ABSTRACT

Energy saving

The paper gives a review of main scientific works of the Chair of Industrial and Biomedical Electronics of the NTU "KhPI" in the field of electromagnetic compatibility of conversion systems and energy saving: compensated controlled rectifier, theory of instantaneous active and reactive powers, transformation of coordinates of voltage and current space vectors, calculation of energy losses and efficiency factor in a power supply system and practical application of results of scientific research. This article describes the second part of the review. References 18, figures 14, tables 1.

Key words: *power supply system, efficiency factor, compensated rectifier, power theory, active power filter, active rectifier, compensated asynchronous machine, distributed production of electric power*

Power engineering

This paper describes an algorithm for determining the actual value of the thermal resistance of heat exchangers during operation for their timely washing in order to reduce the costs of maintaining the specified temperature values.

The paper considers the causes of excessive vibration of pipeline systems and builds a model of a pipeline section based on the finite element method. It determines amplitude and frequency characteristics and cross-sections of the system with the greatest amplitude of oscillations. Based on the results obtained it gives recommendations on how to reduce vibration to a safe level by installing additional supports.

Alternative energy sources

The paper describes a design of a new energy-efficient infrared tube panel gas heater.

Key words: *infrared heater, gas burner, deflector.*

The paper deals with the world principles of rational resources management of railway complexes, emphasizes main trends for development of railway stations in the world as well as investigates world indices for evaluation of the efficiency of their operation.

The paper discusses application of solar and wind energy for traction substations with different wiring diagrams and the specifics of its generation.

ABSTRACT

Ekonomy

The paper considers application of the integrated evaluation of investment attractiveness of the given region, namely Belgorod Region, in order to shape the areas for development of favorable investment climate. It draws the conclusion that the choice of scenario of socio-economic development of the region can be determined based on a number of internal key factors that are also ranked using complex integral evaluation of investment appeal.

Energy audit

The paper suggests improvement of the methods of calculations during the energy audit of lighting systems in the agricultural sector by supplementing and clarifying the existing methods and considering the specifics of agricultural production

Scitntific and technical progress and efficiency of production

The paper considers the principle for construction and main functional capabilities of water supply process automated control system (ACS). It presents a diagram of such system and describes its designated use and main components. It gives justification of the choice of the method of communication and the protocol of information exchange among the objects of the system. It gives recommendation regarding the possibility for extension of the structure and functional capabilities of the process ACS.