FINAL YEAR PROJECT REPORT

ADVANCED DIPLOMA OF MECHANICAL ENGINEERING

SCHOOL OF ENGINEERING

MARA INSTITUTE OF TECHNOLOGY

SHAH ALAM

A STUDY ON PROPERTIES OF WAX (PALM OIL BASED) FOR INDUSTRIAL USES ON MACHINING APPLICATION

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PREFACE

Machining is a mechanical process where excess material from a workpiece can be removed by cutting action to produce a part of specified geometrical shape and surface finish. Machining can be performed on virtually all solid materials even though the term commonly applies to the cutting of metals, alloys, plastics and woods. In this paper, we will discuss whether there is a possibility to use the palm oil based wax for machining application. At the moment, different ferrous and non-ferrous materials are used for practical training purposes by different educational and training organisation. However, the price of such material is very expensive. As for prototype making with use of high-technology machines, such as CNC machine, require cheaper and reliable material to balance the cost of its operations. Hence an attempt is made to substitute these materials by the palm oil based wax produced in Malaysia. This project gives the approaches taken in this direction.

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1.0 Introduction To Machining Operation

Machining has often been defined as the art of chip removal. However, with the evolution of more sophisticated machine tools, particularly those controlled by coded instruction, and an increased knowledge of the mechanical, metallurgical and chemical nature of cutting action, it is probably more accurate to describe modern-day machining as a science rather an art.

A large volume of machining is still performed manually by machine operators who rely both on intuition and skills developed by training and practice. Machine tools are being developed with innovations to increase productivity and improve the technical capabilities of the machinist. The advent of tape and computer-controlled machine tools from the traditional operator to a part programmer. Studies indicate, however, that manually operated machines will continue to dominate manufacturing for at least the near future.

Despite these improvements the basic nature of machining remains the same; to use machine tools and cutting in combination to reduce a piece of material to some specified shape and dimensions in a economical and practical manner while maintaining the quality and reliability requirements for functional application. Many people, such as the production engineer, the process engineer, the plant engineer