MATERIAL HANDLING AND TRANSPORTATION

MATERIAL HANDLING

- Materials handling is the art and science of moving, packing and storing of substances in any form.

- **Objectives** :

- To Lowers unit materials handling cost.
- To reduce manufacturing cycle time
- To provide better control of the flow of materials
- To provide better working conditions
- To provide Contribution for better quality by avoiding damages to products
- To Increase storage capacity
- To provide higher productivity at lower manufacturing cost

- **Principle :**

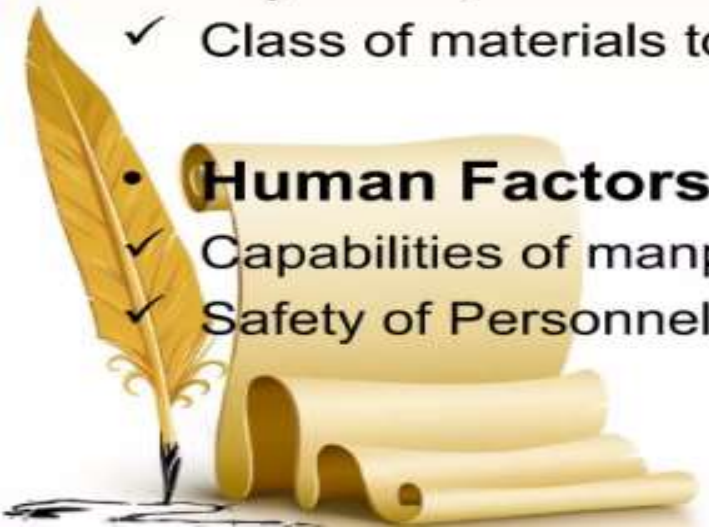
- Material should be moved as little as possible
- Reduction in time by using shortest routers and mechanical material handling equipment
- The material movement should be in lots rather than in individual units
- Design of material handling equipment should be such that it can increase the effectiveness
- Gravity should be used
- Rehandling and back tracking of materials should be avoided
- Periodically Repairing ,Maintaince & Checkup of existing material handling equipments

- **Factors affecting the Selection of Materials Handling Equipment :**

✓ Production problem
✓ Human element involved
✓ Capabilities of the handling equipment available

- **Production Problem:**

✓ Volume of Production to be maintained
✓ Layout of plant & building facilities
✓ Class of materials to be handled



- **Human Factors**

✓ Capabilities of manpower
✓ Safety of Personnel

❖ **Equipment factors :**

- Flexibility
- Adaptability
- Load capacity
- Space requirement
- Speed
- Supervision required
- Ease of maintainance
- Power
- Cost
- Envioronment

- **TYPES OF MATERIAL HANDLING SYSTEM**

1. Equipments oriented systems :

a) Convey or Systems
b) Tractor transfer system
c) Fork lift truck
d) Industrial truck system
e) Underground system

2. Material Oriented Systems

a) Unit handling system
b) Bulk handling system
c) Liquid handling system

3. Methods oriented system

a) Manual systems
b) Automated systems
c) Job shop handling system
d) Mass production system

4. Function oriented system

a) Transportation systems
b) Conveying systems
c) Transferring systems
d) Elevating systems

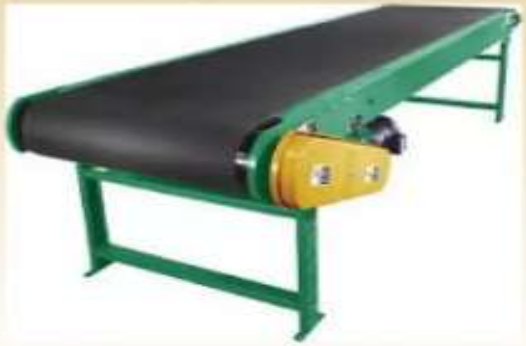
- **Type of material handling equipment**

1. Conveyers
2. Cranes, Elevators and Hoists
3. IndustrialTrucks
4. Auxiliary Equipments

1. Conveyors:

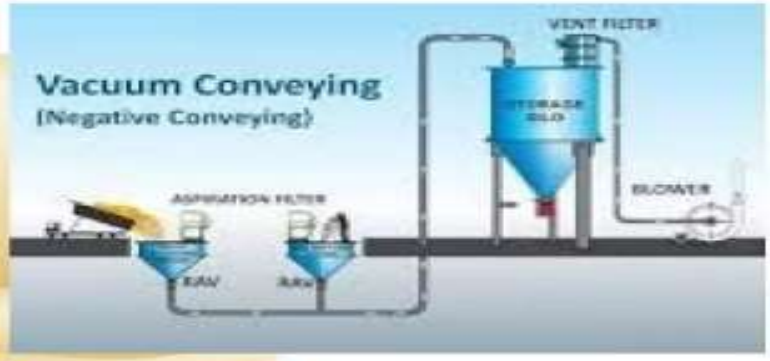
Gravity or powered devices. Used for moving loads from one point to point over fixed paths.

Chain conveyor



Belt conveyor

Roller conveyor



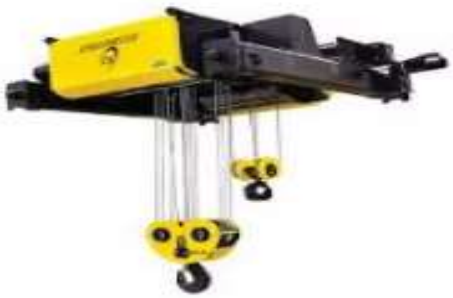
Pneumatic conveyor

2.Cranes,elevator and hoist :

These are overhead devices used for moving varying loads intermittently between points within an area.

cranes

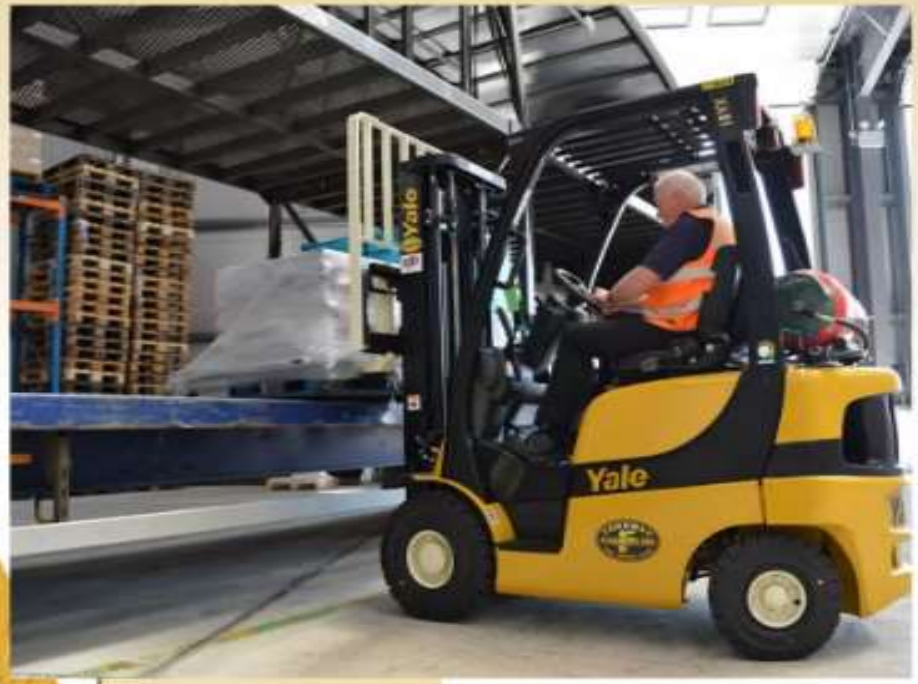
Elevators



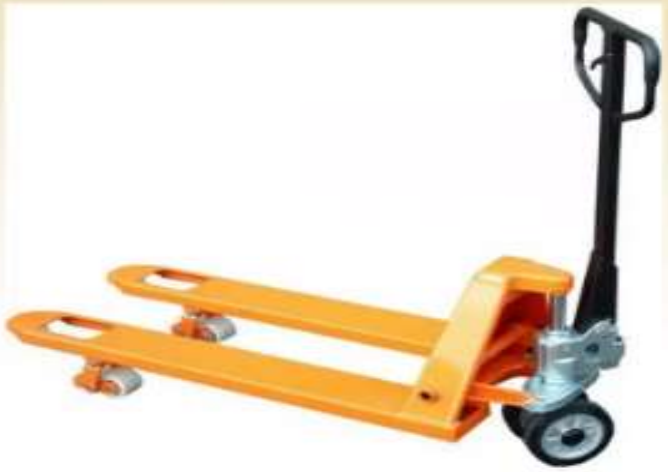
Hoist

3.Industrial trucks:

May be electric, gasoline, gas powered,deisel.



Fort lift truck

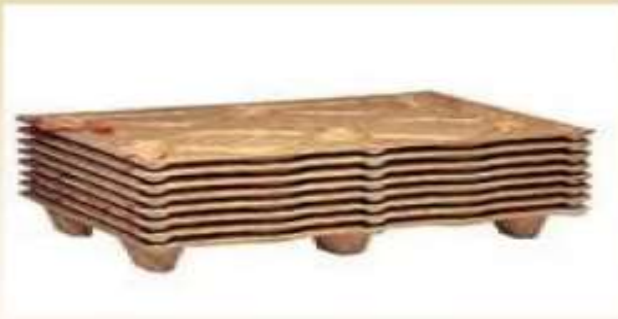


Pallet truck

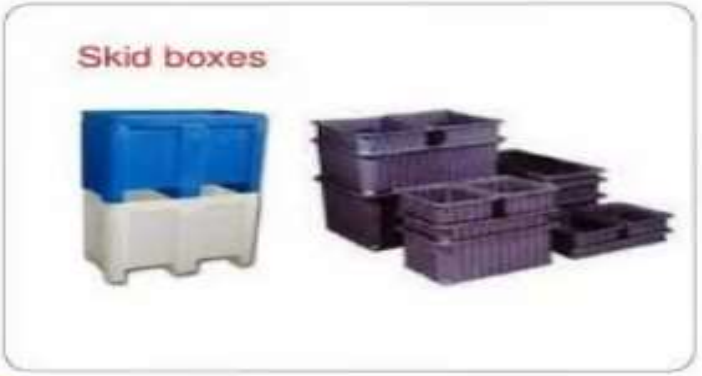
4. Auxillary equipment :

Devices or attachement used with handling equipments to make their use more effective and versetile.

Expendable steel pallets



Expendable wood pallets



TRANSPORTATION

- "The process of moving an item from point A to point B."
- "Safe, efficient, reliable, and sustainable movement of persons and goods over time and space"
- The progress in techniques and management principles improves the moving load, delivery speed, service quality, operation costs, the usage of facilities and energy saving.

- **Importance of Transportation:**

- Without well-developed transportation systems, logistics could not bring its advantages into full play.
- A good transport system in logistics activities could provide better logistics efficiency, reduce operation cost, and promote service quality.
- A well-operated logistics system could increase both the competitiveness of the government and enterprises.
- Transport system is the most important economic activity among the components of business logistics systems.

- **Transportation Functionality**

Functions of transportation :

- Product movement
- Product storage

- **Product Movement :**

❖ **Temporal:**

✓ Product is locked up during transit, hence inaccessible

✓ Positive amount of time is spent in transporting material

✓ Time is a resource [Temporal Resource] expended in Transportation

✓ During the time product is locked up costs are incurred in proportion of time

❖ **Financial:**

✓ Administration costs, Salaries, Maintenance costs are expended

❖ **Environmental:**

✓ Fuel costs are high[Creates air pollution, congestion, Noise pollution

- **Product Storage:**

✓ When unloading and loading is more expensive then storage.

✓ When storage space is limited[situation when inventory levels are high].

- **Principles of Transportation**

✓ Economy of scale

✓ Economy of distance

- **Types of Transportation**
  - Rail
  - Road
  - Water
  - Air

Water transport

Air transport

Road transport

Rail transport