

Machines and equipment should not be fixed so close to each other that it may create problems in repairs, maintenance, and replacement. If one machine breaks down, it should be convenient to repair or replace it without disturbing the working of others.

5) Plant Location

Plant layout is closely connected with plant location. As a matter of fact, the location (urban/rural), size, shape of the site and its topography influence the general pattern of layout. Plant site also influences the type of building (single/multi storey), mode of transport (road/rail/water/airways) and the scope of expansion which in turn influences layout.

6) Employee facilities/ workers

A good plant layout should aim at providing a good working environment and comfort to the workers. Mandatory facilities need to be provided at workplace such as ventilation, restroom, medical room, fire safety provisions, counselling, training hall, canteen, washrooms, locker rooms, parking, etc. It should provide for non-slippery floors, protection against dangerous fumes, excess heat and strong odours.

7) Management policy

Before deciding the plant layout, it is necessary to determine managerial policies. Policies of the management relating to production, purchase, and personnel affect the design of plant layout. such as expansion, diversification, collaboration, technological upgradation etc.

8) Characteristics of the building

Shape of building, covered and open area, number of storeys, facilities of elevators, parking area and so on also influence the layout plan. In most of the cases where building is hired, layout is to be adjusted within the spaces available in the building. But if a building is to be constructed, proper care should be given to construct it according to the layout plan drawn by experts.

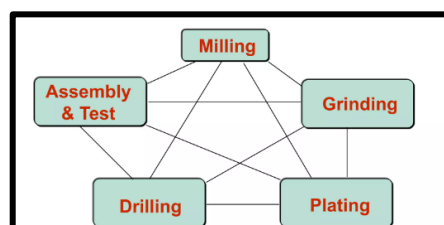
Types of Plant Layout

1) Process Layout

- Process layout also known as functional layout is characterized by keeping similar machines or operations at one location.
- In this type of layout, the machines are arranged according to the nature or type of the operations.
- For example- machines performing drilling operations are kept in the drilling department.
- In this layout, several products may share a machine to make its full use.
- In this type of layout, the process rather than the product has dominating role.
- This type of layout is more suitable to job order type of production or for non- standardised products.

Features of Process Layout

- General purpose equipment is used
- Changeover is rapid
- Material flow is irregular
- Material handling equipment is flexible
- Operators are highly skilled
- Production time is relatively long
- In process inventory is relatively high

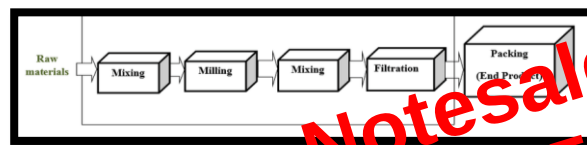


2) Product layout

- Product layout which is also known as line layout includes machines and equipment arranged depending on the sequence of operations for the production.
- All machines as required to balance the particular product line are arranged in a sequential line but not necessarily in the straight line.
- The raw material is supplied at one end of the line and moves from one operation to the next one quite rapidly with a minimum work in process, storage and material handling.
- The best-known example of this type of layout is seen in motor car production.
- In this type of layout, product is given the primary importance and the process machine must remain present at a point where the product needs its services.
- Product layout does not require frequent changes in machine set up and hence is best for standardised products.

Features of Product Layout

- Special purpose equipment is used
- Changeover is expensive and lengthy
- Material flow approaches continuous
- Material handling equipment is fixed
- Operators need not be as skilled
- Production time for a unit is relatively short
- In product inventory is relatively low



Advantages of Product layout

1) Utilization of Space in Optimum Way

We can appropriately use the available space because of the sequences of machines. Also, if the space is limited, machines can be organized in a U shape to maximize efficiency.

2) Efficient material handling

In product layout, the machines are arranged based on the sequence of operations, so there is no forward and backward movement. As a result, material handling expenses and time are reduced. It also removes the transportation cost, which is associated with moving materials between machines.

3) Lower Work-in-Progress

In product layout, the production process is continuous; the work-in-progress is also reduced. Work-in-process needs less storage space and investment.

4) Time-Saving

The product layout aids in reducing the amount of time spent moving goods because materials can be transported using various automated equipment such as conveyor belts.