

## **Effects of Heat Input Conditions on the Local Thermophysical Properties of Super Duplex Stainless Steels**

J. Castro-1<sup>1,\*,#</sup>, D. Almeida-2<sup>1</sup>, G. Fonseca-3<sup>1</sup>, E. Oliveira-4<sup>2</sup>

<sup>1</sup>Federal Fluminense University, Post-Graduation Program in Metallurgical Engineering, Volta Redonda, 27255-125, Brazil

<sup>2</sup>CEFET/RJ – Federal Center for Technological Education, Department of Metallurgical Engineering, Angra dos Reis, 23953-030, Brazil

<sup>#</sup>Corresponding author: joseadilsoncastro@id.uff.br

The properties of the super duplex stainless steels are strongly affected by the thermal history imposed by welding procedures. Substantial changes on the mechanical properties of the welding region are observed. The controlled dual phase microstructure (ferrite and austenite) guarantee excellent mechanical properties such as mechanical strength and corrosion resistance, in addition to small thermal expansion coefficient and high thermal conductivity. In this paper, a model able to predict the thermal history of the welding pieces coupled with local mechanical properties developed during welding procedure is presented. The model was verified by comparing measured and predicted temperature profiles. An inverse method was implemented to obtain the parameters fitting for the grain growth evolution, hardness and yielding strength compatible with the final microstructure and grain size measured using SEM images and stereological techniques.

### References:

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