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ABSTRACT

of PhD disertation

" Ways to reduce the impact of frictional heat on work of brush seal "

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The author of the PhD thesis analyzed in detail a completely new solution for brush seals designed to its thermal protection. The aim of the study is to verify the effectiveness of proposed solutions involving the use of bimetallic elements for thermal protection seal.

In the paper, the author makes the following thesis: it is possible to use for the construction of brush seals bimetallic elements, which act thermoregulatory function by helping to relieve the contact area with the surface of the shaft wires. This improves the durability of the seal, by reducing the heat load was significantly reduced sealing temperature in stages starting and coasting sealed devices.

In order to verify theses have been numerous experimental studies analyzed were built mathematical models of phenomena that have been solved analytically and numerically. Detailed analyzes were mechanical interaction between the thermoregulatory bimetallic element, wires and shaft seals. Also conducted an extensive analysis of the conditions of heat exchange in the seal. Shown friction heat flux depending on the design parameters and operational heat distribution coefficient determined between a pair of friction elements, and the temperature distribution in the seal. Verified impact of bimetallic elements to the tightness of the seal.

It has been found that the proposed solution by reducing the heat load in the contact zone leads to a drop in temperature of the seal.

The test results may be a source of data for further work on the search for optimal solutions built of brush seals with thermoregulatory bimetallic elements, and also on completely new solutions.