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ANALYSIS OF MECHANICAL LOSSES IN THE WORKING CHAMBER OF ROTARY VANE MACHINES

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The work is devoted to the analysis of reducing friction losses in rotary vane machines. It is established that the smallest friction loss is provided by lubricating the cylinder with water, while the values of the friction coefficient obtained by processing the results indicate the presence of the hydrodynamic lubrication regime. Unexpectedly large values of friction power losses are obtained when oil is used as a lubricant, which is primarily due to high hydromechanical losses, which, according to preliminary estimates, can reach 70%.
The analysis of the ratio «friction power/indicator power» in rotary vane compressor machines shows that the use of the water as a lubricant can significantly increase the speed of machines without a significant decrease in their energy characteristics. Increasing the speed of non-lubricated plate machines requires the search for new technical solutions and materials of friction units forming the working chamber.

Keywords: rotary vane compressor, mechanical friction, lubrication, non-lubricated working chamber, power.

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