

## EXISTENCE IN THE WORKING ACTIVITY OF MACHINES AND MECHANISMS CAUSES OF UPCOMING SHAKES

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### ABSTRACT

In this article, machines and mechanisms are created in the process of operation the causes of vibration and damping devices were theoretically analyzed.

**Key words:** vibration, amplitude, vibration damping, resonance.

Different amplitudes during the operation of machines and mechanisms vibrations occur. Simply put, which machines and mechanisms no matter where there is movement or a moving device (engine) in it vibration is formed. The reasons for the occurrence of these vibrations are as follows:

- As a result of the shafts of the driving device (engine) being deviated from the axis;
- Defective means of transmission of movements (coupling, shaft, axle, etc.) as a result of the situation;
- Increase in vibration frequency (Hz), per second of the studied quantity as a result of the increase in the number of vibrations;
- Of fast rotating machine parts or workpiece are vibrations that occur as a result of imbalance.

Common methods of reducing vibration are technological machinery and based on the analysis of equations describing the vibrations of mechanisms and at the same time, we will deal with it by using vibration absorbing means or can be reduced. For simplicity, the analysis assumes that the system is affected by a decaying variable is assumed to be a force obeying a sinusoidal law, so the equation, the relationship between the amplitude of the vibration speed ( $V_m$ ) and the driving force ( $F_m$ ) expression has the following form:

$$V_m = \frac{F_m}{\sqrt{\mu^2 + (m\omega - \frac{k}{\omega})^2}}$$

Here:  $m$  is the mass of the system, kg;  $k$  - coefficient of uniformity of the system, N/m;  $\omega$  - angular frequency of the driving force, rad/s. The denominator in this equation is the system under the influence of the driving force of the system the total mechanical resistance, the quantity  $\mu$  characterizes the active part of this resistance and quantity  $(m\omega - \frac{k}{\omega})$  - reactive part. Exciter in the resonance mode, when the frequency of the

system vibration is equalpower frequency,  $\omega_o = \sqrt{\frac{k}{m}}$  and  $m$ - zero reactive resistance and oscillations the amplitude increases sharply. Analyzing the above equation is a basic technique for combating vibration allows you to determine the measures and see below the methods of their elimination we get:

- 1) elimination or reduction of vibration at the source (no  $F_m$  make or reduce);
- 2) elimination using vibradamper devices;
- 3) devices for dynamic vibration damping.

Vibration at the source that occurs in machines and technological processes elimination or reduction should be done during the design phase. In this case, particular attention should be given to the dynamic caused by the exception or maximum impact drastic reduction of processes should be accelerated.

At the source of its origin, the weakening of the vibration was present in the system is carried out with a decrease in variable forces. Dynamic variables such variables may be reduced in substitution static processes, parts with rotary balancing, etc. If there is contact with a vibrating object, the vibration transmission is remote

control can be reduced using automatic control. These methods the contact of the operator with the vibrating object should be completely excluded . Vibrational vibration by converting mechanical vibrational energy into heatbased on the decrease in vibration level. This can be achieved by:

- use as building materials with high internal friction;
- application to the vibrating surface of elastic materials;
- application of surface friction.

Vibration damping is an effective type of devices with two degrees of freedom vibrations operating on the basis of the anti-resonance principle that appeared in systems is quenching.

## CONCLUSION

It was created during the operation of machines and mechanisms vibrations were measured using vibrometers, and the amplitude exceeded 0.1-0.2 mm it was determined that it is necessary to use vibration damping means. Dynamic vibration is carried out by the installation of machines and mass Aggregates for calculated bases are the amplitude of vibrations of the main base. It should not exceed 0.1-0.2 mm, and for individual devices - 0.005 mm maximum is the limit.

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