Al-Mustaqbal University
Department: Medical Instrumentation Techniques Engineering
Class: 4th
Subject: Project Management
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2nd term / Lecture: Materials Handling – part1

Materials Handling

مناولة المواد

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1. Introduction:

To manufacture any product, it is necessary either that materials move from one step of the manufacturing process to another or that operators move to the materials. The most common practice, of course, is to move the materials. This movement of materials from one processing area to another and from department to department necessitates the use of many personnel and equipment and the handling of treatment tonnages of materials.

Consideration for the handling of work-in-processes materials, as well as raw material and finished goods, has always been a part of the production systems design process. Basic cost accounting evaluation of the cost of manufacturing products reveals that when materials handling costs are separated from other costs, they can be seen to be significant. Recently, the materials handling function has been undergoing significant changes in concept and implementation. Management has been changing its view of materials handling as the routine transfer of materials from place to place and is beginning to think of it as part of a total materials flow system. This change in thinking has come about largely as a result of new automatic handling and storage equipment and systems that are integrated closely with automatic processing and sophisticated management information and control systems.

2. Definition of Materials Handling:

In a broad sense , materials handling includes all movement of materials, in a Manufacturing situation. It has been defined by the Materials Handling Division, American Society of Mechanical Engineers , as follows: "Materials handling is the art and science involving the moving, packing, and storing of substances in any form. 20-70% of product cost attributed to material handling " This is an all-inclusive definition and can include fluids and semi-fluids, as well as discrete items. For the sake of simplicity, we shall limit our discussion in this chapter to the movement of discrete items, such as gears, tires, castings, and boxes. Similarly, we shall consider only the movement of materials within the plant or storage areas. Movement of materials between plants- particularly when common carriers are used – is generally considered a problem in traffic and is frequently handled by a separate traffic department. .

يعرف مناولة المواد على انه فن وعلم يشمل تحريك وتعبئة وخزن المواد باي هيئة.

3. Objectives of Materials Handling:

In the latter situation it is often to bring the tools and workers to the product than to transport the product to the machine or work area. The simplest solution to the materials handling problem- "No movement, no cost" is hardly practicable for a complete manufacturing process. It is basically sound approach when one is attempting to improve a complete production cycle and when the number of handling can be reduced. It is also a good solution in the making of heavy industrial equipment.

In addition to the objective of reducing the overall costs of materials handling by reducing the number of handling involved, the following may be considered as objectives of the engineer in his or her approach to this problem .

1. **Lower the unit materials handling costs : It is obvious that if the overall materials handling costs are reduced the unit costs will be reduced. This approach requires the costs of handling be allocated to or identified with the units of product, or its component parts that moved.**

أهداف مناولة المواد:
1. تخفيض كلف مناولة المواد للوحدة الواحدة

2. Reduce the manufacturing cycle time: The total time required to make a product from the receipt of raw materials to the finished goods can be reduced through effective materials handling.

3. Contribute toward a better control of the flow of goods : A principle way in which good materials handling practice can affect savings is by making the control of goods easier particularly in continuous manufacturing, where all operations are "tied together" by the materials handling plan.

4. Provide for improved working conditions and greater safety in the movement of materials many of the provisions of the occupational Safety and Health Act require adherence to safe handling practices: These must be followed. In addition, it is evident that the safe handling of materials will be reflected in a better industrial accident record .

2. تقليل زمن دورة التصنيع.
3. يساهم في تحكم افضل بتدفق البضائع.
4. تحسين وضع العمل وسلامة اكبر في تحريك المواد.

5. **should be achieved by moving materials in the fastest, most efficient and economical**

   Provide for fewer rejects: Care in the handling of the product will contribute to a better quality level of the goods produced. Products damaged by inefficient handling are all too often a major cost to manufacturer.

6. **Achieve decreased storage requirement: Better movement and storage of materials should increase the utilization of storage space.**

7. **Gain higher productivity at lower manufacturing cost: Any materials handling system, if it is worth its investments, is design to improve productivity. This improvement way possible.**

5. يحقق تحريك المواد بطريقة سريعة وكفوءة واقتصادية بتقليل المرفوض.
6. يحقق تقليل متطلبات الخزن.
7. يحقق إنتاجية اعلى مع كلفة تصنيع اقل.