

THE NEED FOR THE INTRODUCTION OF ENERGY SAVING MEASURES FOR DIESEL GENERATOR TRANSPORT

Kulagin D.O., Zaporizhzhya national technical University

Transport, in particular electric, is a leader in meeting the needs of the manufacturing sector and population in transportation is an important factor in socio-economic development of Ukraine, strengthening its foreign economic relations. The existing governance structure, the state of the production-technical base and technological level of organization of transport by many parameters do not meet the growing needs of society and the international standards of quality of transport services, which hampers the effectiveness of the functioning of many related industries and requires scientifically-based reform. However, the rapid development of the transport industry creates for mankind significant problems, such as pollution of air, soil, depletion of oil fields, the growth of the noise level. Priority areas to ensure a stable and profitable operation of transport, its development and improvement is the transition to resource-efficient technologies, reducing the carrying capacity of passenger and freight transport, the use of alternative designs and energy sources for all modes of transport, in particular the installation of electric transmissions. Objective advantages of vehicles with electric powertrains is significantly fewer harmful emissions, less noise, less maintenance. The use of diesel generators to power vehicles with electric powertrain allows to deviate from the typical problems inherent in electric vehicles: a significant cost of batteries, the technical complexities of setting up and layout, the lack of infrastructure for maintenance and recharging, small misleading mileage, which creates serious obstacles to the development of electric vehicles. Additionally, such an approach to the creation of vehicles allows the use of electric transmission in heavy transport tractors, combine harvesters, haul trucks, military self-propelled machinery, in which the use of batteries as the primary power source is almost impossible. Vehicles with a diesel generator power systems and electric powertrain (diesel trains, diesel locomotives, tractors, combines, self-propelled vehicles, railcars, mobile military equipment), electric vehicles and various types of vehicle with combined power units, hybrid electric vehicles are classified as mobile electrical systems, which are the basis for further development of the transport industry. Means of improving energy efficiency and productivity of mobile electrical systems in difficult situation on the market of energy resources allow for greater independence of the domestic transportation industry from a number of economic and political factors that have a significant impact on the basic indicators of work of many enterprises and the budget of private vehicle owners and provide optimal design and more efficient operation in various sectors of the economy. Energy saving and rational energy use during manufacturing processes across all services in the farms and transport is the main reserve for the development and stability of many related industries in the near future. The main share of the costs of energy for transportation, electric transmission – about 85 percent – are in traction work. In General, the most significant energy savings can be achieved by organizational and technical measures – about 75 %. The highest efficiency demonstrated by the improvement of the technology of the transportation process, the rational use of movable electrical systems. One promising resource-saving in movable electrical facilities also have recovery of electrical energy, i.e., return it in the power train when using regenerative braking or energy storage on directly on a stand-alone complex. The task of creating an energy-saving control algorithms for systems of traction electric drives requires the use of modern mathematical tools, and deep practical knowledge and experience. The solution of such problems requires the involvement of methods of analysis and synthesis of control systems for nonlinear plants, the development of sound mathematical models, adaptation of methods of optimization of Electromechanical systems to the conditions of use in the transport and application of promising

n
e
w

m
e
t
h