

**Power Engineering**

- Pereverzev D. A., Babak N. Yj. And Shelehina Zh. A.** Mathematical modeling of cooling-downs of corps and rotors at stops powerful steam-turbines..... 3

*Two-dimensional mathematical models are offered for autonomous research of processes of cooling-down of rotors and corps, with sufficient plenitude taking into account thermal cooperation between them in the system of cylinder of turbine. The researches executed on models showed that braking the processes of cooling-down in the places of most flows of heat (supporting paws of cylinders, union coupling of pipelines of and other) the improvement of isolation, screening and guided electro-heating, it is possible considerably to shorten duration of the subsequent starting of turbines of type K-300-240 and K-500-240.*

- Sharov V. K., Safonov N. A. and Kompaniets B. I.** Mathematical modeling of the solvent was evaporated in explosion power technology drying impregnated lacquer winding electric machines..... 9

*Proposed structural changes of ventilation systems and ovens identified the minimum necessary amount of air, providing intrinsically safe mode of drying insulating varnish impregnated windings of electric machines. When calculating the volume of air taken into account changes in the intensity of evaporation of solvents during the drying process.*

**Heat Transfer in Engineering Constructions**

- Alyokhina S. V., Goloschapov V. N. and Kostikov A. O.** Optimization of the width of air cooling duct of spent fuel cask ..... 23

*The width of air cooling duct of cask of spent fuel is optimized using the solving the geometric inverse conjugated heat transfer problem. The advices on choosing this parameter for producing the cask for spent fuel assembly with increased burn-up fraction are formulated.*

- Bakhmutskaia J. O.** The solution of a return problem of heat conduction in a rod of final length by a method of optimum estimation with usage of a Kalman filter ..... 30

*The problem of identification of heat flows which are included in a unidimensional rod of final length by a method of optimum estimation with usage of a Kalman filter in space of parameters is resolved. The steady convergence and unbiasedness of estimations of heat flows of adaptive iterative algorithm of spline - identification is rotined on the basis of a truncated Kalman filter.*

**Dynamics and Strength of Machines**

- Krivtsov V. S., Pavlenko V. N. and Volkov I. V.** The evaluation of the influence of some factors on the titanium alloy fatigue resistance ..... 37

*The investigation of the influence of process induced distortion, the size of the component parts and service life on the titanium alloy fatigue resistance has been carried out. The effect of stress concentrators on the fatigue resistance of component parts made of titanium alloys is specified.*

- Bozhko A. E. and Myagkohleb K. B.** The response oscillational system with two free degree on frequency change of input influence ..... 42

*Determined by fluctuations in the mass vibrating system with two degrees of freedom depending on the frequency change of the input. It is shown that the smooth variation of frequency is necessary to consider only the amplitude of the oscillations, focusing on the amplitude frequency response of the oscillating system.*

*Applied Mathematics*

- Lytvyn O. M. and Pershina Yu. I.** Approach of discontinuous functions by discontinuous splines on trapezes .....50  
*The method of construction discontinuous interpolation splines which approach discontinuous functions of two variables with ruptures of the first sort on lines of a rectangular trapeze is offered. The constructed splines include, as a special case, discontinuous and continuous splines.*
- Lisina O. Yu.** Simulation of heat fields in engineering products of noncanonical forms .....57  
*Meshfree method for solving time-dependent three-dimensional heat conduction problem in the complex field is introduced. Propose an algorithm for numerical realization using the atomic radial basis functions.*

*Non-traditional Power Engineering*

- Kramskoy A. V., Kudryavtsev I. N. and Samokhval I. A.** A mathematical modelling of describing of hydro and gas dynamic processes in the vortex tube .....65  
*The mathematical model which uses Reynolds-averaged Navier–Stokes equations has been proposed in present paper for description of the hydro & gas dynamic processes in the Ranque–Hilsch vortex tube. These equations describe both laminar and turbulent flows of a viscous liquid or gas in different directions. The  $k-\omega$  turbulence model in the formulation of Menter is used. The mathematical model proposed takes into account the main features of the laminar and turbulent flows of a viscous liquid or gas and can be used for computer simulation by finite volume analysis of the main thermodynamic and hydro & gas dynamic parameters of the Ranque–Hilsch vortex tube.*
- Kluchka Yu. P., Krivtsova V. I. and Ivanovskiy A. I.** Experimental study of explosion hydride hydrogen storage systems .....69  
*Obtained experimentally by the variation of hydrogen pressure in the cartridge with a hydride from the time when it is heated. The experimental data are consistent with the theoretical values with a deviation of  $\approx 5\%$ .*
- Kanilo P. M. and Kostenko K. V.** Decrease in carcinogenicity of the fulfilled gases of vehicles .....73  
*Influence of a type motor fuel and contents in them of aromatic hydrocarbons on carcinogenicity of the fulfilled gases of vehicles with internal combustion engines is analysed. Bases of minimization of their cancerogenic danger are stated.*