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TECHNICAL FACULTY IN BOR



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TESTING OF WELDED JOINTS WITH LIQUID PENETRANTS

Students: Mahir Dreco, Armin Čaušević

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Abstract

Liquid penetrant examination is one of the most popular Nondestructive Examination (NDE) methods in the industry. It is economical, versatile, and requires minimal training when compared to other NDE methods. This method is used to detect surface defects such as micro and macro cracks on the surface, porosity and the similar defects on non-porous materials. Testing with liquid penetrants is based on capillary phenomena, i.e. the property of liquid to rise and penetrate into narrow free spaces-capillaries. The test procedure consists of cleaning the surface to be tested, then applying a liquid penetrant with high wetting ability and capillarity that penetrates on surface discontinuities. Excess liquid is removed from the surface, then a developer (powder) is applied to "draw" the trapped penetrant from the discontinuity to the surface of the component where it becomes visible. This paper presents the results of testing of welded joints obtained from Nitronic 60 stainless steel. The tested samples were intended for mechanical tensile testing and impact energy. The test was carried out on samples before and after machine processing of the samples. Surface cracks were observed on the samples that were tested before machining. No cracks were observed on the machined samples.

Keywords: *NDE methods, Liquid penetrant examination, Welded joints, Stainless steel*

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