

Application of Barkhausen effect in the impact assessment of welding to internal stress distribution in steel

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ABSTRACT: The paper presents identification method of internal stresses in plane steel elements in the case of delivery and welding assembly. The assessment was made by means of a non-destructive experimental method based on measurements incorporating local external magnetic field and the measurement of induced voltage, including Barkhausen noise. This method allows a degradation assessment due to internal and external actions, causing internal stress variation in a material. Internal stresses combined with the external load effects act on service safety of structural elements. The method allows to assess structural wear, comparing the material after use with the pattern material, leading to non-invasive experiments on ferromagnetic metals, both in qualitative and quantitative meaning.

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