"A NUMERICAL INVESTIGATION INTO THE THERMAL DISTRIBUTION IN A STEAM CRACKING FURNACE" OPTIMAL CHEMICALS (M) SDN. BHD. CASE STUDY

BY

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9004

Draft Dissertation submitted in partial fulfillment of
The requirement for the
Bachelor of Engineering (Hons)
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Universiti Teknologi PETRONAS,
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CERTIFICATION OF APPROVAL

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Khairil Fadzli Bin Abu Bakar

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Approved by,

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(Ir Dr Mohd Shiraz Aris)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
December 2010

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

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KHAIRIL FADZLI BIN ABU BAKAR

ABSTRACT

This project is about a Radiant Tube Coil bending problem inside a Furnace Firebox. This Radiant Tube Coil Bend problem study is crucial because it may affect the reliability life of the radiant tube coil inside the furnace. However, based on the RCI, there are assumptions made that may cause this failure such as non uniform heat distribution inside the firebox, malfunction of the counterweight system for the radiant coil, or too much heat supply.

Therefore, the project will be more focusing on the heat distribution inside the furnace radiant firebox. A model will be constructed and developed to study the heat distribution inside the furnace firebox space by using Computational Fluid Dynamic (CFD) software. By this modeling, the characteristic of heat distributed near the radiant coil inside firebox will be analyzed. In addition, the simulation model will be validating with the OPTIMAL Operating Furnace (specifically Furnace 4) as it will be the case study of this project.

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