Passive Seat Suspension With a Vibration Absorber

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The paper deals with modelling and optimization of a working machine seat suspension system parameters. Experimental work in the past shown that it is possible to replace even more complicated, for example parallelogram or scissor mechanisms, with simpler dynamic models of 1 or 1.5 degree of freedom (Zener model). The optimization of stiffness and damping parameters is realized using multiobjective function. The first component of the function expresses the acceleration of the seat squab, this points on the comfort of the seat, the second one expresses the relative displacement of the seat squab in regard to the working machine cabin, points on the better operator's sightedness and safe handling of the machine. This optimization process allows to propose so called „soft", „medium", or „hard" seat suspensions according to the value of the weighting coefficient. The paper also points on the possibility of improving the dynamic characteritics of the seat with the use of a vibration absorber. The expediency of its application is especially in working machines without significant changes in the seat excitation frequency spectrum.

Keywords: passive seat suspension, vibration absorber, modelling, optimization, frequency spectrum

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