MODES OF COMPUTER SIMULATION PNEUMATIC SYSTEMS

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To ensure the operation of pneumatic installations in transient conditions envisaged projects stock dilution in separate tubes. The presence of these stocks causes increased power consumption and the wear rate of pipelines (especially on turning areas) and other parts of plants which are in collision with the flow of cargo.

Pneumatic installation is a complex branched system. Mode of transportation in each of the pipes of the system depends on the properties of the source and the load pressure in other pipes and transients last for a split second.

Research modes of electromechanical systems using physical models is approximate in nature, since physical implementation of random functions is a difficult burden. Therefore, the most effective method of optimization of electromechanical systems with any disturbance in their channels are mathematical modeling.

The purpose of research - development of a computer model of pneumatic system of the mill type P6 - AVM-15, on which to conduct research her work and justify energy modes air transport the grain and grinding it.

Materials and methods research. Efficacy of different packages for modeling electromechanical systems can be evaluated criteria computational mathematics, the main ones are universal, language modeling, usability and promising concept.

The versatility of the models determined by their fullness, as measured ability versatile description of the object hierarchy, ie, the ability to sequential, algorithmic definition of patterns and characteristics of his behavior; completeness; high performance and reliability.

Among all existing applications package MatLAB brings to perfection creating digital models of electromechanical systems.

To build the model as a block diagram Simulink environment using a graphical user interface used (GUI).

Developed nonlinear mathematical model of the process air transport mill type P6 - AVM - 15 channel "material consumption - consumption of the air."

On the basis of the system of equations created simulation model pneumatic installation of mill, which enables you to explore the dynamic modes and parameters of air mill.

Using a simulation model pneumatic installation of mill investigate its dynamic mode, namely the removal of transients in pneumatic branch, depending on the definition of air flow from the fan rotation frequency in the busiest pneumatic branch mill, air velocity when passing the dam material wire depending on the load of the mill, and the impact of changes in the concentration aeromixture pneumatic branch a loss of pressure in them and the loss of pressure in the reservoir.

Results. As a result of studies found:

1. For normal operation of pneumatic mill installation at its nominal load enough to rotation frequency ventilation installation was 2300 r/min.

2. As the air velocity in the reservoir below 12 m/s and the rated load is material wire obstruction 10th pneumatic branch, that is most sensitive to disturbance.

3. Increased download 10th pneumatic branch at speed ventilation installation 2300 rev/min leads to increased pressure in the reservoir and an increase in load pneumatic branch 10 % is its obstruction and accumulator pressure abruptly increases by 50 Pa.

4. To prevent blockage 10th pneumatic branch need to increase the speed of it aeromixture increasing rotational frequency ventilation installation. So, when you reach a traffic aeromixture pneumatic branch to 11 m/s need to increase the frequency of 55 / min for 13 s time to reach the nominal mode.