INCREASING DURABILITY OF MACHINE ACTUATORS

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Abstract

The study deals with the reasons why dynamic loads increase and actuator durability drops. We show that in terms of the wave theory resonance appears when the travelling and reflected waves combine, these waves forming as a result of the travelling waves reflecting from the irregularities of the torsional system. We consider various ways of reducing dynamic loads in an oscillating system, along with an arbitrary multi-mass system employing a dynamic load reduction method that consists of selecting the inertial and rigidity properties of the actuator elements, which makes it possible to minimise the probability of resonance. We investigated how the stresses depend on the number of cycles, which are in turn directly related to durability.

Keywords

Durability, torsional vibrations, dynamic loads, travelling wave, wave drag

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