Mara University Of Technology

FINAL YEAR PROJECT REPORT

TO STUDY THE EFFECT OF HEAT TREATMENT ON THE MECHANICAL PROPERTIES OF LOW-ALLOY COLD WORK STEEL

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Acknowledgment

Assalamualaikum w.b.t

Praise and grace to Allah for under His blessing, which allows us to complete our final project even through there are some problems occur during the experiment.

This final project is prerequisite to fulfill the requirement of Diploma in Mechanical Engineering from University Technology Mara.

First of all we would like to express our gratitude to our project advisor, Pn Noraini bte Wahab for her guidance, advised and knowledge during working out with this project.

We also like to thanks to En. Abu Kassim (Material Science lab technician), En. Ayub (Strength lab technician) and all workshop technician for their contribution in our project.

Lastly we would like to express our appreciation to all lecturers and other personnel which involved in this project. All your kindness will be remembered, thank you.....

ABSTRACT

Heat treatment is an operation involving the heating of the solid metal to definite temperature followed by cooling at suitable rates in order to obtain certain physical properties, which are associated with changes in the nature, form size and distribution of the micro constitutions.

In our project, we used low alloy cold work steel that we brought from mechanical shop at Sungai Rasau, Klang. We cuts the raw materials into I tensile test specimen and we did a heat treatment on it.

Heat treatment that we done in our process can be classifieds as follows:

(a) Hardening

(b) Tempering

(c) Quenching.

Our hardening temperature is about 1000°and than we holding for a soaking time at this temperature for one hour. After that put all the specimen into a cooling medium, that is liquid nitrogen

For our tempering process, we done in different temperatures, that is:

300°c	450°c	600°c
350°c	500°c	650°c
400°c	550°c	700°c

After all the heat treatments done, than we test the mechanical properties of steel by using a tensile test machine. Tensile test is used to study a strength or strain of steel. We also study a hardness of steel by using a Rockwell machine

For the last, we did a photomicrography process to see the microstructure and grain size of low-alloy cold work steel.