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Enhance Facility Work Efforts to Increase Productivity of Packing Section PT. XYZ

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Abstract**—** *Productivity is a very important for companies in the context of highly competitive business competition. This is an indicator of the company's success in utilizing company resources to produce a product, so many companies try to improve and increase their productivity. This research was conducted in the light bulb manufacturing industry of PT. XYZ Medan. This study aims to determine: (1) the level of productivity at the packing station at PT. XYZ, (2) An effect of implementing new work facilities in effort to increase the productivity of PT. XYZ. This type of research is quantitative research with the aim of testing the hypotheses that have been set, aspects analyzed are work facilities at the packing station. After analyzing and processing data using fishbone diagrams and work maps, a new work equipment design and work area layout is obtained. Based on the results of the analysis before and after improvements, it was found that the number of standard outputs from each operator has increased. This is proven by the productivity index before improvement of 71.31% and the productivity index after improvement has increased to 100.00%. Therefore, it can be concluded that the improvement of work facilities with fishbone diagram and work map analysis has a good impact on the company and can increase productivity*.

Keywords**—** *Productivity, Work Facilities, Productivity Index*.

I. INTRODUCTION

Productivity are most important for companies, even in context of highly competitive business competition, each company is required to improve a performance in order be able to compete with other companies. This case be an indicator of the company's success in utilizing resources company power to produce a desired product, so that many companies are trying to improve and increase their productivity.

PT. XYZ is one of largest light bulb suppliers in North Sumatra, which has been producing since 1976, with a production capacity of 10,000-15,000 light bulbs / day. This company used sophisticated automatic machines on each production line except at the packing station, at this station all work is done manually so that the operators at this station are not able to keep up with the speed of production of these machines. Ineffective work has an impact on the accumulation of light bulb products around 3000 pieces / day, this causes a decrease in the value of productivity. Poor work facilities also have an impact on sub-optimal work cycle times, irregular work area lay-out, and out of sync worker movements. As seen in the following image:

Figure 1. Actual Condition of the Work field

Figures 2. Material Handling Tools

Based on this problems, this research is expected to be able increase operator productivity at the packing station at PT. XYZ through some identification and improvement of layout and work equipment, so as to meet the production demand within the specified time.

II. LITERATUR REVIEW

2.1. Productivity

Productivity is a ratio between results achieved (outputs) and all sources (inputs) used by time unity. To determine productivity there are two things that must be considered, namely is desired has been achieved, the results are associated with the results, while the usability is associated with sources. Wignjosoebroto (2006: 6) said that productivity is a comparison between the results achieved (output) with the ability of the resources used (input).

2.2. Work Facilities

The meaning of facility planning can be put forward as a facility planning process, including analysis, planning, design and arrangement of facilities, physical equipment, and humans that are shown to improve production efficiency and service systems (Purnomo, 2004: 1). Facility planning is a design of industrial facilities to be established or built. In the industrial world, facility planning is intended as a means for improving

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facility layouts, used in material handling and for determining equipment in the production process, also used in overall facility planning.

There are two main things in planning facilities, namely relating to plant location planning (plant location) and design of production facilities which include design of plant structures, design of facility layouts and design of material handling systems (Purnomo, 2004: 2). The facility layout design is an important facility, because the factory or industry will operate for a long period of time, so mistakes in analysis and layout planning will cause ineffective and inefficient production activities. Facility layout planning is always related to minimizing total cost.

III. METHOD OF RESEARCH

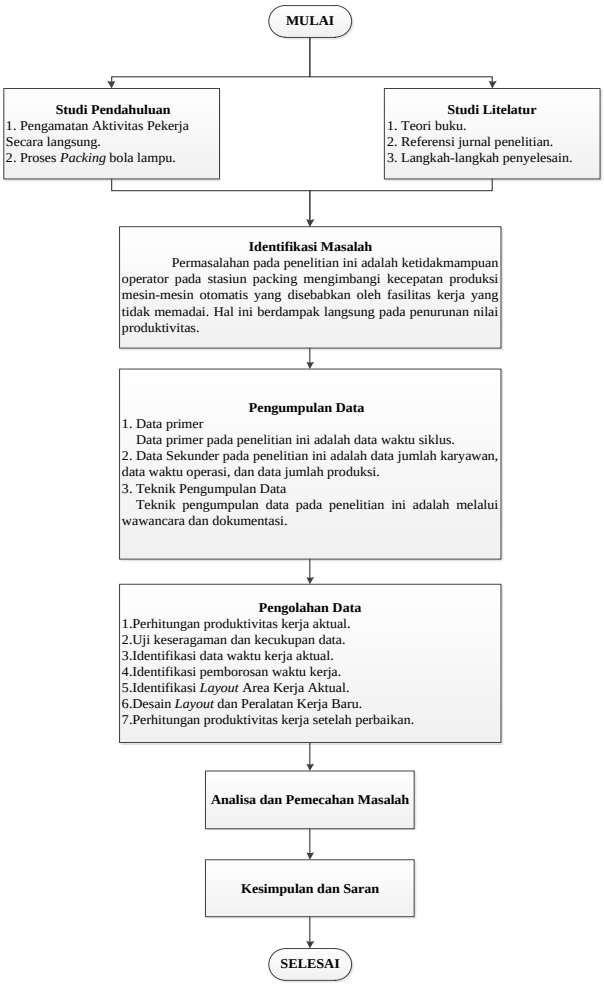
The research methodology is a description of the entire set of activities carried out during the research process, from the beginning of the activity to the end penelitian.

IV. RESULTS AND DISCUSSION

A results and discussion in this study, starts with productivity calculations and continues with evaluating the working environment of the operator using fishbone diagrams and work maps. The explanation of each operator's working conditions before and after repair is as follows:

Before Repairing Work Facilities and Work Layout Operators

Based on the table, its can see that an overall operator productivity during the observation process is 60 cartons / hour and when compared with the standards set by the company which is 1200 cartons / day, the percentage of productivity is 69.76%



Figures 3. Chart of System.

TABLE 1. Actual Operator Productivity.

Date	Value of Production (Box)	Total Operator (Peoples)	Work Time (Hours)	Productive (Box)	Standar Packing (Karton)	Percentage of productivity (%)
6	837	2	7	60	86	69,76
7	850	2	7	61	86	70,85
8	849	2	7	61	86	70,76
9	847	2	7	61	86	70,60
10	836	2	7	60	86	69,68
11	798	2	4	67	86	77,60
13	821	2	7	59	86	68,43
14	851	2	7	61	86	70,93
15	820	2	7	59	86	68,34
16	835	2	7	60	86	69,59
18	823	2	4	69	86	80,08
20	842	2	7	60	86	70,18
21	859	2	7	61	86	71,60
23	813	2	7	58	86	67,76
24	843	2	7	60	86	70,26
25	857	2	4	71	86	83,28
27	838	2	7	60	86	69,84
28	817	2	7	58	86	68,09
29	839	2	7	60	86	69,93
30	823	2	7	59	86	68,59
Averages	794			61	86	71,31

4.1. Identification of Worktime Waste

The table above presents the overall operator's work time which is considered to be still below the standard that has been set, so that identification is needed to look for the causes of waste of work time. Identification is done by using a fishbone diagram (cause-effect diagram), identification of a fishbone diagram for waste of work time can be seen in the following figures 4:

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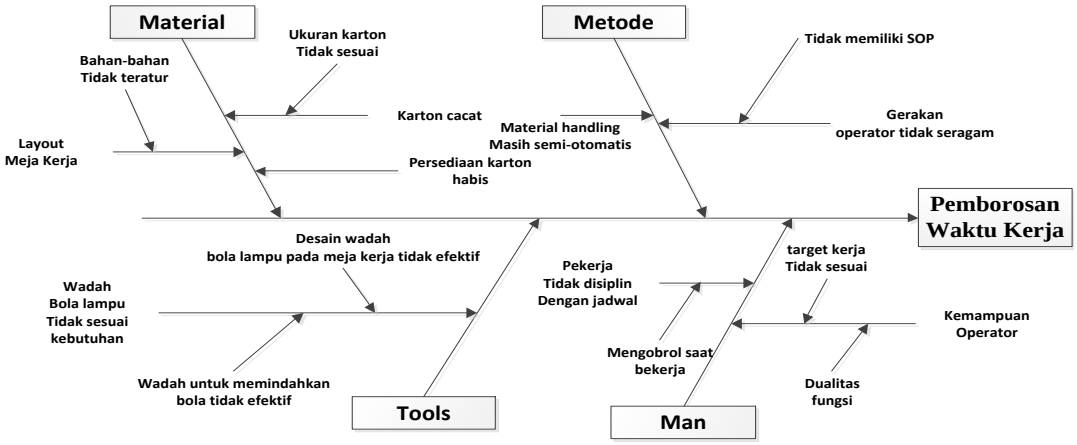
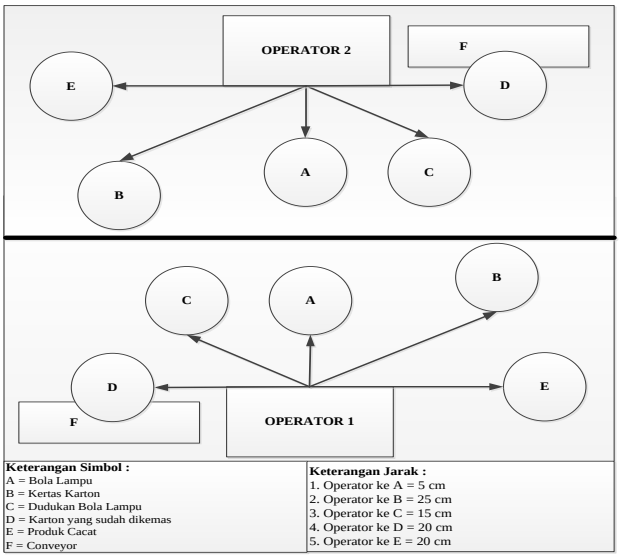


Figures 4. Fishbone Diagram Wasting Work Time.

4.2. Identification of Actual Work Area Layout

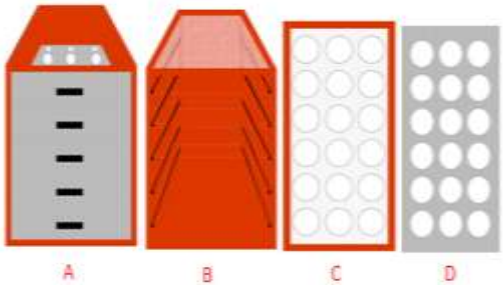
Based on observations made, it can be concluded that the condition of the work area of the operator does not support the packing process, this causes the working time of this process to not reach the specified target. The required working time is around 60 seconds / carton, while the standard time is 37 seconds per cartons.

Following is the layout of the operator's work area after undergoing repairs



Figures 5. Layout Area Kerja wirou p

After the work area layout is considered effective, the next step is to design a new light bulb container. The design to be carried out is only focused on making the position of the light bulb stand while in the container, so that no overall change is needed. The design of the new light bulb container can be seen in below:



Figures 6. Design tools Material Handling

V. CONCLUSION

Based on formulation, objectives, results, and discussion in the previously stated research, the following conclusions are obtained:

1. Productivity value at PT. XYZ before repair is 60 cartons / hour, with a percentage of productivity against standard packing of 71.31%. The productivity value after repairs is 84 cartons / hour with a percentage of productivity against standard packing of 100.00%.
2. Repair work facilities performed on the packing part of PT. XYZ gives the effect of increasing productivity on average by 24 cartons / hour with a percentage increase in productivity of 28.69%.

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