RESEARCH LABORATORY «SEALING MECHANICS AND VIBRODIAGNOSTICS»

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The basic directions of scientific research of laboratory and the results of research in the field of seals design are shown.

The line of scientific activity is connected with the investigations directed to increase of vibro-reliability, efficiency, environmental safety and hermetic sealing of centrifugal machines.

The Laboratory proposes scientific service on development and calculation:

— impulse face gas seals of centrifugal compressors and impulse face gas buffer seals of chemical pumps (fig. 1);

— radial and face packing seals of centrifugal pumps (fig. 2);

— axial balance devices of centrifugal pumps, buffer hydro-pivots in conjunction with differential pressure regulator;

— methods and tools of technical state diagnostics and prediction of life time of rotor machines;

— rotordynamics of centrifugal machines in the annular seals;

— hydrodynamics of the annular and face channels.

Fig. 1. Gas buffer impulse face seal for centrifugal pumps and compressors

Fig. 2. Face packing seal for centrifugal pumps

Scientific developments of the Laboratory, at present are used in chemical plants of Ukraine and Russia, in rocket space complex plants of Russia and in coal industry plants of Poland. Also important is continued use of the Laboratory developments on nuclear power plants, namely, face impulse and stuffing box packing seals and methods and tools for diagnostics of technical condition and prediction of resource for providing environmental safety, resource increasing and reliability of pumping equipment. The Laboratory has a university licenses of the ANSYS CFD (Ansys Inc., USA) and modeFrontier (Esteco Inc., Italy) programs, with the help of which the numerical calculations and optimization of centrifugal machines seals geometry is carried out.