

STANDARDIZED WORK APPROACH TOWARD
KAIZEN EVENT OF THE FRONT HUB MYVI D54T
LINE AT SAPURA MACHINING CORPORATION
SDN BHD

MASTURAH BINTI SULIMAN ATORIY

B. ENG. (HONS.) MANUFACTURING ENGINEERING

UNIVERSITI MALAYSIA PAHANG

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Report submitted in partial fulfillment of the requirements
for the award of the degree of
Bachelor of Engineering in Manufacturing Engineering

Faculty of Manufacturing Engineering

UNIVERSITI MALAYSIA PAHANG

June 2016

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LIST OF ABBREVIATIONS

FG	Finish Goods
FMEA	Failure Mode Element Analysis
MAJAICO	Malaysia-Japan Automotive Industry Cooperation
NVA	Non-Value Added
OP	Operation
PDCA	Plan-Do-Check-Act
SMC	Sapura Machining Corporation
SMED	Single Minute Exchange Dies
SWC	Standardized Work Chart
TPS	Toyota Production System
TQM	Total Quality Management
WIP	Work-In-Progress

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ABSTRACT

This thesis is deal with the one of the lean production system tool which is standardized work to eliminate the waste at the production line for continuous improvement. Standardized work is conducted to design, developing, and documentation and visualizes the proper and detail manufacturing process. This project is applied at the Front Hub MyVi D54T Line at Sapura Machining Corporation Sdn. Bhd. which is the vendor to Perusahaan Otomobil Kedua Sendirian Berhad (PERODUA) for front hub MyVi model. The productivity improvement is one of the major concerns in the manufacturing industry. Therefore, by providing this standardized work approach it can improve the efficiency and the performance of the manufacturing process. The project is following the PDCA (Plan, Do, Check, Action) continuous improvement cycle. At Plan stage is the identification and analyze the problem by using Total Quality Management (TQM) tools such as process flowchart, ishikawa diagram, FMEA and the 5 why analysis. At Do stage, the solution is developed and applied the pilot basis solution. The next stage is the Check stage which is for evaluate the result. Lastly, at Act stage is for implement the solution and planning ongoing monitoring on the solution. The improvement action of the standardized work kaizen can to increase the production consistency, process stability and the operator's performances.

ABSTRAK

Tesis ini membentangkan tentang salah satu alat Sistem Pengeluaran Toyota iaitu penyeragaman kerja untuk menghapuskan sisa di barisan pengeluaran untuk penambahbaikan secara berterusan. Penyeragaman kerja dijalankan untuk mereka bentuk, membangun, dokumentasi dan memvisualkan proses pembuatan yang betul dan secara terperinci. Projek ini digunakan di Line D54T Front Hub MyVi di Sapura Machining Corporation Sdn. Bhd. yang merupakan vendor untuk Perusahaan Otomobil Kedua Sdn Bhd (PERODUA) untuk model *front hub* MyVi. Peningkatan produktiviti adalah salah satu daripada kebimbangan utama dalam industri pembuatan. Oleh itu, dengan menyediakan pendekatan kerja yang seragam ini ia boleh meningkatkan kecekapan dan prestasi proses pembuatan. Projek ini mengikuti PDCA (*Plan, Do, Check, Action*) kitaran untuk penambahbaikan yang berterusan. Pada peringkat Rancangan adalah mengenalpasti dan menganalisis masalah ini dengan menggunakan alat Pengurusan Kualiti Menyeluruh (TQM) seperti proses carta aliran, gambar rajah ishikawa, FMEA dan 5 *Why* analisis. Pada peringkat Laksana, penyelesaian dibangunkan dan digunakan penyelesaian secara perintis. Peringkat seterusnya adalah peringkat Periksa iaitu untuk menilai hasil. Akhir sekali, pada peringkat Akta untuk melaksanakan penyelesaian dan perancangan pemantauan berterusan ke atas penyelesaian. Tindakan penambahbaikan *kaizen* penyeragaman kerja boleh meningkatkan konsistensi pengeluaran, kestabilan proses dan persembahan pengendali.

CHAPTER 1

INTRODUCTION

1.1.1 BACKGROUND OF THE PROJECT

This project is about Analysis of the Standardized Work Kaizen of the Front Hub Honda & Myvi at Sapura Machining Corporation Sdn Bhd. This study is dealing with tool for improving the productivity of the manufacturing area which is the standardized work tool. It can provide safe work methods, outlines the efficiency of work and can eliminate 'muda'. Standardized work ensuring the machine and equipment is used properly and provide more fast and safe operations. Besides that, there still have problems in the entire industry due to variable process time, line balancing problems deal with multiple workstations, human factors, and length of cycle time. Therefore, analyzing and studying this current problem is important by following Plan-Do-Check-Action (PDCA) cycle.

In this case, the production line that was selected is Front Hub Honda Line. It is important to recognize the cycle time and 'takt' time of the production from the selection product. Each process of the workstation can affect the design of the layout and the production time. This study required student to make the observation at the production line to identify the process flow, production time, including machine time, cycle time, automatic time, and man time, quality of the selected product and the production layout of the manufacturing cell at Front Hub line.

In this project the standardized work element which is 'takt' time, cycle time, work sequence and standard in-process inventory of the production line will be analyzed. There are few steps required to develop the standardized work at the line which is doing

the 'gemba' walk, create the Production Capacity Sheet, make the the Standardized Work Chart and do the Standardized Work Audit. The collected data will be analyzed by using Minitab software and the simulation will be done by using ARENA software. By doing this project, it can enhance the learning and understanding of basic concepts of lean and create the ability to implement Lean Production System (LPS) in current manufacturing industry to achieve required standard and goal.

1.1.2 PROBLEM STATEMENT

In the global manufacturing environment, it is important to always improve the productivity of the production processes. The car component maker such as Sapura Machining Corporation Sdn Bhd. have their own target to improve skill of operation consist of Production Capability, Quality and Maintenance based on LPS practice.

The problem arises is the difficulty to make any kind of improvement in terms of productivity. Standardized Work is the foundation for all kinds of lean activity. Without standard, there are impossible for make any improvement. This project is the way that can help to create the baseline for the kaizen. This method is the problem solving for quality, cost and safety issue that always happen at automotive industry.

- i) Quality issue plays major role of the production. Most of the quality problem is come from the deviation of the standard. Variation in the operation or process is the biggest enemy for quality. The problem for the quality can be overcome by improving and stabilizing the standard method.
- ii) The cost of production comes from various sources. The company will try hard to reduce the cost and one of the methods is by improving the efficiency. The time study and line balance is the technique in improves the production floor. The proper time study is when the process is standardized first.
- iii) Industrial accident usually occurs when something out of a norm happens. It could be the worker did not follow the 5S standard, decide to make the

shortcut in moving the material and create the hazard. When all the procedure has been standardized, if the problem occurs, the countermeasure can be implemented immediately.

1.1.3 OBJECTIVES OF THE PROJECT

There are three objectives for this project, which are listed as below.

- 1.1.4 To improve the efficiency of Front Hub MyVi D54T Line by using standardized work approach. Standardized work has many benefits to the production line. It is the basic operations to make the correct product in the easiest, effective and safest way based on current formula and technology. By implement this tool, it will maintain the process stability of the production line.
- 1.1.5 To create a baseline for kaizen activity at the Front Hub Honda and MyVi Line. Standardized work is provides the basic for continuous improvement through kaizen. The benefits of standardized work, including reductions in variability, easier training of new operator, reductions in injuries and documentation of the current process for all shifts. Once outlined, standardized work does not remain fixed. It is revised and updated as often as necessary according to the work kaizen, machinery improvements and change in work combination responding to the production volume change.
- 1.1.6 To analyze the effectiveness of standardized work method at Front Hub Honda & MyVi Line. The standardized work method should be analyzed to measure the effectiveness of this implementation by ensuring all work elements should be in the cycle. Any out-of-cycle work destroys continuous flow and makes it difficult to maintain efficient and consistent production to 'takt' time.

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