hossam maghraby

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

hossam maghraby

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

hossam maghraby

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

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بعض الوثائق الأصلية تالفة

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شبكة المعلومات الجامعية

بالرسالة صفحات لم ترد بالأصل

Suez Canal University
Faculty of Petroleum and Mining Engineering
Metallurgical and Materials Engineering Department

STUDY ON WELDABILITY OF 50/50 Ni/ Cr ALLOY

A Thesis
Submitted to
Metallurgical and Materials Engineering Department
Faculty of Petroleum and Mining Engineering
Suez Canal University

For
The Master Degree of Science
In
Metallurgical and Materials Engineering
By

Hany Mohamed Masoud Farag
B.Sc. in Mechanical Engineering, 1988
Diploma in Metallurgical Engineering 1994
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2006

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Degree	Master Degree of Science
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English Abstract

In the present study observing the metallurgical transformations due to the high service temperature, and the effect of this transformation on mechanical properties and weldability of the alloy of interest (as cast and after service). Various heat treatment regimes at different temperatures and welding at different heat inputs, several facts about the phase structure evolution and its relation to the deterioration in mechanical properties. It is related to precipitation of Cr-rich α-phase inside γ-phase at low service temperatures (close to 700°C).This precipitation gets slightly enhanced if the alloy is previously heated at higher temperatures (1050°C) due to the high solubility of Cr in the γ-phase at these temperatures as compared with that at service temperatures (close to 700°C). Also heat input controls the hardness profile across the weld, with higher possibility of formation of local hard zone and hard throat as the cooling rate decreases, especially for the as-cast alloy. Hard throat could be avoided by either increasing or decreasing the heat input beyond a critical value.

Key words	Superalloy, Heat Treatment, Microstructure, weldability, Heat input, local hard zone, hard throat

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ABSTRACT