Power Engineering

Aero- and Hydromechanics in Power Machines

Heat Transfer in Engineering Constructions

Heat exchange intensification is the main technique of increasing the heat exchanger efficiency which application not only will ensure a high extent of regeneration (E = 0.8–0.85) for the air heater, but, also, enable development of the standardized elemental basis that will allow implementation of the heat exchanger mounting using standard components suitable for wide power range GTEs.

Applied Mathematics

The models of nonlinear parametric vibrations of cylindrical shells with four degrees of freedom are investigated. Donnel's non-linear shallow-shell theory is used. To obtain a finite degree-of-freedom model of shell motions the Bubnov-Galerkin method is applied. The dynamical systems are analyzed by multiply scales method.

In the work the mathematical model of ethnogeny influence from heterogenic level of population of flora and fauna is researched. Model is present from system of differential equation. System's stationary point and stationary gypper-plane is researched. The classification of bifurcation gypper-plane, on two- and three - dimensional bifurcation diagram is research. The type of square bifurcation curve and gypper-plane is identification. Program application of numerical analysis of subpopulation differential model dynamic is developed.

The reviews of articles are representing which had been devoted to development of meshfree approaches to the numerical methods for solution of the boundary value problems for the partial differential equations of the different physics processes modeling. The chronological overview of the meshless methods is presented. The meshfree scheme of the algorithm based on the particles method is described

Optimization Problems in Mechanical Engineering

The gas-pumping unit efficiency indicators determining problem under conditions of incomplete input information is considered. The influence of the gas pressure and temperature loss at the inlet and outlet of the compressor plant are analyzed. On the basis of statistical methods for data traffic control logs and automatic control of gas pumping units, pressure and temperature losses are estimated.