
Experimental research of fatigue crack development in a rectangular plate

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The article presents the results of the experimental study of vibration parameters of rectangular plates with fatigue cracks loaded in their plane by a cyclically changing bending moment. The description of the original experimental stand where a cyclic load is created by means of a rotating disc installed with an eccentricity is given. Roller guides are installed between the disc and the plate to prevent wear of the plate during the loading. A high correlation of vibration signals obtained from sensors mounted directly on the plate near a crack and on the basis of the experimental stand is shown. It is concluded that for the further analysis of a technical condition of a plate it is possible to use a signal from the gauge mounted outside a plate. The results of the study can be useful for diagnosing plates if the crack in them cannot be detected visually due to the complexity of access to it.

Keywords: rectangular plate, vibration, diagnostics, experimental research, cracks

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