

Testing and analysis of vibrations of a tension transmission with a thermally sealed belt

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Abstract: The advantages of heat-sealable belts include: the possibility of welding their ends, which allows to obtain a strip of any length and its quick replacement in case of damage, excellent resistance to abrasion, resistance to oil, grease, dirt and some chemicals, resistance to temperature from -30 °C to + 80 °C, significant elasticity at a relatively low level of stretching, high value of the friction coefficient, and thus very good anti-slip properties even at changes in load, safety in use in contact with food. There are few publications devoted to these belts, therefore the authors have built a stand for experimental studies of such drives. The analysis of vibrations of a draw gear with a thermally sealed belt was carried out in accordance with the assumptions of an active experiment. It was assumed that the input parameters are: belt tension force, torque loading the gearbox and rotational speed of the drive shaft, and the output parameters are the values of vibration acceleration of selected elements of the stand (the transducers are mounted on the bearing housings of the drive and driven shafts). During the research, the load of the gearbox was changed and the influence of its action on the value of point measures of vibration signals was observed. The following point measures were analyzed: rms value, peak value and kurtosis. The results of the research will certainly be useful for designers and people involved in the operation of drawstring drives with thermally weldable belts.

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