EFFECT OF PRE-SETED RESIDUAL STRESS ON THE SPUR GEAR

ALFONSO MUZE JEROL

(2000215729)

A thesis submitted in partial fulfillment of the requirement for the award of Bachelor of Engineering (Hons) (Mechanical)

Faculty of Mechanical Engineering

Universiti Teknologi MARA (UiTM)

MEI 2003

"I declare that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

Signed : 

Date : 19/05/2003

Alfonso Muze Jerol

UiTM No: 2000215729

ABSTRACT

Residual stresses are those stresses remaining in a part after all manufacturing operations are completed, and with no external load applied. These residual stresses can be either tensile or compressive. Residual stresses affect such important materials design properties such as fatigue life, fracture strength, onset of yield, and microcracking.

This project work is focused on the effect of pre-setted residual stress on a spur gear. Test jig is designed and fabricated to facilitate monitoring of the effect progress and with the help of compress machine, which apply the load that available in the lab. Different value of pre-setted load is applied to observe the effect that may occur. Another method using finite element method is used for comparative studies. In this method, location of maximum stress occurred is observed and compared with the result from the experimental method.

It is importance to notify here that with such experimental work and finite element analysis, understanding on residual stress and finite element software analysis should be taking into account.

TABLE OF CONTENTS