KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA

BORANG PENGESAHAN STATUS TESIS*

JUDUL: MANAGEMENT AND IMPROVEMENT OF CAD/CAM SYSTEM - STEELCASE ARTWRIGHT MANUFACTURING SDN BHD

SESU PENGAJIAN: 2001/2005

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Management and Improvement of CAD/CAM System – Steelcase Artwright Manufacturing Sdn Bhd

Thesis submitted in accordance with the requirements of the National Technical University College of Malaysia for the Degree of Bachelor of Engineering (Honours) Manufacturing (Process)

By

Mohd Izhar Bin Bahru

Faculty of Manufacturing Engineering

October 2005
DECLARATION

I hereby, declare this thesis entitled “Management and Improvement of CAD/CAM System – Steelcase Artwright Manufacturing Sdn.Bhd” is the results of my own research except as cited in the reference.

Signature : 
Author’s Name : MOHD. IZHAR BIN. BAHRU
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MANAGEMENT AND IMPROVEMENT OF CAD/CAM SYSTEM – STEELCASE ARTWRIGHT MANUFACTURING SDN BHD

MOHD IZHAR BIN BAHRU

KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
APPROVAL

This thesis submitted to the senate of KUTKM and has been accepted as fulfillment of the requirement for the degree of Bachelor of Engineering (Honours) Manufacturing (Process). The members of the supervisory committee are as follows:

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ABSTRACT

The term CAD/CAM implies that an engineer can use the system both for designing a product and for controlling manufacturing processes. This thesis develops the management and improvement of CAD/CAM system at Steelcase Artwright Manufacturing Sdn Bhd to maximize material (sheet metal) utilization. AP100 software was been use to improve the CAD/CAM system in this company. Beside that, two types of CNC punching machine was involved to produce very large numbers of identical parts from sheet metal. Due to the high volumes of parts produced, even small inefficiencies in material utilization per part can lead to very large amounts of wasted material over a good management of CAD/CAM system. This system hardware and software must be in working order and available and all other resources must be in place. The system should be backed up frequently to prevent unnecessary loss of working data. Further more, less knowledge and do not have standards system from workers, staff and engineer was one of the weakness in production management. To achieve maximum benefits from the use of CAD/CAM, the system that have been improve in this thesis should be in productive use as much as possible. This requires good planning and organization. The real situation of this thesis had been implemented at Steelcase Artwright Manufacturing Sdn Bhd for finding a best way to improve their quality system of CAM/CAM management.
ABSTRAK

DEDICATION

To my beloved parent, family and friends
ACKNOWLEDGEMENTS

In the name of Allah SWT, I thank Him, as for His bless, I was able to finish this Projek Sarjana Muda report.

Along my involvement in the process of writing this report, I was helped and support by all parties in terms of moral, spiritual and technical support. I would like to thank my PSM Supervisor, Puan Seri Rahayu Binti Kamat for his patient in supervising and managing me along this period.

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Mohd Izhar Bin Bahru

October 2005
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SIGN AND SYMBOLS

| 3D  | - | Three dimension |
| 2D  | - | Two dimension   |
| DWG | - | Drawing         |
| CAD | - | Computer Numerical Control |
| CAM | - | Computer Added Manufacturing |
| RM  | - | Malaysian Ringgit |
| IT  | - | Information Technology |
| SAM | - | Steelcase Artwright Manufacturing Sdn Bhd |
| SME | - | Small Medium Enterprise |
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CHAPTER I
CHAPTER 1
INTRODUCTION

1.1 Background

The study was conducted in Steelcase Artwright Manufacturing (M) Sdn. Bhd. It is focused on the plant layout for Zones 07, CAD/CAM system and CNC machines in the factory. This manufacturing plant was established and located at Puchong, Selangor. Steelcase Artwright is internationally recognized as a leading office interiors company. The brand name is known for design, innovation and a range of products named System MX workstations, that provides a fully integrated and highly flexible office interiors solutions developed from the ground-up.

Company name : Steelcase Artwright Manufacturing Sdn Bhd,
Address : No.17, Jalan Puchong 22KM, 47100 Puchong, Selangor.
Product : Office Furniture (System MX workstations)
Working Hours : Normal shift – From 8.00am to 5.00pm
Others shift ;  
1) 8.00am – 6.00pm
2) 6.00pm – 7.00 am
Number of Staff : 300 persons.
1.2 Objective of the Research

All of the objective are refer to the Steelcase Artwright Manufacturing Sdn Bhd, Puchong, Selangor. It is include;

i) To improve quality of CAD/CAM management system in industry.

ii) To optimize material usage for sheet metal and increase company profit.

iii) To maximize utilization of AP100 software in controlling CAD/CAM process for punching machine (model PEGA 357 and ARIES 245).

1.3 Scope of the Research

Scope for the thesis is refer to Zone 07 (sheet metal zone) at Steelcase Arwright Manufacturing Sdn Bhd. The research and analysis focus on improvement CAD/CAM system management and process of controlling two type of CNC punching machine model. There models are;

i) AMADA PEGA 357 Punching Machine and,

ii) AMADA ARIES 245 Punching Machine.

This two type of CNC punching machine are operating 24 hours per day. It is produce many part for sheet metal product. The research also focus on their improvement utilization of AP100 software in controlling this two types of CNC machine. So that, the overall scope must related to the CNC punching machine and the AP100 software at Steelcase Artwright Manufacturing Sdn Bhd.
1.4 Problem Statement

Often processes involve the application of raw materials to a minimum specification (e.g. filling or coating processes). In many cases the manufacturing specifications are set to ensure customer conformance but if the process could be controlled better, the process set point could be set lower and still meet the minimum requirement. A saving of only 1% of material cost can add up if the material is a significant one.
There are several problems occurred in this thesis that needed to be solved. Problem statement in this thesis include:

i) Performance of material usage for CNC punching machine process

ii) Utilization of AP100 software in controlling CAD/CAM process for punching machine (model PEGA 357 and ARIES 245)

iii) Profit and Quality of CAD/CAM

1.4.1 Performance of Material Usage for CNC Punching Machine Process

There are many problem associated in material waste of manufacturing plant at zone 7, Steelcase Artwright Manufacturing Sdn Bhd. Two type of CNC punching machine was be identified as a major problem in given negative impact of material usage in the factory. There are many scrap, and reject part had happen from the punching process and also low performance of CAD/CAM management system in the factory.

1.4.2 Utilization of AP100 Software in Controlling CAD/CAM Process for Punching Machine (Model PEGA 357 and ARIES 245)

To achieve maximum benefits from the use of CAD/CAM, the system should be in productive use as much as possible. System hardware and software must be in working order and available and all other resources must be in place. The system should be backed up frequently to prevent unnecessary loss of working data. Less knowledge and do not have standards system from workers, staff and engineer was one of the weakness in production management. The problems of minimum utilization in AP100 software should be the worst thing for achieving high productivity in fabrications industries. This problem must be counter for improve their productivity.
1.4.3 Profit and Quality of CAD/CAM

The problem statement included on this matter are;

i) Low quality of CAD/CAM management at SAM.

ii) The cost for material waste of sheet metal is too high.

a) Low quality of CAD/CAM management at SAM

There is no research or detail development done to control the quality rate of CAD/CAM management at SAM. In this situation bring the negative effect to the company profit by produce many rework and reject part. This problem are the most important thing to improve now.

b) The cost for material waste of sheet metal is too high.

Waste and scrap reduction are probably in the top three critical issues affecting global industries competitiveness. The recent push to emphasize total quality management and re-engineering certainly highlight its importance. But, even before these holistic assessments, there are many obvious areas where process-by-process waste reduction and minimization are cost-effective. As with other cost control issues, proper measurement and reporting is the critical first step.