



**COMPARISON BETWEEN THE ESTIMATED AND
ACTUAL PRODUCTIVITY FOR THE
FABRICATION OF A STEEL FRAMEWORK**

**MOHD ZUKARNAN BIN MAT DERASEH
(2006689119)**

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

MAY 2010

ACKNOWLEDGEMENT

Firstly, I would like to be very thankful to the Almighty for His benevolence and generosity in giving me strength, healthy and courage to complete my thesis successfully in order to fulfill the requirement for Bachelor of Engineering (Hons.) in Mechanical Engineering, University Technology Mara.

I would like to express my sincere gratitude and appreciation to my supervisor En Ghalib Tham for kindness, guidance, advice and sharing experiences in the research of comparison between the estimated and actual productivity for the fabrication of a steel framework. He inspiring advice will be remembered.

Also appreciate to my family that has give me the best support via morale and specifically via economy throughout my academy career. Thousands thank to lecturers, workshop staffs and my fellow friends with their fervent helps in finding out the information, generate some ideas and improve my febleness in case solutions to me accommodate in this final year project.

ABSTRACT

A manufacturing company has the need to improve productivity in fabrication. The improvement in production technology will not effectively increase productivity unless the efficiency in material handling, preparation, assembly, application of tooling and welding deposition is optimized. To improving the productivity, Work Study analysis was applied, incorporating Method Study and Work Measurement to determine the critical path, to optimize the assembly line and to eliminate activities that reduce the productivity.

The study began by selection one of the process line (fabrication of structure frame), video of the entire process or activities such as design of the structure frame with Catia software(structure details, gusset details, welding details, bolting details)welding training, structure members(search material, handling material, measurement of material preparation of cutting process, replace material, drilling), gusset plate(search, handling, cutting, replace, drilling material), assembly(assembly the fixture, assembly the structure members, assembly the gusset plate, tack welding/bolting) and welding(preparation of welding machine, preparation of frame before welding, NDT testing, inspecting of welding) was recorded and data were analyzed in Microsoft project software.

Through replay of the video, the duration of every operation step in every work station can be measured. Based on the production flow, a new flow chart was developed in Microsoft Project software. a planned project schedule or new flow chart will then be compared to actual fabrication performance.

TABLE OF CONTENTS

CONTENT	PAGE
ACKNOWLEDGEMENT	i
ABSTRACT	ii
TABLE OF CONTENT	iii
CHAPTER 1 INTRODUCTION	
1.1 Introduction	1
1.2 Objective of the project	3
1.3 Scope of the project	3
1.4 Significances of the project	3
1.5 Project flow	4
CHAPTER 2 LITERATURE REVIEW	5
2.1 Introductions	5
2.1.1 What is Productivity	6
2.1.2 Productivity framework	7
2.2 work study	9
2.2.1 The meaning of work study	9
2.2.2 Techniques of work study and their relationship	9
2.2.3 Basic procedure of work study	10

CHAPTER 1

1.1 INTRODUCTION

Welding is a fabrication that joins materials, usually metals or thermoplastics, by causing coalescence. This is often done by melting the workpieces and adding a filler material to form a pool of molten material (the weld pool) that cools to become a strong joint, with pressure sometimes used in conjunction with heat, or by itself, to produce the weld. This is in contrast with soldering and brazing, which involve melting a lower-melting-point material between the workpieces to form a bond between them, without melting the workpieces. [2]

Now a days, in the world of fabrication and manufacturing industry, mostly the products and the parts that produces involve various steps in their process of which the product start from raw material until the product or fabrication parts produces a desired. So, most the fabrication process involves the process like stamping, joining and other process until the parts or products ready to be distributed. So like in automotive industry, each type of process must be aware to get the product in good condition and safe when being in is use. [2]



Figure 1: Gas Metal Arc Welding