

Optimal Path Motion of Positional Electric Drive

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Abstract : The article identifies optimal path motion of positional electric drive, for example, the feed of cold pilgering mill. It is shown that triangle is the optimum shape of the speed curve, and the ratio of its sides depends on the type of load diagram, in particular from the influence of the main drive of pilgering mill, and is not dependent on the presence of backlash and elasticity in the system. This thesis is proved analytically, and confirmed the results are obtained by a mathematical model that take into account the influence of the main drive-to-drive feed. By statistical analysis of oscillograph traces obtained on the real object allowed to give recommendations on the optimal control of the electric drive feed cold pilgering mill 450. Based on the data that the load torque depends on by hit the pipe in rolls of pilgering mill, occurs in the interval (0,6...0,75) tc, the recommended ratio of start time to the braking time is 2:1. Optimized path motion allowed get up to 25% more RMS torque for the cycle that allowed increased the productivity of the mill.

Keywords : optimal curve speed, positional electric drive, cold pilgering mill 450, optimal path motion

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