

damping is exponentially damping factor for mechanical parameters of the dynamic system "skip - guiding device" has different meanings, which can be calculated from the equation. The experimental model velocities and accelerations in the transverse direction are used to determine the loads on the rollers and the guide devices powers are compared with the values obtained from the mathematical model. Revealed that the maximum dynamic loads on the guide device by pneumatic skip lifting equipment as it moves are determined depending on the weight of the loaded skip, the shift of its center of mass, the angle of the overpass to the horizon and the coefficient of dynamic (3,4):

$$R_i = (1 + k_o \cdot V) \cdot M \cdot g \cdot \frac{a}{l} \quad (3)$$

$$R_i = \frac{(1 + k_o \cdot V) \cdot M \cdot g \cdot \cos \beta_c}{n}, \quad (4)$$

where V – the velocity of the skip, m/s; k_o is stiffness coefficient overpass; a is the displacement of the center of mass of the laden skip; l is the distance between adjacent tiers of guiding devices; $k_d = 1 + k_c \cdot V$ is dynamic factor.

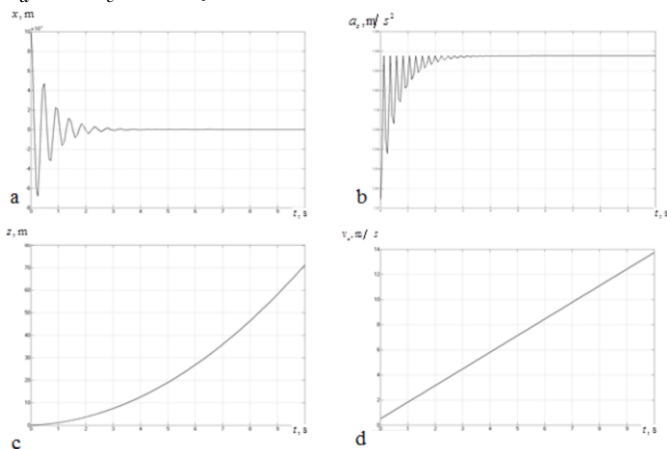


Fig. 8: Results of the solution of the mathematical model of pneumatic lifting equipment in the application program Matlab Simulink:
 a) dependence of the deformation roller from time to time;
 b) dependence of the acceleration skip from time to time;
 c) dependence on the time of travel Skip;
 d) dependence of the rate on the time skip.

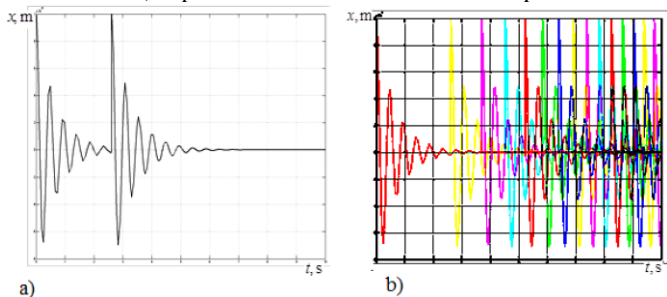


Fig. 9: Walkthrough skip several tiers guiding devices:
 a) passage of two tiers; b) passage of fifteen tiers.

III. CONCLUSION

Developed and researched mathematical model of the motion skip in systems of quarry pneumatic lifting equipment and mine have established patterns of interaction "skip - guiding devices". It was found that the system of "skip - guiding devices" most loaded at the time of entry unevenly loaded skip stage vanes. Revealed that the maximum dynamic loads on the guide device by pneumatic skip lifting equipment as it moves are determined depending on the weight of the loaded skip, the shift of its center of mass, the angle of the overpass to the horizon and the coefficient of dynamic. The adequacy of the emerging dynamic loads on the roller guide device is confirmed by experimental research models skip pneumatic lifting equipment.

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