CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This chapter describes more on modeling and simulation of flexible production line for coil winding assembly and the importance of flexible production line in the industry. In addition, the background of company, project background, objective and scope of the study including in this section.

1.2 BACKGROUND STUDY

In this rapid development, the area of flexibility can be considered as the main issue for surviving today’s demand which can be described as high productivity, shorter lead times, good quality, low cost and continuous evolution of the technological requirement of the product. The greater number variation of new models, fluctuation in the market demand refers as some problem need to face on the flexibility system. Even flexibility can be identify as a crucial strategic option which must consider as the competitiveness of a firm can be strongly affected by the burden of capital intensive investment in flexibility system. For that reason, there is the need of viewing flexibility system in the global image trying to consider both pros and cons related to the acquisition of flexibility.
1.3 PROBLEM STATEMENT

With the faster development of modern industry, the scale of the production became more expanding and it is proposed higher requirement for the process and production management system. Flexibility refer to ease physically rearrange the cell. It is necessary of production manufacturing system have to be flexible to adapt more faster to an increasing number and variety product and changing market volumes. The ideal condition is the flexible production line can be cater in term of volume fluctuation and product mix.

However, the concepts of classical assembly line are difficult to control utilization when producing part with different processing at same line. (Krajewaski et al., 2010). This is support by the current condition at Vacuumschmelze (M) Sdn Bhd. The problem involve of conveyer usage. So that, it will give an impact to the spaces of the production line where can increase the work in progress (WIP) and bottleneck

In order to develop competitive organization, the production system must along with to be lean and flexible to achieve constant development. As the proposed solution to this project, cell manufacturing layout will be applied. This is supported by journal from Ogan & Azizoglu (2015), the need for higher productivity with greater flexibility has advocated the need for the U-shaped lines. The method approach in this case by using ProModel simulation software. According to the Villarreal & Alanis (2011), the uses of simulator such as ProModel, Witness and others have facilitated enormously the application of simulation to the design, improvement and validation of system in a wide area of knowledge.
1.4 OBJECTIVE

The objectives of this study are stated as below:

1. To investigate current performance of coil winding assembly.
2. To model and simulate the flexible production line using ProModel Software.

1.5 PROJECT SCOPE

The scope of project is mainly about on modeling and simulates the real production process. The research will be conducted in manufacturing company focused on Multinational Company (MNC) in Malaysia context. The project was conducted at Vacuumschmelze (M) Sdn Bhd. This company located at Lot 3465, Tanah Putih, 26600 Pekan Pahang. Basically, Vacuumschmelze is a leading global manufacturer of advanced material and related products. The early beginning of Vacuumschmelze (M) Sdn Bhd is transferring labor–intensive manufacturing processes to more cost effective countries. Since 1980’s, VAC maintained the production facilities in Asia. Nowadays, VAC becomes well established in production network in Europe and Asia, which is optimized and best-suited for each product group. Generally, this company produced mixed model product at the production line. The variation of the model is depending on scheduling and demands from customer. The straight line layout was used and apply conveyer. The coil winding model was investigated in this project are 6161-X037 and 6161-X001 and ProModel 7.0 Student version was used in running the simulation.

Figure 1.1: Vacuumschmelze (M) Sdn Bhd