UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Observation of Quality Inspection Standard for Shoe-Making Industry

Thesis submitted in accordance with the partial requirements of the
Universiti Teknikal Malaysia Melaka for the Bachelor of Manufacturing
Engineering (Manufacturing Process)

By

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OBSERVATION OF QUALITY INSPECTION STANDARD FOR SHOE-MAKING INDUSTRY

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APPROVAL

This thesis submitted to the senate of UTeM and has been accepted as partial fulfilment
of the requirements for the degree of Bachelor of Manufacturing
(Manufacturing Process). The members of the supervisory committee are as follow:

………………………………………

Supervisor

(Official Stamp & Date)

DECLARATION

I hereby, declare this thesis entitled "Observation Of Quality Inspection Standard For Shoe-Making Industry" is the result of my own research except as cited in the references.

Signature   :   …………………………………………..

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Date   :   **17TH MAY 2007**

ABSTRACT

The thesis is about the Observation of Quality Inspection Standard for Shoe Making Industry at Sepatu Timur Sdn Bhd. Quality which is controllable factors that either positively or negatively influence the finished product are referred to as the quality control. The use of good and sound raw material is of primary importance for the achievement of the required end product of consistent quality. The objectives of this project are to do the research of the quality inspection methods. The methods of inspection will be analyzed to find the more suitable inspection methods instead of the existing 100 percent inspection which is being used in quality department of the company. For doing the research, literature review is conducted to find sources regarding the topic as references for the thesis. In order to guide the thesis, Gantt chart is constructed which includes the tasks needed to be completed according to the time given. Besides, all the methods to do the thesis used are listed in the third chapter so that it will guide the research according to the scopes of the thesis. The scopes of the research are studying of all the methods and tools used in inspection standard in order to do the analysis of the existing inspection method of the company. Check sheet in 7 basic quality control tools is proposed as a new method. The check sheet will be used for In-coming, In-process, Final assembly and Out-going inspection. The comparison is made between the two inspections to distinguish their advantages and disadvantages. The proposed method is expected to be beneficial to the company.

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ABSTRAK

Tesis ini adalah berkaitan pemerhatian standard penyemakan kualiti untuk industri kasut di Sepatu Timur Sdn Bhd. yang merupakan faktor-faktor terkawal yang sama ada secara positif atau mempengaruhi secara negatif produk siap yang dirujuk sebagai kawalan mutu. Penggunaan bahan mentah yang baik adalah penting untuk mencapai keluaran akhir yang berkualiti dan konsisten. Objektif projek ini adalah melakukan penyelidikan ke atas kaedah-kaedah penyemakan kualiti. Kaedah-kaedah pemeriksaan akan dikaji untuk mencari kaedah-kaedah pemeriksaan yang lebih sesuai daripada 100 peratus pemeriksaan yang merupakan kaedah yang digunakan dalam bahagian kualiti syarikat. Untuk melakukan penyelidikan, kajian dijalankan untuk mencari sumber-sumber yang berkaitan dengan tesis ini. Di peringkat awal tesis, carta Gantt dibina untuk menyenaraikan tugas-tugas supaya dapat menyiapkan tesis dalam waktu yang ditetapkan. Selain itu, semua perkara yang perlu dilakukan dalam tesis disenaraikan dalam bab ketiga supaya ia akan membimbing penyelidikan menurut ruang lingkup tesis. Ruang lingkup penyelidikan adalah mengkaji semua kaedah-kaedah dan alat-alat yang digunakan dalam standard pemeriksaan. 7 kaedah asas pemeriksaan kualiti adalah dicadangkan sebagai satu kaedah baru. Lembaran pemeriksaan akan digunakan untuk pemeriksaan bahan mentah, pemeriksaan proses, pemasangan akhir dan pemeriksaan bahan yang telah dibungkus. Perbandingan akan dibuat di antara dua pemeriksaan untuk mencari kebaikan dan keburukan kedua-dua pemeriksaan.

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CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

The thesis is an observation of quality inspection standard of the company Sepatu Timur Sdn Bhd. The project is conducted to analyze the existing inspection method that is being used in the company for product quality inspection. A literature review is conducted to search for references on quality inspection method as guideline that leads to new methods for quality inspection.

The inspection method used by this company is "one by one inspection" and total inspection was done at the end of the production line. All finished products are inspected for defects according to common aspects like shoe size, shoe surface, the height of the shoe, heel pad, shoe lace and shoe outsole. There is no guideline to the workers in the quality control department. Inspection is done through naked eyes by checking the finished product one by one and look for the defective parts. The method is less efficient compared to other inspection method.

The existing inspection is analyzed for its disadvantages. The research is done for more suitable inspection method by conducting more literature review to search for journals, books and any other sources on quality inspection method. All the sources from the literature review will be guideline to complete the research for the next semester. The research methodology continues by doing the case study of the company. The company research includes the product, existing inspection of the company and the process flow of company.

From the analysis, according to the research of the new improvement method, inspection check sheet is proposed according to the acceptance sampling. The single sampling plan (normal, tightened and reduced) is used to identify the sample size for every inspected part. The sample size obtained from the plan will be used to create the inspection check sheet.

1.2　OBJECTIVES

The objectives of this case study are:

1. To expose students with the concept of quality control and methods used in quality control inspection
2. To identify the weaknesses in existing inspection
3. To propose an improved inspection method for the company.

1.3　SCOPES OF STUDY

The following are the scopes of this project:

- Study on the tools and methods in the inspection standard.
- Study on the existing inspection method of the company.
- Analysis on the existing inspection method of the company.
- Choosing the suitable inspection method for the company to be proposed

1.4   PROBLEM STATEMENTS

The purpose of this case study is to find a suitable inspection method to become a standard for controlling the quality of products. For this shoe making company Sepatu Timur Sdn Bhd, there is no specific inspection method that is used as a reference to define the qualities of the product being produced. The existing inspection is implementing a 100 percent inspection. The company implemented this method since its operation in 1983. This method was found to be less effective because of improper documentation of defective products and no responsible authority to manage the quality issues. As for this method, it is difficult to repair the final product because it is already completed. Besides, rework will increase the production cost ant the profit reduce because the rework and defective products are classified as Sub Standard (SS) shoes where their price is half of the original. Thus, a new inspection method that contains some guidelines will be proposed to the company may implement a proper management procedures in monitoring defective products. The new inspection method should be beneficial to the company. The implementation of the proposed inspection method is optional to the company.

1.5   SUMMARY

The introduction of the thesis contains the overview of the research to be conducted that includes the concept of quality and the inspection methods to be proposed for the company. The objective of the thesis is to find the suitable inspection method to guide the operator for proper inspection guideline. This will lead to study on the quality methods to overcome the problem stated.

CHAPTER 2
LITERATURE REVIEW

2.1   INTRODUCTION

The literature review explains about the concept of quality inspection standard. The act of monitoring or observing, (usually involving sampling and related sampling plans), a process, procedure, or service to insure compliance with the operational definition and to insure that all customer requirements or internal prerequisites are meet. Activities may include the collecting data using stratified sampling from the item being inspected. This chapter will cover the methods involve in quality inspection.

2.2   DEFINITION OF QUALITY

Quality refers to the distinctive characteristics or properties of a person, object, process or other thing. Such characteristics may enhance a subject's distinctiveness, or may denote some degree of achievement or excellence. When used in relation to people, the term may also signify a personal character or trait. When used in relation to management, the term may be easily defined as "reduction of variability" or "compliance with specifications".

The term is sometimes contrasted with the concept of quantity. In science, the work of Aristotle focused on measuring quality, whereas the work of Galileo resulted in a shift towards the study of quantity.

Quality can be used as a tool of measurement, like metric or Fahrenheit, as it is used to judge both subjects that are esteemed as credible and agreeable as "high quality" and subjects that are viewed as confusing, offensive, unhelpful, or incredible as "low quality." But quality is also used as a positive word, as in the sense of "this is a quality chair." Its antonym can be perceived as poorness, incredibility, unhelpfulness, and a variety of other words that reflect the concept of having low quality. ISO 9000 defines quality as "degree to which a set of inherent characteristic fulfils requirements".

A quality is a characteristic that a product or service must have. For example, products must be reliable, useable, and repairable. These are some of the characteristics that a good quality product must have. Similarly, service should be courteous, efficient, and effective.

Quality control is defined as a set of activities or techniques whose purpose is to ensure that all quality requirements are being met. In order to achieve this purpose, processes are monitored and performance problems are solved

2.3 HISTORY OF QUALITY

Though terms like 'quality engineering' and 'quality assurance' are relatively new, the ideas have existed just as long as the very art of tool manufacture. Simple tools made of rock or bones were subject to familiar modes of failure. They could be fragile, dull where they should be sharp, sharp where they should be dull, etc. When the first specialized craftsmen arose, manufacturing tools for others, the principle of quality control was simple: "let the buyer beware" (caveat emptor).

2.4 DEFINITION OF QUALITY INSPECTION

The act of monitoring or observing, (usually involving sampling and related sampling plans), a process, procedure, or service to ensure compliance with the operational definition and to insure that all customer requirements or internal prerequisites are met.

Activities may include the collecting data using stratified sampling from the item being inspected. Usually execute by the QA, (quality assurance), departments, but not always.

Typically employs the use of a control charts using collected data to evaluate the process using statistical process control.

But who is responsible for ensuring the quality of a project? Does it hinge on the structural engineer of record providing efficient, properly analyzed designs meeting applicable codes and specifications? Should we rely on shop and field inspectors? Or Building code officials responsible for reviewing the design? What about certified or 'approved' contractors? Unfortunately, there's no easy answer. Every project is different—different materials, level of complexity, scope, end use, location, etc. And even the definition of "quality" is open to debate. Some describe it as value. Others

argue it is conformance to specifications. Still others believe it is meeting customer expectations. If even the 'experts' can't agree on how to define quality, how do you begin to quantify and measure it?

Inspection is often referred to as quality control whereby the quality is 'inspected in'. The concept of quality control arose out of mass production manufacturing industries where thousands of parts were expected to be identical and finding the ones that didn't meet product specifications was a black and white process. Finding non-conformances post-production can be costly to fix, especially if the product is a steel truss already on the job site.

2.5   THE QUALITY REQUIREMENTS

On an individual requirement by requirement basis, quality requirements are typically much more important than functional requirements because they most strongly drive the architecture of software-intensive systems. Thus, it is how well the quality requirements are engineered and implemented that tends to determine the success or failure of mission critical systems. Yet, missing or poorly specified quality requirements can all too commonly be identified during effective evaluations of the requirements specifications and the resulting architectures. The engineering and evaluation of quality requirements to help the requirements team develop better quality requirements and to help evaluators of these requirements identify defects in the associated requirements specifications.

2.5.1   The Critically of Quality Requirements

A great deal of formal and anecdotal evidence exists that the typical quality of actual requirement specifications today is embarrassingly poor. In practice, far too many

requirements are ambiguous, incomplete, infeasible, unverifiable, inadequately prioritized, and mutually inconsistent [Firesmith 2003a]. In fact, this poor quality of individual requirements and the requirements specifications that document them is a primary reason why so many projects continue to fail [Standish 1994]. Because so many requirements defects remain in requirements specifications after they have been reviewed and approved, clearly the current approaches as applied in practice being used to develop and review requirements are seriously inadequate to discover and correct these defects.

2.5.2   A Major Way of Quality Requirement Defects Are Currently Identified

Unfortunately, the poor quality of the requirements is typically not recognized during requirements engineering and the evaluation of requirements specifications. Due to inadequate customer organization (e.g., the Government or commercial market) experience, training and tool support, the stakeholder (e.g., business, user) requirements typically contain large numbers of defects. These requirements may be internally reviewed, but most defects are not found. These stakeholder requirements are then passed on to the development organization (e.g., prime contractor or internal IT), which derives system-level technical requirements. For similar reasons, these technical requirements are typically of poor quality, and a great many defects are not identified when the requirements specifications are duly evaluated during peer-level and more formal milestone reviews.

This process continues down the system logical architecture from system to subsystems to subsubsystems and from prime contractors to subcontractors and integrated product teams (IPTs) who are responsible for implementing the allocated requirements. Although many defects are identified and fixed during this process of derivation and evaluation, a vast number of requirements errors still slip through the requirements engineering process into the architecture, design, and implementation.