***Aero- and Hydromechanics in Power Machines***



*Calculation results for heterogeneous nucleus influence on condensation instability near the expanding nozzle throat for no equilibrium wet steam flow are presented.Stabilizing influence of growing heterogeneous nucleus concentration on the flow, which caused the change of regime into the stable flow with the rise of pressure, is shown.*

***Heat Transfer in Engineering Constructions***



*The new methodology for identification of heat flux and heat transfer coefficient on the boundary of the investigated object of complex shapes in real time from the experimental data is proposed. The technique is based on the use of spectral functions of regional impact and a gradual increase the number of regions into which the investigated area is divided and as a consequence the number of parts that make up the boundary where thermal loads are recovered.*



*Heat transfer experimental investigations of multi-channel convectors of various design in the free air flow. The obtained results allow to define the heat output depending on the number of heater convector vertical channels, the number of tubes rows in a horizontal plane and the height of the rear wall. The obtained characteristics is the basis for the design of multi-channel water convectors.*

***Dynamics and Strength of Machines***



*A mathematical model of crack nucleation in an isotropic body, weakened by periodic system of circular holes, at the transverse shear was constructed. It is assumed that as the intensity of the external load is increase, in the perforated body cracks nuclear. Solution of the problem of the equilibrium of the perforated body at transverse shear with pre-fracture zones is reduced to the solution of two infinitely algebraic systems and two non-linear singular integral equations with Cauchy kernel. From solutions of these equations are found forces in the zones. The criterion of crack nucleation is formulated with the criterion of limit shear of material bonds.*



*The analysis of the stress state of the connection disc of $^{1st}$ degree cylinder medium-pressure steam turbine blades in the castle. The areas of possible occurrence of fatigue cracks in the castle connection with turbine operation.*



*The new approach for multidimensional vibration diagnostic based on methods of nonstationary random processes theory and correlation tensor analysis for complex rotating machines diagnostic is proposed. The verification of developed methods on industrial objects of Ukraine and vibration test bench is shown. The portative vibration diagnostic system which utilizes the developed methods is described.*

Оригинал-макет подготовлен в редакции журнала «Проблемы машиностроения»
Компьютерная верстка *А. О. Костиков*
Редактор *Н. В. Сивцова*

Подп. в печ. 22.09.13. Формат 60×84 1/8. Гарнитура «Таймс».
Бум. офс. Усл. п. л. 10. Тираж 300 экз.
Цена договорная. Заказ №

Издание подготовлено к печати и отпечатано
в типографии ГП «СКТБ» ИПМаш НАН Украины
Украина, 61046, г. Харьков, ул. Академика Филиппова, 9/17
тел. (0572) 95-95-28
Свидетельство: № 29695720 от 18.06.03