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## Experimental determination of deformations of the hard faced samples made of steel for operating at elevated temperatures

Vukić Lazić<sup>a</sup>, Dušan Arsić<sup>a</sup>, Ružica Nikolić<sup>a,b,\*</sup>, Srbišlav Aleksandrović<sup>a</sup>,  
Milan Djordjević<sup>a</sup>, Branislav Hadzima<sup>b</sup>, Jan Bujnak<sup>c</sup>

<sup>a</sup>Faculty of Engineering, University of Kragujevac, Sestre Janjić 6, Kragujevac 34000, Serbia

<sup>b</sup>Research Centre, University of Žilina, Univerzitná 8215/1, Žilina 010 26, Slovak Republic

<sup>c</sup>Faculty of Civil Engineering, University of Žilina, Univerzitná 8215/1, Žilina 010 26, Slovak Republic

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### Abstract

An experimental procedure for determination of the lateral and longitudinal deformations of the multi-layer hard faced samples made of steel for operating at elevated temperatures is presented in this paper. Two plates, which were hard faced in three passes, were used to determine the level of residual stresses. The cored electrodes UTOP 38 and UTOP 55 were used. Deformations were measured in two phases: before and after the hard facing. The objective of deformations measurements was to establish the correlation between deformations, namely the applied technology (the input energy/heat) and the level of residual stresses, for different plate thicknesses.

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### 1. Introduction

In this paper is pointed to the complex problems of reparatory hard facing of forging dies, which are in exploitation conditions exposed to impact loading and cyclic heating up to elevated temperatures. Steels aimed for manufacturing of those tools thus have to sustain high impact loads, while preserving good mechanical properties at elevated temperatures and they have to be resistant to wear and thermal fatigue. From all the mentioned reasons, for

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\* Corresponding author. Tel.: 421-41-513-5912.

E-mail address: [ruzicarnikolic@yahoo.com](mailto:ruzicarnikolic@yahoo.com)











