

The Stress Detection and the Fatigue Lifetime of Stainless Steel during Three-Point Bending Cyclic Loading

Milan Uhrčík, Monika Oravcová, Peter Palček, Mária Chalupová

Department of Material Engineering, Faculty of Mechanical Engineering, University of Žilina, Univerzitná 8215/1, 010 26 Žilina, Slovakia. E-mail: milan.uhricik@fstroj.uniza.sk, monika.oravcova@fstroj.uniza.sk, peter.palcek@fstroj.uniza.sk, maria.chalupova@fstroj.uniza.sk

The article will describe investigation of the deformation of stainless steel during three-point bending cyclic loading with using thermovision. The analysis will prove different temperature response to external loading and dependence of elastic or plastic deformation development on material's state. The input data which are necessary for this analysis we will can get from temperature field of specimen surface. Process of elastic and plastic deformation is in dependence on radiation emitted by the object. For obtain thermal fields we will use thermal camera FLIR SC7000 with the highest sensitivity. The contribution also presents results of fatigue resistance of austenitic stainless steel AISI 316L, which is used as a biomaterial, obtained at low frequency cyclic loading in the high cycle fatigue region by three- point bending test. The fracture surface of the testing sample was examined using scanning electron microscopy (SEM).

Keywords: Stress, Stainless Steel, Three-point bending, Fatigue.

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