MACHINING PRACTIES IN MALAYSIA INDUSTRIES

PREPARED BY

TONY JERRY
93162809

NORIZAH MOHD GHANI
93540247

PREPARED FOR

MECHANICAL ENGINEERING DEPARTMENT

MARA INSTITUTE OF TECHNOLOGY

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TABLE OF CONTENTS

PREFACE

This final project report is a part of need for fulfilment of Diploma in Mechanical Engineering,School of Engineering,Mara Institute Of Technology,Shah Alam.

Prepared by :

TONY JERRY
93162809

NORIZAH MOHD GHANI
93540247

Satisfied by :

Dr. P.N Rao
Mechanical Engineering Department
Mara Institute Of Technology

School Of Engineering
Mechanical Engineering Department
Mara Institute Of Technology

INTRODUCTION.

Some of the most important problems of the workshop involved the choice of cutting speeds and feeds, tool geometry,tool and work materials, cutting fluids and machine tool themselves.

There appear to be only three basic considerations associated with all of these decisions:-

1. The chosen cutting conditions must be capable of producing part and that meet the required specifications of size, shape and finish.
2. The required production schedules must be met.
3. The parts should be produced at the lowest possible cost.

In the large-scale mass production of parts, sufficient equipment can often be procured to meet production requirement under a wide range of conditions and the important problem might then become to choose the operating conditions so that guality requirements are just met and the total cost per part is a minimum.

Since the cost of the tools what are used on a given operation respresent a major component of the total machining cost,tool life plays a major role in the choice of optimum machining conditions. The several different criteria for tool life which must be adapted under different practical situations.

ECONOMICS.

The ultimate objective of the manufacturing engineer is to produce the objects at the most economical cost. To do this he should be able to analyze the machining process for all the possible costs,so that he would be able to optimise the process to get the minimum possible costs satisfying all the requirements.

The various costs associated with machining process are:

1. The manpower cost, C_1 which is measured in RM per unit time, generally hour that operator is employed.
2. The machine tool operating (overhead) cost, C_m which includes machine depreciation,and other costs associated with the running of the machine tool such as power consumed, maintenace overheads,consumables such as oils, etc. This may also include the other overhead costs, which takes care of all the fixed overheads such as buildings,land and administrative overheads. $C_m = C_m + C_1$
3. The job handling costs, which arises because of the time spent in loading and unloading of the job in which time the machine tool is kept idle,and also requires the operator to attend to the job.It is also possible that some special equipment such as crane,etc. may be used for heavy jobs.
4. The tool cost, C_t which is the cost of the cutting tool for the given operation.

The three optimisation criterion that are generally considered are:

- Minimisation of the machining cost.
- Maximizing the production rate.
- Maximizing the profit rate.

Of the criteria, the profit rate criterion requires more information in terms of various costs which may not always be available to the process planning department,hence the other two are more practical in terms of actual application. Later on practical example shows the effect of each of the criterion on the results obtained.