Power Engineering

Kovalsky A. E. The method of calculating breaking capacity of a last stage rotor wheel of a powerful steam turbine by the derived condensed moisture 5

We have examined the problems of improving method of calculation losses caused by the large-dispersed condensed moisture in the last stages of low pressure cylinders of power turbines. We have grounded the necessity to take into account characteristics of derived condensed moisture as a discrete environment presented as a set of separate drops when identifying the power of braking a rotor wheel of a wet-steam turbine stage.

Sklyarov V. P. Wet steam generation procedure influence on thermodynamic and aerodynamic processes in wet steam zone for experimental researches 12

Mechanism of wet steam generation procedure influence on investigation results on expanding wet steam in two-phase zone is considered. It is shown that wet damping by spit of water create precondition for incorrect inference and ipso facto disorientate observer.

Aero- and Hydromechanics in Power Machines

Rusanov A. V., Gorodetskij Yu. V., Kosyanov D. Yu., Sukhorebryi P. N. and Khoryev O. N. Numerical investigation of the three-dimensional viscous incompressible flow at the axial turbine draft tube 16

The results of the three-dimensional viscous incompressible flow numerical research are presented for vertical axis Kaplan turbine, which developed on head of 20 m. The numerical simulations were realized using the CFD software package FlowER−U. The analysis of the flow structure character for the four operating modes and energy losses at turbine draft tube are described.

Diedkov V. N. Serial pump application as hydroturbine in low energetic 24

The main factors determined the features of applying the serial pumps at operation in the turbine regime are under consideration. The estimation was done for existing formulas determined hydraulic parameters supplied effective operation of the centrifugal pump as a turbine. These parameters were compared with experimental data. Besides testing on the experimental bench the numerical research is possible for simulation the 3D viscid flow in air-gas channel of pump.

Heat Transfer in Engineering Constructions

Matsevity Yu. M., Tsentsiper A. I., Goloschapov V. N., Kostikov A. O. and Prikhodko A. I. Choosing the operating condition and the design values of the device for extraction of thermal energy from waste oil and gas well 31

The problem of optimal design of the device for extraction of thermal energy from waste oil and gas well. The influence of the operating condition and the design values on technical and economic characteristics of the device is investigated.

Havin G. L. Calculation of plate heat exchanger with different channel types in one device..... 40

The relation for definition of necessary number of channels (plates) in designing of plate heat exchanger with different channel types is obtained. The transcendental equation for heat carriers flow rates in different channel types is received. This equation based on satisfying conditions for heat load and pressure drop on hot and cold sides. The number of channels of different channel types may be found by solving the equation with known flow rates values. The reliability and effectiveness of obtained solution demonstrated on hot tap water heater design.

Dynamics and Strength of Machines

Bozhko A. E. Errors of dynamical systems 46

The errors of output signals of dynamical systems in dependence to errors of input signals and errors of transmission functions of this systems, are defined. The amplitude errors and angle errors of oscillating systems are defined too.

Shulzenko M. G., Gontarovsky P. P., Gontarovsky V. P., Lyhvar M. V. and Garmash N. G. Definition of the thermal and thermostressed states of turbine rotor in resource counter 52

The technique is proposed for definition of characteristics of the thermal and thermostressed state of a high pressure rotor of a steam turbine T-250/300-240 on the basis of using of archives technological parameters of automatic control system of technology processes for a resource estimation under operating conditions. The technique is proposed for use in resource counter.

Avramov K. V., Pirog V. A., Tonkonogenko A. M., Peresad'ko T. M. and Shiraeva N. V. Flexural-flexural-longitudinal transients of launch vehicle 60

Flexural-flexural-longitudinal vibrations of launch vehicle under the action of the nonstationary loads of winds and longitudinal force describing the action of engine plant are analyzed. Nonstationary vibrations are analyzed on the basis of finite-element analysis of launch vehicle model.

Kantor B. Ya., Shupikov O. N. and Misiura S. Yu. Numerical analysis of the stress-strain state and an optimization of the adjustable blade hydroturbine cover model 65

A mathematical model of the adjustable blade hydroturbine cover was developed. Optimization with the help of the gradient method using the finite element method and cyclically symmetrical calculation scheme and numerical analysis of the stress-strain state of the cover construction were carried out. The influence of a number of the main vertical edges at a fixed number of oblique edges and small edges on the strength of the cover was investigated. It was found that the initial construction has an overstock of a strength. Optimization of a mass and a nomenclature of construction material was carried out.

Non-traditional Power Engineering

Kanilo P. M. and Shubenko A. L. Minimization of cancerogenic danger of power units 73

Influence of various kinds hydrocarbonic fuels, including high-aromatic fuels, and also qualities of the organization of their burning on carcinogenicity of the exhausted gases is analysed. Bases of minimization cancerogenic dangers of power units installations are stated.