Material Handling

"Materials Handling is the art and science involving the moving, packaging and storing of substance in any form." Materials handling is the creation of time and place utility in a material. Materials handling is the lifting, shifting and placing of materials, which effect savings in money time and place.

Material Handling Principles:

Some of the major principles in the design of an efficient system of materials handling are:

(i) Reduce handling to a minimum:- As far as possible materials should always move towards completion, over, the shortest distance without back-tracking. Often materials move back and forth over large distances unnecessarily. A large amount of handling can be eliminated by planning the location of operations so that one operation finishes right where the next begins. The flow of product should receive top priority in planning of layout.

(ii) Avoid re-handling:- It may not be possible to eliminate re-handling completely, nevertheless re handling is a wasteful and costly operation.
Re-handling can be reduced by

(i) Not keeping anything on floor,
(ii) Avoiding transfers from floor to container or vice versa or from container to container
(iii) Avoiding mixing of materials.

(iii) Combine handling with other operations:- Many times handling may be, made a productive activity by combining with other operations, such as production, inspection, and storage. In process industries, materials undergo physical and chemical changes while in movement, handling devices may be used as live storages or materials may be sorted and inspected while they are being handled.

(iv) Ensure safety in handling:- Safety is a key word in handling. A large percentage of industrial accident is attributed to poor handling practices. Even more costly in terms of money in the damage to equipment and products due to improper handling methods. A good handling system should ensure safety to walkers and materials. Manual handling of heavy objects materials scattered on floor or projecting into aisles are but a few causes of accidents. Keeping gangways and aisles clear is one of the primary precautions against accidents in handling.

(v) Use gravity where possible and mechanical means if necessary:- The simplest and cheapest way to handle materials is by using gravity. Often chutes and inclined boards can conveniently used to transport materials quickly to the point of use about much investment on costly handling equipment. Where it is not possible to use gravity for various practical reasons, some mechanical means should be considered. Lifting and carrying of heavy materials mechanical1y saves time and reduces fatigue of workers.

(vi) Select proper handling equipment:- There are as many types of handling equipment available today as the number of materials to be handled. And any single equipment may not solve all handling problems. It is therefore, necessary to choose the equipment suitable for the

job under consideration. In other words, the equipment selected. should be capable of a variety of uses and applications.

Efficient Material Handling:
Use of right method; To provide right amount of right material at the right time, in the right sequence, right position, right condition and at right cost.

Types of Material Handling Equipment:
The material handling equipment are classified as-
1. Conveyors:- Used to move the material between two fixed stations either continuously or intermittently.
1. Roller Type
2. Wheel Type
3. Bucket Type
4. Screw Type
2. Industrial Trucks and Trolleys:- Moving materials in a shop floor in a flexible manner.
1. Trolleys
2. Motor Trucks
3. Fork Lifts or lifters
4. Platform Truck
3. Cranes:- Moving the material on over head space without disturbing workers.
Examples: Jib cranes, Bridge cranes, Circular cranes
4 Hoists:-
Chain hoists,
Electric hoists,
Pneumatic hoists
5 Containers:-
(i) Dead Container: Contains material but not moved
(ii)Live Container: Contains material and can be moved
E.g. Power trucks, wagons etc.

EOT (Electric overhead traveling) crane is one of the most common types of overhead crane, or called bridge cranes, which consist of parallel runways with a traveling bridge spanning the gap. As obvious from the name, EOT crane is operate by electric, generally there is an operator cabin or a control pendant along with the EOT crane.

Applications of EOT crane:-
EOT crane is extensively used in the warehouse, workshop, Diesel Shed and stock ground of piling, unloading or relocating heavy load. Generally speaking, the EOT crane is equipped with the mechanical means to realize the traveling not only in both directions but also can raise or lower the heavy load easily. But should pay attention to that EOT crane is forbidden to used in the explosive, combustible or corrosive environment, and the working temperature is approximately from -20℃ to 40℃
Single girder EOT crane-
As the name shown, single girder EOT crane has one main girder, which is easy to install and requires less maintenance.

Uses of Single Girder EOT Crane:
Single Girder EOT Crane is used for lesser heavy industrial applications. It is used to pull and move lighter machines parts and applications in Industries.

Double Girder EOT Crane
It has 2 Main **Girders** across the span. It consist of Electric Hoist travelling on lower flange of Main **Girder** and not required rail for cross traveling. It consist of a crab mechanism travels above both **girders** run over cross travel rails with platform to maintain all parts of crab.

Uses of Double Girder EOT Crane is used in the application of lifting the heavy loads which may weigh up to 10 T and also for transporting such heavy weights including the span of 30m and more than that.