عنوان مقاله:

An Investigation on Optimal Designing of Dynamic Vibration Absorbers Using Genetic Algorithm

محل انتشار:

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خلاصه مقاله:

In this study reducing of the unwanted phenomenon in machine tools, Vibration, has been investigated. The machine tools has been simulated as a five-degree-of-freedom discrete system consisting of cutting tool, work piece, body, head and cantilever of the machine. In order to reduce the undesired vibrations, a dynamic vibration absorber (DVA) with three unknown parameters (mass absorber, damping coefficient, stiffness absorberhas been added to the system in different positions. Utilizing Newton's second law, the governing equations have been obtained and solved. A genetic algorithm is proposed to efficiently achieve the optimum value for each 3-fold parameters in each positions of the system. The effectiveness of the proposed algorithm and the designed DVA is evaluated through comparing the vibration amplitude of the machine tool in the presence and absence of the DVA, and the paper concludes the best place to situate the vibration absorber and its specifications.

کلمات کلیدی:

Vibration Control, Dynamic Vibration Absorber, Optimize, Genetic Algorithm

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