

UNIVERSITI TEKNOLOGI MARA

**A STUDY ON THE CAPACITY CONSTRAINT AND
PRODUCTION OUTPUT AT FIRST SOLAR (M) SDN
BHD**

**ABDUL RASHID BIN MOHD GHAZALI
ASRUL KAMAL BIN MOHD SAFIE
MD ZAHID BIN ZAINOL**

Dissertation submitted in partial fulfilment of the requirements
for the degree of
Master of Business Administration


Arshad Ayub Graduate Business School

June 2014

AUTHORS' DECLARATION

We declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of our own work, unless otherwise indicated or acknowledged as referenced work. This topic has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

In the event that our dissertation be found to violate the conditions mentioned above, we voluntarily waive the right of conferment of our degree and agree be subjected to the disciplinary rules and regulations of Universiti Teknologi MARA.

Name of Candidate : Abdul Rashid Bin Mohd Ghazalli
Candidate I.D. No. : 2012883944
Signature of Candidate : 

Name of Candidate : Asrul Kamal Bin Mohd Safie
Candidate I.D. No. : 2012627716
Signature of Candidate : 

Name of Candidate : Md Zahid Bin Zainol
Candidate I.D. No. : 2012823052
Signature of Candidate : 

Programme : Master of Business Administration
Faculty : Arshad Ayub Graduate Business School
Thesis Title : A Study On The Capacity Constraint and Production Output At First Solar (M) Sdn Bhd

ABSTRACT

From operation management view, the capacity of an operation is defined as the maximum level of value-added activity that the process can achieved under normal operating conditions. More often, especially in manufacturing sector, capacity is defined as the maximum production or output rate. Despite having good capacity, the production rate / capacity are highly depending on the constraint available, which limited the company to achieve its current and future demand as well as opportunity available.

In First Solar Kulim, the company is facing problem on it existing capacity. The existing production capacity is unable to manage and fulfil existing and additional demand on its solar panel. This is due to the First Solar German's factory and operation has been suspended, which had affected First Solar global production output. Increasing demand for solar panels products is another contributing factor. Without involving new investments, the problems of capacity constraints need to be addressed and resolved in order for First Solar to remain competitive in the market. In this study, the researchers have investigated on how to overcome the capacity constraints to enable First Solar Kulim to achieve its existing and future demand for its products.

The researchers have focused on the process improvements at finishing area which is the last process and become bottleneck in an existing First Solar throughput. There are four tests being conducted in order to find the best options for process improvement. All four tests have given significant results in terms of production output. However, the best option is selected based on the criteria of acceptable product quality such as panel dryness and visual specifications. This study could help to enable First Solar Kulim to manage its capacity constraints by doing a process improvement in order to achieve its maximum production output.

TABLE OF CONTENTS

	Page
TITLE PAGE	
AUTHORS' DECLARATION	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	vii
LIST OF FIGURES	viii
CHAPTER 1 : INTRODUCTION	
1.1 Background of the Study	1
1.2 Background of the Company	3
1.2.1 First Solar Technology	5
1.2.2 First Solar Market History	5
1.2.3 Production History	5
1.2.4 First Solar Market Performance	6
1.2.5 First Solar Achievement	6
1.3 Problem Statement	8
1.4 Objective of the Study	13
1.5 Scope of the Study	13
1.6 Limitation of the Study	13
1.7 Significant of the Study	14
1.8. Definition of the Terms	15
1.9 Organization of the Report	16
CHAPTER 2: LITERATURE REVIEW	
2.1 Preamble	17
2.2 Production Capacity	17
2.3 Process Improvement	19
2.4 JMP Software	21
2.5 Six Sigma Approach	21

CHAPTER 3: RESEARCH METHODOLOGY

3.1	Preamble	24
3.2	Method of Collection	25
3.3	Design of The Study	26
3.4	Unit of Analysis	26
3.5	Emphirical Study	26

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

4.1	Preamble	27
4.2	Six Sigma Approach	28
4.2.1	Define (D-Phase)	28
4.2.2	Measure (M-Phase)	29
4.2.3	Analyse (A-Phase)	31
4.2.4	Improve (I-Phase)	35
4.2.5	Control (C-Phase)	38

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

REFERENCES

APPENDICES

<i>Appendix 1</i>	Production Data on KLM2 Labeller Throughput
<i>Appendix 2</i>	Production Data on KLM3 Labeller Throughput
<i>Appendix 3</i>	Production Data on KLM4 Labeller Throughput
<i>Appendix 4</i>	Data Analysis on KLM2 Broken and CSM Rate
<i>Appendix 5</i>	Data Analysis on KLM3 Broken and CSM Rate
<i>Appendix 6</i>	Data Analysis on KLM4 Broken and CSM Rate
<i>Appendix 7</i>	Hypothesis Test