC networks [*Razrabotka i sovershenstvovanie algoritmov selektivnoi i neselektivnoi system zaschity tyagovyh setey peremennogo toka*]. Abstract of Ph.D. (Eng) thesis. Moscow, Russian University of Transport, 2018, 24 p.

The author suggested model of a circuit of the area of traction power network located between substations for calculation of the currents of short-circuit current that takes into account the linkage between two adjacent substations through high-voltage line 110 (220) kV and increasing thus the accuracy of calculations. The study also suggested partially selective system of relay protection against short-circuit currents, thanks to which the area of action for the first level of remote protection with zero delay time is extended up to the sectioning post, and the area of post protection is extended up to the buses of remote protection. A new algorithm of automation of electric power feeding of the traction network had been develop.

Tagiltseva, Yu. A. Estimation of economic efficiency of industrial and economic activity of railway transport enterprises taking into account environmental protection measures [*Otsenka ekonomicheskoy effektivnosti proizvodstvenno-khozyaistvennoy deyatelnosti predpriyatiy zheleznodorozhnogo transporta s uchjetom prirodookhrannyh meropriyatiy*]. Abstract of Ph.D. (Econ) thesis. Moscow, Russian University of Transport, 2018, 24 p.

The author's approach to the subject of research expands the area of theoretical analysis of unproductive losses and costs of alternative possible formats, representing it as a totality of interrelated actions aimed at maximizing the profits of the enterprise while protecting the environment. Accordingly, the theoretical and game model and the algorithm of making management decisions regarding the combination of economic benefits and environmental safety objectives are proposed, taking into account two new indicators, which are ecological and economic efficiency and environmental component of profit of a business entity.

Wu Ho Nam. Calculation of the orthotropic plates regarding dynamic loads [*Raschjet ortotropnykh plastin na dinamicheskie nagruzki*]. Abstract of Ph.D. (Eng) thesis. Moscow, Russian University of Transport, 2018, 20 p.

Construction practices widely use designs whose functions and purpose can be represented by the model of an anisotropic, and particularly, of an orthotropic plate. Those designs are often subject to external impact which is dynamic loading. The author demonstrates the proposed algorithm of calculation of the orthotropic plates through identification of frequencies and forms of own oscillations, suggests a model of response of plates to forced fluctuations, solution of new problems of calculation of orthotropic plates with regard to dynamic loadings.

Compiled by N. OLEYNIK ●