Analysis Of Improving The Layout Of Warehouse Accessories Facilities In PT Delapan Jaya Perkasa Garment

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Analysis Of Improving The Layout Of Warehouse Accessories Facilities In PT Delapan Jaya Perkasa Garment

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Abstract. *PT Empat Jaya Perkasa Garmen is a company located in Bendungan, Kebayanan Jetis, Pilangsari, Kec. Ngrampal, Sragen Regency, Central Java 57252, operates in the garment industry and its production system is based on make to order. High consumer demand causes the production process to increase. This also affects warehouse management activities. Storage conditions and arrangement of goods that are carried out randomly and irregularly will result in the accumulation of goods or mixing of goods in one rack slot. So, this condition will result in a longer search time. This study discusses improving warehouse layout and arranging goods using the Class Based Storage method for process-focused manufacturing or service facilities. The research was carried out by examining products in the accessories warehouse with the aim of finding out the layout of goods in the accessories warehouse, to fulfill the need for searching for goods accurately by looking for the causes of irregular placement and arrangement of goods, then creating a layout of goods in the accessories warehouse. The arrangement of goods is carried out based on the type of goods by means of one rack slot being used for one type of goods. So that the material handling process runs smoothly.*

Keywords: *Facility layout, Class Based Storage, PT Empat Jaya Perkasa Garmen*

INTRODUCTION

The high level of competition in this industry ultimately requires determining the right strategies in order to maintain productivity so that profits can continue to be increased. One way or strategy to realize this goal is to arrange the layout of the facilities. Facility layout has a significant impact on company performance, such as material handling costs, work in process inventory, lead time, productivity and distribution performance. A material handling system that is less systematic is a big problem and disrupts the smooth production process, thereby affecting the system as a whole. The increasing development of industrialization currently requires companies to be more advanced and develop further in order to improve the quality of their services. This can be done by organizing all aspects of the company to achieve performance. effective and efficient. By planning a good and economical factory layout, it can be created when it comes to the overall planning of the factory layout. Where, it can be explained and resolved according to logic and into a certain method. Good factory layout can be classified as planning and combining the flow paths of a production component to obtain the most effective and

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economical flow of components between workers, equipment and materials. Starting from the time the material is received into the factory until the delivery of the finished product from the factory.

The importance of good factory layout is related to efficiency, this can be explained as follows: (Kurniawan, 2016)

1. Production activities will be more economical if the flow of materials is planned well.
2. Material flow patterns become the basis for an effective equipment arrangement.
3. Effective arrangement of facilities around the flow pattern will provide effective operation of interconnected production processes.
4. Minimum production costs will result in higher profits.

In the storage process, PT Empat Jaya Perkasa Garmen stores accessories for products randomly and the warehouse space is insufficient. Ineffective field conditions plus extensive storage criteria requirements mean that material and product handling at PT Empat Jaya Perkasa Garmen is given less attention, plus the stock of materials stored exceeds the capacity of the existing warehouse shelves, making material storage less neat and there are still lots of items piling up. on the floor, this will greatly hamper the flow of activities in the warehouse and the production process. For this reason, it is necessary to design a facility layout that is truly effective and efficient in order to improve existing conditions within the company.

THEORETICAL BASIS

Layout is the physical arrangement of equipment, production machines, work stations, material locations, and material handling equipment. The basic principles in factory layout planning include total integration of all production elements, minimizing material movement distances, creating good work flow, optimal use of space, paying attention to work satisfaction and safety, and flexibility. A warehouse is a facility that functions as a place to store goods from suppliers to end users.

The existence of a warehouse is important in dealing with demand uncertainty, and is used as a place to store goods in the inventory system. Warehouses also play a role in reducing transportation and production costs, as well as coordinating supply and demand. Apart from that, warehouses can also meet production and market needs. The objectives of establishing a warehouse include reducing transportation and production costs, coordinating supply and demand, meeting needs production, as well as meeting market needs so that the supply of goods is uninterrupted. In production as well as providing information about the status and

condition of materials/products stored in the warehouse.

There are four storage methods in the warehouse that can be used:

1. The Dedicated Storage method is permanent storage and the location for each item has been determined. The number of storage locations must meet the maximum storage needs of the product.
2. The Randomized Storage method allows products to change locations. Placement of goods only takes into account the closest distance to a storage place using the FIFO system.
3. The Class-Based Dedicated Storage method is a compromise between the Randomized Storage and Dedicated Storage methods. Products are divided into several classes based on throughput and storage ratio. The storage area is also divided into several sections to fill items of different types and sizes.
4. The Shared Storage method is a variation of the Dedicated Storage method that is more careful in selecting products to reduce storage space requirements. Some products use the same storage slot. The rack system is used to increase warehouse capacity without expanding. Items can be grouped by type or size and placed on permanent shelves or temporary shelves.

Warehouse Management Systems (WMS) are used to better manage warehouses and distribution of goods. With WMS, movement and storage processes can be controlled, warehouse space usage can be optimized, and stock information can be known more accurately. The concepts of FIFO, LIFO, and FEFO can be used in WMS, where currently many products use the FEFO concept for warehouse functions which function as in-out relationships.

Material Handling is the practice or science of moving, storing, protecting and monitoring materials. The main goal of Material Handling is to reduce production costs and influence operations and facility design. Some of the objectives of the Material Handling system include maintaining product quality, improving safety and working conditions, and increasing productivity and facility use.

The Material Handling System also plays a role in inventory control. Material Handling equipment that is commonly used consists of three main types, namely Conveyors (conveyor belts), Cranes and Hoists (cranes and hoists), and Trucks. Conveyors are used to move materials continuously on a fixed path, with the advantages of high capacity, adjustable speed, and versatility. Cranes and Hoists are used to move loads within a limited area, with the

advantage of being able to lift and move loads. Hand-driven or machine-driven trucks are used to move materials over a variety of routes.

RESULTS AND DISCUSSION

Currently, items placed in the accessories warehouse are placed randomly, occupying the available empty space. Plus there was a buildup of items on the floor. So the distance to pick up goods of any type in the current conditions is disrupted. After the goods have gone through the inspection process, they are arranged on the shelves. Arrangements can be made up to the maximum shelf capacity. It is hoped that the number of items available is in accordance with the maximum shelf capacity. This aims to prevent accumulation on the accessories warehouse floor. The layout can be seen in Figure 3.2.

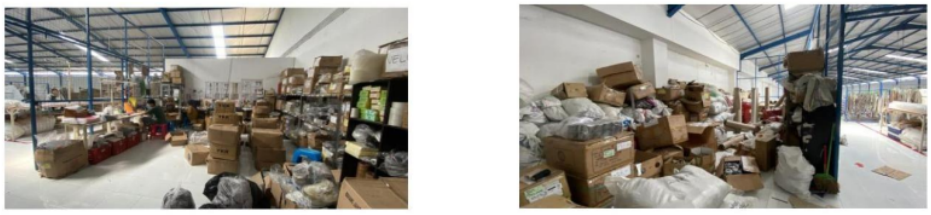

Figure 3.1 Accessories Warehouse

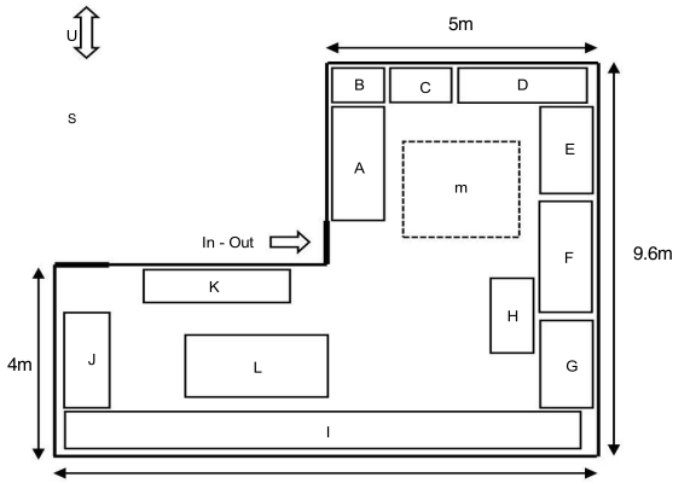

Figure 3.2 Layout of the Accessories Warehouse

Information:

A : Goods Inspection Desk	H: Stacking Shelves
B : Stationery Cupboard	I : Items on the floor
C: Computer Desk	J: Items on the floor
D : Shelf 1	K : Shelf 5
E: Shelf 2	F : Shelf 3
M: Goods reception area	L: Items not used
G : Rack 4	

In the initial layout condition, there was still some accumulation of goods in areas "L" and "I" because goods that were no longer used were not thrown away and ended up piling up in the accessories warehouse, this resulted in limited movement space. The computer desk (C) or administration section is also far from the entrance. If the computer desk is placed near the door, it will be easier to collect data on incoming goods.

Constraints in the Warehouse

In PT Eight Jaya Perkasa Garment's warehouse activities there are several obstacles What happens includes:

1. Movement space in the accessories warehouse is limited.
2. Picking up goods is inefficient.
3. Storage of items that are still messy.
4. Piling of items on the floor.
5. Enter and exit the warehouse through only 1 door.

Proposed Accessories Warehouse Layout

In designing the layout of the accessories warehouse, the proposed storage method used is class based storage. The class based storage method will group items based on their type. In the order of placement, the types of goods are sorted based on the average demand for each type of item. The types of goods in highest demand are placed closest to the exit. In this case, shelves "J" and "K" can be placed closest to the exit to be used to store yarn because the demand for yarn is highest compared to other items. Items that are no longer used can be thrown away to save space and can be used as a goods reception area. In the "I" layout, where previously the goods were placed on the floor, it is suggested that more shelves can be added so that the arrangement of the goods can look neat and nice. The aim of adding racks is to prevent

accumulation of goods on the floor. There is no accumulation of items on the floor, ensuring movement when retrieving items. The aisles between shelves are spaced. This is based on the maximum width of operator movement, because during the storage process it is used for the lifting track. The layout of the proposed layout can be seen in Figure 3.3

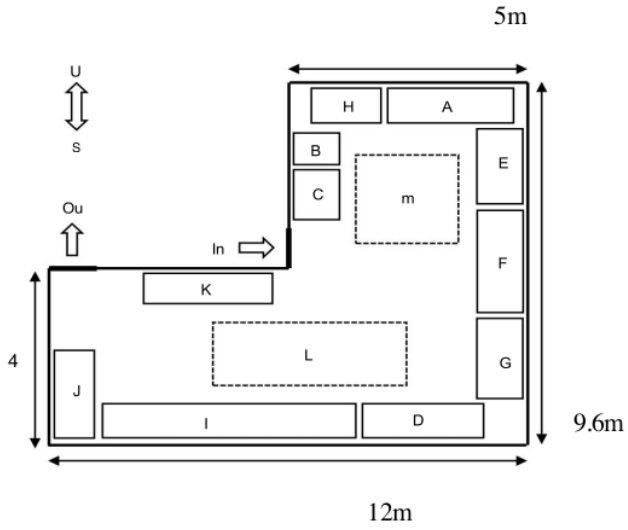

Figure 3.3 Layout of the Proposed Layout

Information:

A : Goods Inspection Desk	H: Stacking Shelves
B : Stationery Cupboard	I : Items on the floor
C: Computer Desk D : Shelf 1	J: Items on the floor
E: Shelf 2	K : Shelf 5
F : Shelf 3	L : Goods reception area (new)
G : Rack 4	M: Goods reception area

The first proposed layout improvement in the accessories warehouse is for areas "C" (computer desks) and "B" (stationery cupboards) to be placed near the entrance to make it easier to collect data on incoming goods. Second, the stacking shelf "H" can be placed in the top left corner so as not to interfere with the placement of goods on shelves 3 & 4. Third, the inspection table for goods "A" can be placed in the top right corner which was previously occupied by shelf 1 "D". Fourth, shelf 1 “D” Place it parallel to area "I" where previously there were items on the floor and items not in use, then provide empty space and add shelves so that

there are no more items on the floor, it can look nice and neat. Fifth, make use of the exit doors that were previously not used. Lastly, shelf 5 is used for items with high demand placed near the exit and another shelf is added in area "J".

Discussion Analysis

In designing the facility layout, an appropriate floor area is needed for the goods storage process. Space requirements also take into account the allowances required by each facility such as operator, material and material handling allowances. This allowance of course also requires a number of areas to accommodate it. The layout provisions which stipulate that the types of goods in highest demand must be placed close to the exit door result in an increase in warehouse storage capacity. After rearranging the layout of the accessories warehouse, it is more effective in storing goods so that warehouse capacity can increase.

CLOSING

Conclusion

From the practical work activities carried out, several conclusions were obtained including:

1. Layout design or layout of a company, especially warehouse buildings, greatly influences the activities that take place within it, because one problem and obstacle in an existing activity will affect the flow of other processes that are still in the same environment so that they become effective and efficient in the warehouse.
2. From the data obtained, an important problem is limited warehouse space and not optimal in arranging goods.
3. Good material handling will have an impact on efficiency in the subsequent process flow.

Suggestion

The suggestions that can be given are as follows: The arrangement and design of shelves in the warehouse area should pay attention to actual conditions in the field, this is done to facilitate activities in the field.

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