Stress analysis by NDE to steel heated and submitted to the uni axial constraint

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Abstract

Any alteration in the microstructure, which reduces the life or performance, should be predicted sufficiently in advance in order to ensure safe, reliable and economic operation of the components. This prediction is possible with NDE techniques; so far the interaction of the non-destructive probing energy with the material depends on the sub structural / micro structural features such as point defects, dislocations, voids, micro and macro cracks, secondary phases, texture and residual stress. The stress sensitivity plays a very important role with respect to the different material properties. The object of this work is the characterization of stresses in the steel subjected to stresses. Indeed, we present in this paper the evaluation of steel X 38 coated and uncoated subjected to axial stresses located in the elastic and heated to varying temperatures by NDT methods. Thermography also allowed the application as a method of NDT, to check the thermal field.

Microstructural evaluation by conventional methods (XRD, micrography, microhardness) will be conducted as a comparative (to validate the performance of NDT).