CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This chapter discusses about the introduction, overall ideas and concepts to the Total Productive Maintenance (TPM) and Overall Equipment Effectiveness (OEE). Besides, the background of the study, problem statements, objective of the study, and scope of the study will also be described in details in the sections below.

1.2 BACKGROUND OF STUDY

Lean production system is the idea of long-term growth and value generation through the main goal, to reduce costs and improve quality through the complete elimination of waste. Lean production system is also seen as a collection of tools, tips and techniques, which has been shown to be effective to drive waste with no value added in the manufacturing process from the customer's point of view.

JSC Paper Mill Sdn. Bhd. was selected to be studied in this research. It is one of the largest tissue paper manufacturers in Malaysia with 220-250 employees and staffs. JSC exports its products to Singapore, Brunei, New Zealand, and Mauritius instead of local customers. JSC imports wood pulps from China and Indonesia. These pulps are produced into higher grade of jumbo rolls while recycled papers are used to produce lower grade of jumbo rolls. These jumbo rolls are then converted into different products of tissue papers, which are toilet tissue rolls, jumbo roll tissue, facial tissue, kitchen towel, pop-up tissue, serviettes and napkins, industrial wiping, clinical roll and centre-flow towel.
This study is conducted by choosing the toilet tissue (TT) section as a research. TT section has three shifts with 8 hours per shift, which mean the production is 24-hours-based. They highlighted that they are experiencing a high possibility of losses in the production area due to the equipment breakdown and high minor stops while operating their core products.

Through the first visit to the company in Toilet Tissue (TT) Section, the operators were observed that they are pressing the emergency button repeatedly in short time intervals, readjusting the machine setting and toilet tissue position. Besides, the downtime of TT section is so high that the machine operating time is low. The high downtime rate is due to the machine breakdowns, frequent stoppages, and low maintenance level of machines.

All these factors lead to low output production with low machine operating time. The existing maintenance department was struggling to match the process improvements with their maintenance schedules. They have performed maintenance actions weekly and some monthly in duration of 6 months; however the results showed no significance improvements in the machinery breakdown. Based on this situation, there is a need to investigate the root cause of the breakdown and implement a more suitable method in order to further improve the process flow, which will directly benefit the whole production process.
1.3 PROBLEM STATEMENTS

Through numerous interviews and observations done in the Toilet Tissue (TT) section, there are quite a number of machine breakdown and minor stoppages cases throughout the production in every shift, which requires serious concern and improvement. To go further, there are some questions that need serious consideration. There are:

i. Which factor causes the highest downtime rate in TT section?
ii. How to increase the machine operating time as well as reduce the downtime rate?

1.4 OBJECTIVES OF STUDY

This project aims to investigate current manufacturing system in the real manufacturing industry. There are two objectives in this project, which are:

i. To propose a method to reduce or eliminate unplanned downtime losses on machine breakdowns and minor stoppages.

ii. To evaluate and propose a new solution through the Overall Equipment Effectiveness (OEE) analysis based on Total Productive Maintenance (TPM).

1.5 SCOPES OF STUDY

The first scope of study is to identify a suitable company to carry out my project. The company should be open-minded and do not resist to change. JSC Paper Mill Sdn. Bhd. is chosen instead of other manufacturing companies. The study is narrowed down to only Toilet Tissue (TT) section in the whole converting department in JSC. This is because the manager and the operators highlighted that the TT section has the highest machine breakdown cases compared to the other sections. The study is focused from machine set-up until inspection process only; Manual packing into pallet form or palletizing is not included in the study.