RATIONALE FOR THE PARAMETERS OF WORKING SURFACE PROTECTIVE DEVICE FOR SCREW CONVEYOR CONTACT STRESSES IN THE ELEMENT MESHING

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Screw conveyors are widely used in the movement of bulk and lump materials in various industrial processes. However, transportation of materials possible jamming screw the working body, resulting from the presence of the gap between the surface of the rotation of the screw and the inner surface of the guide tube. For disaster recovery should take screw conveyor in the axial direction and release keyed edge screw from contact with the material, and subsequently after removing the overload screw have to return to the starting position for further transportation of the material in the discharge zone.

There are different ways of axial screw removal keyed working body -this using reverse mechanism, ball joints with safety profile execution holes as when leaving the gearing, and in their entry.

Analysis of the research showed that the main drawbacks of existing safety devices, providing reverse congested working bodies are their constructive and technological complexity, high material consumption, insecurity at work. They also have large dimensions, and when their work there are significant dynamic forces due to inertia forces led drive units and working body with automatic restoration of its original position.

The purpose of research - improve the efficiency of screw conveyors in extreme conditions through the development and substantiation of rational parameters of a safeguard mechanism to screw the working body that will ensure its automatic allotment overload and subsequent restoration of its original position.

Results. To improve operational performance screw conveyors designed safety device for screw conveyor.

The work carried out so screw conveyor. Bulk material through the hopper reaches the auger, which transports it in the direction of discharge. If the product gets unground particles bodies in the area between the surface of the screw and the inner surface of the case there is jamming.

In order to eliminate jamming working body of the screw conveyor in the transmission torque suggested to use safety device with separate time modes slipping and axial displacement auger for Restoring the conveyor.

To determine the structural parameters of the safety device screw conveyor calculated the contact stresses in the elements of engagement in all phases of operation.

Based on the Hertz contact problem set relationship between the magnitude of contact stresses and design data element mesh safety device screw conveyor.

Using the obtained dependencies and table relative to the maximum allowable stress in the plane of contact material selected half-coupling safety device screw conveyor, which provides strength condition of contact stresses.

Based on patent review and analysis of existing structural and technological schemes protective devices screw conveyers proposed new design safety device, which allows to reduce the dynamic load on the drive, which greatly improves the durability and performance of screw conveyors. Also, the calculation of contact stresses in the elements of engagement in all phases of operation of the safety device, the level of which is the determining factors that affect the intensity of wear surface contact.