



**STUDY ON MACHINING OF ASSAB 718HH
WITH AND WITHOUT COOLER DEVICE**

**MOHAMMAD ANAS BIN BAHAROM
(2007270972)**

**BACHELOR ENGINEERING (HONS) (MECHANICAL)
UNIVERSITI TEKNOLOGI MARA (UiTM)**

MAY 2010

“I declared 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 : 24/5/2010

Mohammad Anas Bin Baharom

UiTM No : 2007270972

ACKNOWLEDGEMENT

Praise to the Almighty Allah, for I bless with the experiences that I obtained during my entire final year project research and giving me opportunity to complete this project. First and foremost, I would like to express my gratitude to my outstanding supervisors, Pn. Norliana Binti Mohd for his guidance, advice, co-operation, encouragement and useful ideas in completing this research. Thank you very much to Dr. Ramlan Bin Zailani as my Co-supervisor for helping me from the beginning of my research.

My appreciation and gratitude is extended to En Wan Emri bin Wan Abdul Rahman as my Final Year Project Coordinator who has teach and guided me on how to do a thesis and share his priceless experience about what are the mistakes that students usually done during this project.

My appreciation would be incomplete without giving credit to UITM, especially Department of Mechanical Engineering who has equipped me with essential skills for self-learning. Its well-grounded graduate philosophy has proven to be useful in the industry.

Last but not least, I would thank to all staff members of Laboratory of Mechanical Engineering Faculty as well as my friends and family for their assistance and support.

ABSTRACT

Electrical discharge machining (EDM) is one of the most widely applied non-conventional processes. Its most important advantage is that its effectiveness is regardless of the mechanical properties of the machined materials. Hence, titanium, which is a difficult-to-machine material, can be machined effectively by EDM. However, EDM machined surfaces have defects of micro cracks and pores formed by the strong temperature gradient during machining. These defects result not only in poor surface precision, but also in a shortened service life of machinery parts. Crack can be found under the machined surface when detail analysis was conducted. Crack tip tend to follow the temperature isotherm. Therefore, the study aims to reduce the crack formation by introducing cooler method. This study focus on the behavior of machining ASSAB 718HH using EDM die sinking which has undergo machining with and without cooler device. The investigation were conducted cover the area such as material removal rate (MRR), tool wear rate (TWR), and surface integrity such as hardness, surface roughness (SR), white layer thickness (WLT), roundness, and microstructure. Furthermore, this study discusses the relationship between parameters selected with the effect on the EDM performance and surface integrity exhibits after EDM process. Based on the result obtained, the machining with cooler device helps in improving the MRR and the hardness of the machined specimen.

AUTHOR DECLARATION

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

Signed : 

Date : *8/12/06*

MOHD ANUAR AFFENDI B SENARDI

UiTM No: 2002333661