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Investigation of the Medium Motion Dynamics during Vibratory Finishing the Detail Parts

Abstract: The article presents the results of research on granular media motion dynamics for vibratory finishing in the working chambers of the various types. The importance of studying the working chamber parameters has been justified. The analysis of the commonly applied shapes of the working chambers used for this process has been made, their properties, advantages, disadvantages and scope of application have been described. The dynamic processes taking place inside the working chamber of a vibratory finishing machine have been studied. The main regularities increasing and maintaining the granular working medium movement by exposing it to mechanical vibrations have been investigated. The various models of the granular media movement dynamics in the vibrating working chambers have been studied (a single-mass model of vibratory displacement of a body along the slope conveyor, a model of single- and multi-mass composite elastic-visco-plastic bodies). The comprehensive theoretical study has been carried out. The experimental study results of the parameters of granules' self-interaction and their interaction with the working chamber lining (for various media and lining materials) have been presented for further computer modeling the dynamics of interactions during the vibratory finishing.