

WAREHOUSE MANAGEMENT

BA4055

UNIT IV

MATERIALS HANDLING

Principles and Performance Measures Of Material Handling Systems – Fundamentals of Material Handling – Various Types of Material Handling Equipments – Types of Conveyors – Refrigerated Warehouses- Cold Chain- Agri SCM

MATERIAL HANDLING

DEFNITION

Material management is a sub-set of warehouse management dealing exclusively material which contribute the maximum to completion of the end product. The objectives of material management are as follows: Lower the price of the raw materials. Reduce the cost of production and ensure the smooth flow of production.

Introduction

Purchase of raw materials is an integral part of any business, i.e. manufacturing organization or service organization.


Purpose of raw material is to be converted into finished goods for selling, but after purchase and before selling, they need to keep in safety and good care. The

timeframe of storage can be short period or longer depending upon nature and requirement of materials.

Any damage or theft to the materials is going to increase cost to the organization. **So it becomes important for organization to have a robust and effective warehouse as well as material's management.**

Scope of Warehouse Management

The place where raw material and/or finished goods are stored is referred to as warehouse or store. Generally, warehouse is structure or building design keeping in mind raw material and finished goods it is going to store. Therefore, warehouse management should be able to:

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- Receive the purchase goods and entered upon the stock register.
 - Inventory Accounting of raw material, work-in-progress or finished goods.
 - Preservation of the inventory
 - Ability to access goods whenever called upon.
 - Appropriate record keeping through coding as to preserve goods and reduce obsolescence.
 - Proper stocking of goods as ensure smooth handling.

If above objectives are met, warehouse management significantly increases the overall efficiency of the production and organization. A robust warehouse management would ensure that:

- A smooth flow of production
- Appropriate layout management to reduce material handling and equipment handling
- Reduce to wastage as well as spoilage
- Eliminate the possibility of theft and damage
- Ensure preservation of environment and reduce pollution.
- Encourage cost reduction and driving efficiency

Warehouse Design

Warehouse design is art in which goods and material can be stored as to reduce wastage, cost of carrying and increase safety. The various factors considered for warehouse design are as follows:

- Easy material handling including receipt, dispatch and storage.
- Easy supervision of materials as well as personnel
- Reduce and control obsolescence of the goods by following appropriate method.

- Optimum utilization of space

Storage Location

There are three general ways in which goods are stocked as to reduce material handling and increase prompt access. They are as follows:

- Fixed position in which specific area is located where designated goods are stored. If the designated goods are not there, that space will remain empty. Fixed position encourages easy and traceable access to the goods.
- Random Storage in which goods are stored where ever space is available. Here maximum utilization of the space is achieved.
- Categorized fixed location in which particular set of products are placed randomly in the allotted space.

Material Management

Material management is a sub-set of warehouse management dealing exclusively material which contribute the maximum to completion of the end product. The objectives of material management are as follows:

- Lower the price of the raw materials.
- Reduce the cost of production and ensure the smooth flow of production.

- Maintain quality of raw material as well as finished goods.
- Maintain good relation with the supplier as to ensure a smooth flow of raw materials.
- Continuous improvement of the skill set of the workers thereby increasing overall efficiency within the organization.



Material Handling - Principles, Operations and Equipment

Introduction


Raw materials form a critical part of manufacturing as well as service organization. In any organization, a considerable amount of material handling is done in one form or the other. This movement is either done manually or through an automated process.

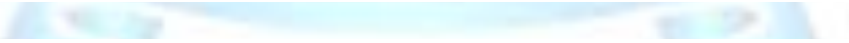
Throughout material handling processes significant safety and health challenges are presented to workers as well as management. Therefore, manual material handling is of prime concern for health and safety professional, and they must determine practical ways of reducing health risk to the workers.

Material Handling

Manual material handling ranges from movement of raw material, work in progress, finished goods, rejected, scraps, packing material, etc. These materials are of different shape and sizes as well as weight.

Material handling is a systematic and scientific method of moving, packing and storing of material in appropriate and suitable location. The main objectives of material handling are as follows:

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- It should be able determine appropriate distance to be covered.
 - Facilitate the reduction in material damage as to improve quality.
 - Reducing overall manufacturing time by designing efficient material movement
 - Improve material flow control
 - Creation and encouragement of safe and hazard-free work condition
 - Improve productivity and efficiency
 - Better utilization of time and equipment



It is critical for manufacturing organization to identify importance of material handling principle as the critical step in promoting the job improvement process. Manual material handling significantly increases health hazard for the workers in from lower back injuries.

In the current competitive and globalized environment, it is important to control cost and reduce time in material handling. An efficient material handling process promotes:

- Design of proper facility layout
- Promotes development of method which improves and simplifies the work process
- It improves overall production activity.
- Efficient material handling reduces total cost of production.

Principles of Material Handling

Material handling principles are as follows:

- **Orientation Principle:** It encourages study of all available system relationships before moving towards preliminary planning. The study includes looking at existing methods, problems, etc.
- **Planning Principle:** It establishes a plan which includes basic requirements, desirable alternates and planning for contingency.
- **Systems Principle:** It integrates handling and storage activities, which is cost effective into integrated system design.
- **Unit Load Principle:** Handle product in a unit load as large as possible

- **Space Utilization Principle:** Encourage effective utilization of all the space available
- **Standardization Principle:** It encourages standardization of handling methods and equipment.
- **Ergonomic Principle:** It recognizes human capabilities and limitation by design effective handling equipment.
- **Energy Principle:** It considers consumption of energy during material handling.
- **Ecology Principle:** It encourages minimum impact upon the environment during material handling.
- **Mechanization Principle:** It encourages mechanization of handling process wherever possible as to encourage efficiency.
- **Flexibility Principle:** Encourages of methods and equipment which are possible to utilize in all types of condition.
- **Simplification Principle:** Encourage simplification of methods and process by removing unnecessary movements
- **Gravity Principle:** Encourages usage of gravity principle in movement of goods.
- **Safety Principle:** Encourages provision for safe handling equipment according to safety rules and regulation

- **Computerization Principle:** Encourages of computerization of material handling and storage systems
- **System Flow Principle:** Encourages integration of data flow with physical material flow
- **Layout Principle:** Encourages preparation of operational sequence of all systems available
- **Cost Principle:** Encourages cost benefit analysis of all solutions available
- **Maintenance Principle:** Encourages preparation of plan for preventive maintenance and scheduled repairs
- **Obsolescence Principle:** Encourage preparation of equipment policy as to enjoy appropriate economic advantage.

Material handling operations are designed based upon principles as discussed above.

Material handling equipment consists of cranes, conveyors and industrial trucks.



Material Handling

Definition: The movement, storage, protection and control of materials throughout the manufacturing and distribution process including their consumption and disposal

- Handling of materials must be performed
 - Safely
 - Efficiently
 - At low cost
 - In a timely manner
 - Accurately (the right materials in the right quantities to the right locations)
 - And without damage to the materials

