



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Karung Berkunci 1200, Hang Tuah Jaya, Ayer Keroh, 75450 Melaka
Tel : 06 - 555 2111, Faks : 06 - 555 2112
E-mel : fkekk@kutkm.edu.my / fkekk@utem.edu.my

FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

Rujukan Kami (Our Ref) : UTeM 22/15.12/1 (3)
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PENKELASAN LAPORAN PROJEK SARJANA MUDA (PSM) SEBAGAI SULIT/ TERHAD

- **NAMA PENULIS : NUR HANISAH BINTI BUANG**
- **KURSUS : SARJANA MUDA KEJURUTERAAN ELEKTRONIK (ELEKTRONIK INDUSTRI)**
- **TAJUK : Investigation of Handphone Manufacturing Process**

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Sekian. *Wassalam.*

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Fakulti Kejuruteraan Elektronik Dan Kejuruteraan Komputer
b.p Dekan

s.k - En. Zulhairi bin Othman
Ketua Jabatan Elektronik Industri
Fakulti Kejuruteraan Elektronik dan kejuruteraan Komputer

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INVESTIGATION OF HANDPHONE MANUFACTURING PROCESS

NUR HANISAH BINTI BUANG

**This Report Is Submitted In Partial Fulfillment Of Requirements For The
Bachelor Degree of Electronic Engineering (Industrial Electronic)**

**Fakulti Kejuruteraan Elektronik dan Kejuruteraan Komputer
Universiti Teknikal Malaysia Melaka**

April 2006

**CUBIC LEARNING FACTORY SDN BHD
(731432-M)
NO. 1, JALAN T.U. 43,
TAMAN TASIK UTAMA,
AYER KEROH,
75450 MELAKA.**

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FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

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Alamat Tetap: 2, JLN KERUING 4A/2,
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ZULHAIRI B OTHMAN
Ketua Jabatan (Elektronik Industri)
Fakulti Kej Elektronik dan Kej Komputer (FKEKK),
Universiti Teknikal Malaysia Melaka (UTeM),
Karung Berkunci 1200,
Ayer Keroh, 75450 Melaka

Tarikh: 27 APRIL 2007.....

Tarikh: 27 APRIL 2007.....

Ref: CLF.EXT.1074/07

Date: 5th April 2007

Supervisor Name: En Zuhairi Bin Othman

TO WHOM IT MAY CONCERN

This is to certify that Nur Hanisah Binti Buang, IC No. 840418-06-5402, who is a Bachelor Engineering undergraduate from University Technical Malaysia Malacca has undergone a project attachment with Cubic Electronics Sdn Bhd.

She has specifically completed a project study on Investigation Of Handphone Manufacturing process. This project is strategy collaboration under the MOU between CESB and UTEM, which coordinated by Cubic Learning Factory. The projects given are concentrating in our latest project Magic and Minimo Multimedia Phone specifically focus on production process cycle time and its improvement. The priority of this program is to improve Cubic production process capability. Project completed with excellence process and now production are in optimize process.

During her short period with our company, we found that she is industrious, creative, innovative and capable of handling all the assignments given to her. We would like to recommend that she is a good learner with a great attitude and also a proactive player in her team.


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Signature : 
Supervisor Name : Mr. ZULHAIRI BIN OTHMAN
Date : 27 APRIL 2007

ZULHAIRI B OTHMAN
Ketua Jabatan (Elektronik Industri)
Fakulti Kejuruteraan Elektronik dan Kejuruteraan Komputer (FKEKK),
Universiti Teknikal Malaysia Melaka (UTeM),
Karung Berkunci 1200,
Ayer Keroh, 75450 Melaka

“I admit that I had read this report and in my opinion this report is sufficient in the manner of scope and quality, to be awarded with a Bachelor of Electronic Engineering with honors (Industrial Electronic)”


Signature :.....

Supervisor Name : En. Sik Chong Weai

Date :.....

CUBIC ELECTRONICS SDN. BHD.
295864-X
NO. 1, JALAN T.U. 43,
TAMAN TASIK UTAMA,
AYER KERDH,
75450 MELAKA.
TEL: 06-2512888 FAX: 06-251 2999

“I admit this report is written by me except the summary and extraction for each I
have been clearly presented.”

Signature : 

Name : NUR HANISAH BINTI BUANG

Date : 27 APRIL 2007

Special dedicated to my beloved parents, family and fellow friends, who had strongly encouraged and supported me in my entire journey of learning....

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Finally, for those who give a contribution in my training whether direct or indirectly involved thanks a lot. Completing my Projek Sarjana Muda with the title of Investigation of Handphone Manufacturing Process successfully is the pleasant time for me.

ABSTRACT

This project involve in actual handphone manufacturing process. The hanphone is called Minimo which is the first low cost multimedia phones featuring a full featured MP3 player, a 2Mega Pixel camera and a mini SD memory card for the price of a normal color screen phone. The growing population of cell phones increases the number of competitor. Industries need to produce good features and quality handphone. Those make the cost to produce a handphone increase. To make sure production cost balance with the profit, the company have to reduce production cost. There are two methods in six sigma that have been focus to reduce the cost and at the same time increase the output without forget the quality of the handphone. The methods that have been used are standard time analysis and yield analysis. The statistical tools of Six Sigma system are designed to help an organization correctly diagnose the root causes of performance gaps and variability, and apply the most appropriate tools and solutions in addressing those gaps.

ABSTRAK

Dewasa ini, penggunaan telefon bimbit digunakan dengan meluas di seluruh dunia tanpa mengira umur. Projek ini terlibat dalam proses pembuatan telefon bimbit iaitu Minimo. Minimo merupakan telefon multimedia dengan kos yang rendah tetapi mempunyai pelbagai fungsi yang memenuhi citarasa pelanggan. Pertambahan jenis telefon bimbit telah meningkatkan bilangan pesaing antara industri. Oleh itu, setiap industri mesti mengeluarkan jenis telefon bimbit yang berkualiti dengan fungsi yang menarik dan pelbagai. Oleh itu, untuk memastikan kos pengeluaran seimbang dengan keuntungan, industri harus mengurangkan kos pengeluaran. Terdapat dua metodologi dalam six sigma yang difokuskan agar dapat menambahkan output sekaligus mengurangkan kos pengeluaran. Metodologi yang dimaksudkan ialah analisis masa dan produk. Six sigma adalah kaedah yang terbaik untuk menganalisa data yang menjadi punca utama masalah dan seterusnya mencari jalan penyelesaian terbaik bagi menyelesaikan masalah tersebut.. Kebanyakan industri menggunakan kaedah ini dalam setiap proses pengeluaran.

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CHAPTER I

INTRODUCTION

This chapter briefly explains about the project which involve in actual handphone manufacturing process in CESB production line.

1.1 INTRODUCTION

This project is classified since it involves actual handphone manufacturing process in CESB production line. In this project, we use six sigma method which is a highly discipline process that helps organizations focus on developing and delivering near perfect product and services.[5]

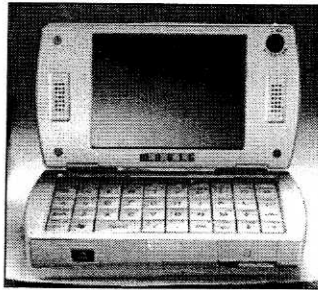
We are involved in MAGIC and MINIMO manufacturing process. M.A.G.I.C, is the world's first unique high end convergent communication device for the world market. The core competency for this project will be provided by Dr. Shiv Verma. The R&D and hardware design team with current staff strength of 8 engineers and 6 support staff in marketing, finance/administration, will be based in Malaysia. The team will be supported by dedicated resources from USA, HK and China. The product will be manufactured by OEM arrangements with manufacturing partners, Cubic Solutions S/B.

ATC has a substantial contract from China Media Group to supply to the China market [9] while Minimo M2 series are the first low cost multimedia phones featuring a full featured MP3 player, a 2Mega Pixel camera and a miniSD memory card for a low retail price. [10]

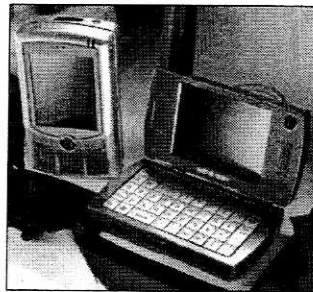
Six Sigma method is the best method to apply in this project. Six Sigma is not just another management catch phrase. Rather, it is a highly disciplined process that helps a business develop and deliver near perfect products and services. By accurately measuring the number of defects in a process, it can systematically eliminate them. Achieving Six Sigma indicates that have less than four defects per million transactions.

Six Sigma goes beyond small point improvements in product quality to the very fabric of the organization as a whole. It is a process for both improving performance and ensuring consistency in the delivery of a product or service. Most importantly, Six Sigma focuses on the customer. It continuously and rigorously measures those elements the customer identifies as "critical-to-quality." [5]

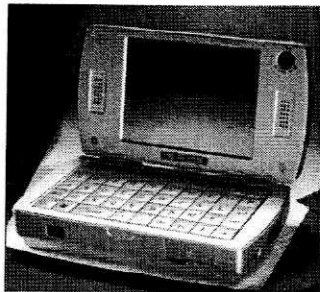
MAGIC Final Prototype



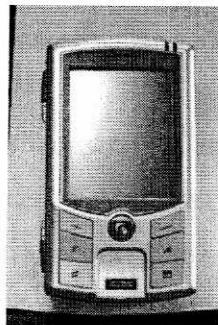
Silver front



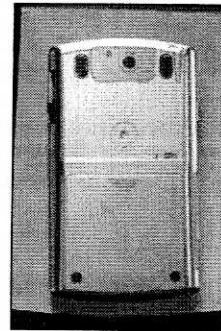
Pair



Silver open



Silver Open



Silver Back

Figure 1.1 MAGIC Final Prototypes

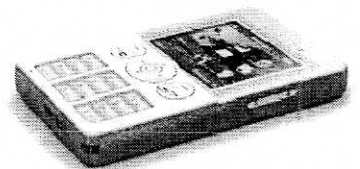
MINIMO Final Prototype



Minimo™ M2 Black



Minimo™ M2 Grey



Minimo™ M2 White

Figure 1.2: MINIMO Final Prototype

1.2 SCOPES OF WORK

In this project, we focus on:

a) Cycling time :

Six sigma methodology uses problem solving techniques to determine how systems and processes operate and how to reduce variation in processes. Lean creates the standard and Six Sigma investigates and resolves any variation from the standard.[5]

Lean methodology focus on product flow and on the operator. It refers to the product that can be produced in the least amount of time and the standardization of operator methods when doing work. Flow focused cells in an organization reduce the communication barriers that exist at the numerous interfaces between operation and greatly reduce the time to achieve a completed part. [2]

b) Yield analysis:

Analyze the data and make a report in industrial acceptable format. Identify all potential causes which could explain why the problem occurred. Identify alternative corrective actions to eliminate root cause.

1.3 PROJECT OBJECTIVES

Objectives of this project are:

- i) To track and summarize CESB handphone manufacturing data in industrial acceptable format.
- ii) To analyze the data. Together with project supervisors, the data analysis should lead to suggestions for improvements in an acceptable format.

If situation permits, the students will monitor and report the result of the improvement plan.

1.4 PROBLEM STATEMENTS

Problem statement that we face in MAGIC is :

Magic is the first handphone that will run in CESB, so we will face some problem in the process.

Problem statement that we face in MINIMO is :

The growing population of cell phones increases the no of competitor. Company need to produce good features and quality handphone and the cost will be increase. To make sure production cost balance with the profit the company have to reduce production cost.

CHAPTER II

LITERATURE REVIEW

2.1 The History of Six Sigma

The roots of Six Sigma as a measurement standard can be traced back to Carl Frederick Gauss (1777-1855) who introduced the concept of the normal curve. Six Sigma as a measurement standard in product variation can be traced back to the 1920's when Walter Shewhart showed that three sigma from the mean is the point where a process requires correction. Many measurement standards (Cpk, Zero Defects, etc.) later came on the scene but credit for coining the term "Six Sigma" goes to a Motorola engineer named Bill Smith. (Incidentally, "Six Sigma" is a federally registered trademark of Motorola).

In the early and mid-1980s with Chairman Bob Galvin at the helm, Motorola engineers decided that the traditional quality levels -- measuring defects in thousands of opportunities -- didn't provide enough granularity. Instead, they wanted to measure the defects per million opportunities. Motorola developed this new standard and created the methodology and needed cultural change associated with it. Six Sigma helped Motorola realize powerful bottom-line results in their organization. In fact, they documented more than \$16 Billion in savings as a result of our Six Sigma efforts.