IMPLEMENTATION OF A QUALITY-FOCUSED ORGANISATIONAL STRUCTURE THROUGH SHOP FLOOR MANAGEMENT

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ABSTRACT

Shop floor management is widely regarded to be a pre-requisite condition and enabler for sustainable implementation of lean processes. This thesis deals with the investigative research for the implementation of a quality-focused organisational structure in a production line through shop floor management, aimed at increasing quality and process stability. The existing structure of shop floor management currently being used in Mercedes-Benz Malaysia's Production Plant, specifically the C-Class passenger car production line, is firstly analysed to understand the dynamics and synergy of the system. The objective of this thesis is to help improve the existing shop floor management structure by further incorporating and integrating the role of station leaders with the whole production line organisation. The thesis describes the development of tools used to enforce said role which will affect significant key performance indicators in production, namely Defects per Hundred and First Time Right Rate.

ABSTRAK

Pengurusan lantai kedai secara konvesionalnya dianggap sebagai pra-kondisi dan peneraju untuk implimentasi proses-proses 'lean' yang mampan. Tesis ini membentangkan kajian terhadap implimentasi organisasi yang berstruktur di barisan pengeluaran melalui pengurusan lantai kedai, dengan tujuan meningkatkan kualiti dan stabiliti proses. Struktur pengurusan lantai kedai yand sedia ada dan digunakan oleh kilang Mercedes-Benz Malaysia pertama sekali dianalisa agar dinamik dan sinergi system tersebut difaham dengan terang dan jelas. Objektif tesis ini adalah untuk membantu menambah baik pengurusan lantai kedai yang sedia ada melalui integrasi peranan ketua-ketua stesen bersama dengan seluruh organisasi barisan pengeluaran. Tesis ini juga menerangkan pembangunan alat-alat yang digunakan untuk menguatkuasakan peranan tersebut yang akan memberi kesan kepada petunjuk prestasi utama seperti kecacatan per seratus dan kadar lalu kali pertama.

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LIST OF ABBREVIATIONS

KPI	Key performance indicators
MBC	Mercedes-Benz Cars
MBM	Mercedes-Benz Malaysia
MPS	Mercedes-Benz Production System
SFM	Shop floor management
SPL	Single point lesson
VoCa	Voice of customer audit

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This chapter describes the project background, problem statement, research objectives and thesis overview.

1.2 PROJECT BACKGROUND

In today's era of globalisation and intensely competitive market, manufacturing and automotive companies see lean manufacturing as a great management tool and as a strategy to enhance the company's efficiency and competitiveness. Furthermore, it is currently deemed to be the standard manufacturing mode of modern day (Rinehart, Huxley, and Robertson, 1997).

Shop floor management (SFM) is the precondition to the implementation of lean manufacturing and lean processes. It allows early problem-spotting, regular and short-cycled monitoring for goal achievement and promotes systematically supported problem solving (Schmückle, 2008). The aspect of shop floor management staff is significantly important in the act as an effective control tool. Through shop floor management, the staff members are supported in a more effective manner in daily work. Hence, this ensures preventive action can be carried out and subsequently improves performance and achievement.

By visualising the most important variable production Key Performance Indicators (KPIs), an increased transparency can be achieved on the shop floor. This leads – along with other shop floor management elements – to a more committed working culture in the factory, reduces reaction times and increases the quickness in which problem solving processes are carried out.

1.3 PROBLEM STATEMENT

The shop floor management at the Mercedes-Benz production plant is organised such that the information is ascended from the operators to the line manager to higher management levels including department representatives from logistics, body shop, paint shop, assembly, finish line, VoCa, PDI and also head of department from HAMM.

At the production line, communication and information flow starts from the line manager to two multis, one who is in charge of trim line from preparation to station 9 and another multi who is in charge of mechanical line from station 10 to station 19. Subsequently, from the multis to station leaders called penghulus who are in charge of 2 to 4 stations. Then from the penghulus to the operators at the stations which are under their authority. This information flow works as well the other way around from the operators and penghulus to the line manager on a day to day basis during production. The line manager is responsible to coordinate a daily shop floor meeting before production starts and at 11:00am at a fixed meeting place. The meeting before production starts involve multis and penghulus and issues for production for the previous day are discussed. The 11:00am meeting is attended by department representatives such as engineering, logistics and quality.

Good communication is essential to avoid misinformation or any misunderstandings, especially between the people working directly on assembling units in the production line and line management. In an ideal scenario, possible problems in the process sequence can be addressed immediately in a controlled presence of participating shop floor management parties and be solved as quickly as possible. Without regular and efficient communication, providing the information needed at the

right time becomes highly unlikely, with the least amount of resources and the required quality.

Although the role of operators and penghulus in shop floor management is only a small part of a bigger structure, they play an important duty to ensure the smooth flow of operations because they are the ones who are building quality into the cars that are being assembled. In order to increase efficiency and reduce reaction times to solve problems, it is important for penghulus to play an active role in shop floor management.

1.4 RESEARCH OBJECTIVES

The objectives of this project are as follows:

i. To understand the basis and fundamentals of Mercedes-Benz shop floor management and the shop floor management structure in place for C-class production line at the plant in Pekan.
ii. To analyse the current role and responsibilities of a penghulu in daily shop floor management for C-class production line.
iii. Enforcing the role and responsibilities of Penghulus in daily Shop Floor Management to increase quality and improve process stability.

1.5 THESIS OVERVIEW

The main focus of this thesis is to analyse and determine the positional authority of a penghulu in the C-class production line and the potential of a contributing role which he can play in shop floor management and production as a whole. Further improvements can then be made on enforcing the responsibilities of a penghulu based on the analysis. The working relation between penghulus and the operators under their charge as well between them and the multis is imperative to ensure the line manager is able to utilise the resources available to him for a smooth production to run.

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