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STIDIES IN EFFECT OF INCREASE IN DIAMETERS OF BODY CENTRAL BEARING AND THRUST BEARING OF FREIGHT CAR ON ITS DYNAMIC PERFORMANCE ON CURVED TRACKS

The paper focuses on evaluation of the effects of increased diameters of the center plate and center bowl of the freight car running on curves on its dynamic qualities. During the last decades the research in improvements of some units and elements of the 18-100 type bogies was carried out very actively in Ukraine. However, most upgrades were aimed mainly at improving only the normalized indexes of dynamic qualities of the car. The purpose of this paper is to examine the possibility of reducing an unnormalized angle of rolling the car body relative to the bolster by changing the diameter of the center plate and center bowl of the freight car. This objective is achieved by applying statistical methods of the research using a computer simulation. From the results of the study it was concluded that a change in diameters of the center plate and center bowl does not affect the regulated parameters of the dynamic qualities of the cars equipped with both standard and comprehensively retrofitted bogies running on curves. Also, an increase in the diameter of the center plate from 300mm to 500 mm has a little impact on the rolling angle of the car body with standard bogies running on curves of 200-400 m radius. The rolling angle of the car body equipped with comprehensively retrofitted bogies with different models of slides is little dependent on the diameter of center plates on curves of small radius (200 m). In so doing the rolling angle of the body is reduced, on average, by 15-20% for running the cars equipped with retrofitted bogies at a speed over 60 km/h on curves of 300-400 m radius. The research results show the effectiveness of changed diameters of center plates and center bowls. The research is valuable for railway transport and primarily for Ukrzaliznytsya as reduction of the rolling angle of the car results in an improved safety of the car

Keywords: dynamic qualities of car, diameters of body central bearing and thrust bearing, decrease in unnormalized angle of rolling the car body relative to bolster, statistic methods of studies using computer simulation.

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