

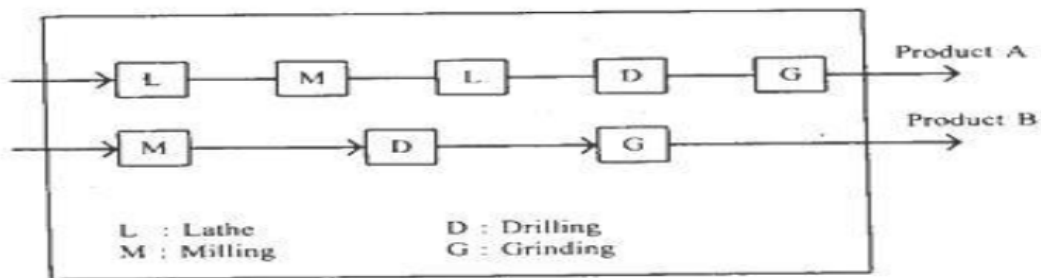
PROFESSIONAL ETHICS IN BUSINESS

LECTURE SIX

1. Product layout

A product layout groups different workstations together according to the products they work on. Workstations in a product layout can quickly transfer small batches of semi-finished goods directly to the next station in a production line. Product layouts can be ideal for smaller manufacturing businesses with lower volume than their large corporate competitors.

Layout that uses standardized processing operations to achieve smooth, rapid, high-volume flow. Here machines are arranged according to the needs of product & in the same sequence as the operations are necessary for manufacture. E.g. 'back office' of services such as banks and insurance companies.



Advantages of Product Layout

- High rate of output
- Low unit cost
- Labor specialization
- Low material handling cost
- High utilization of labor and equipment
- Established routing and scheduling
- Short processing time

Disadvantages of Product Layout

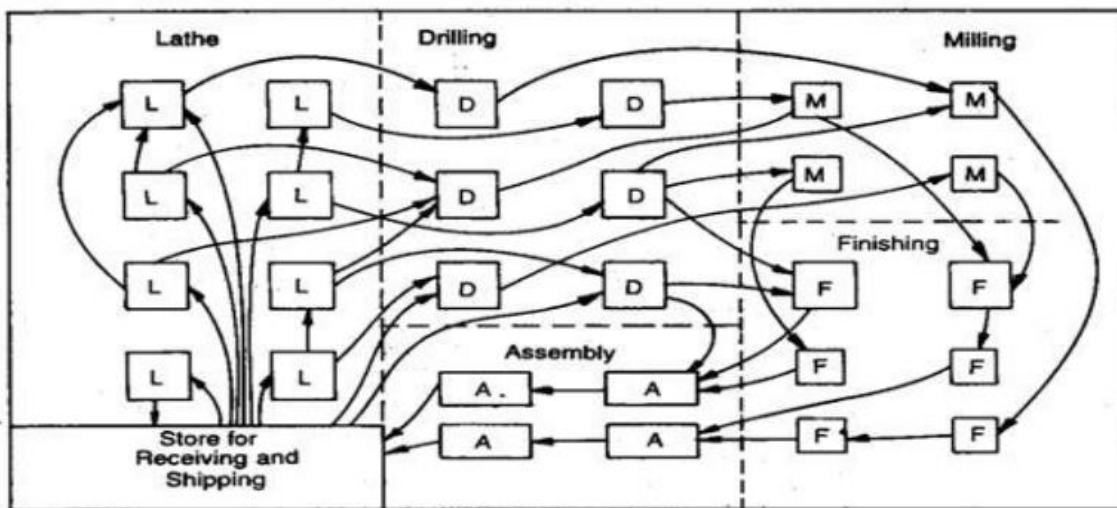
- Creates dull, repetitive jobs
- Poorly skilled workers may not maintain equipment or quality of output
- Fairly inflexible to changes in volume
- Highly susceptible to shutdowns
- Needs preventive maintenance
- Require large capital investment

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2. Process layout

A process layout groups workstations together according to the activities being performed, regardless of which products each workstation is working on. Workstations produce higher volumes of output at a time before sending semi-finished goods in bulk to the next area, which may be located as close as the other end of a building or as far as another facility on the other side of the globe.

Layout that can handle varied processing requirements. Here all machines performing similar type of operations are grouped together at one location in the process layout. Thus here facilities are grouped together acc. To their functions. E.g. all drilling machines are located at one place known as drilling section.



Advantages of Process Layouts

- Can handle a variety of processing requirements
- Machines breakdown doesn't result in shutdown.
- Equipment used is less costly
- Wide flexibility in production facilities.
- Each production unit of system works independently.
- High utilization of facilities
- Variety makes the job interesting.

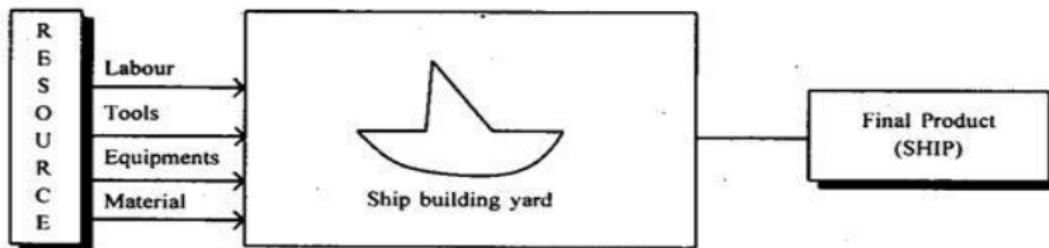
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Disadvantages of Process Layouts

- In-process inventory costs can be high
- Challenging routing and scheduling
- Equipment utilization rates are low
- Material handling is slow and inefficient & is more.
- More space is required
- Longer processing time
- Back tracking may occur.

3. Stationary layout:

Stationary Layout in which the product or project remains stationary, and workers, materials and equipment are moved as needed. Eg. Construction of DAMS. The product, because of its size and/or weight, remains in one location and processes are brought to it.

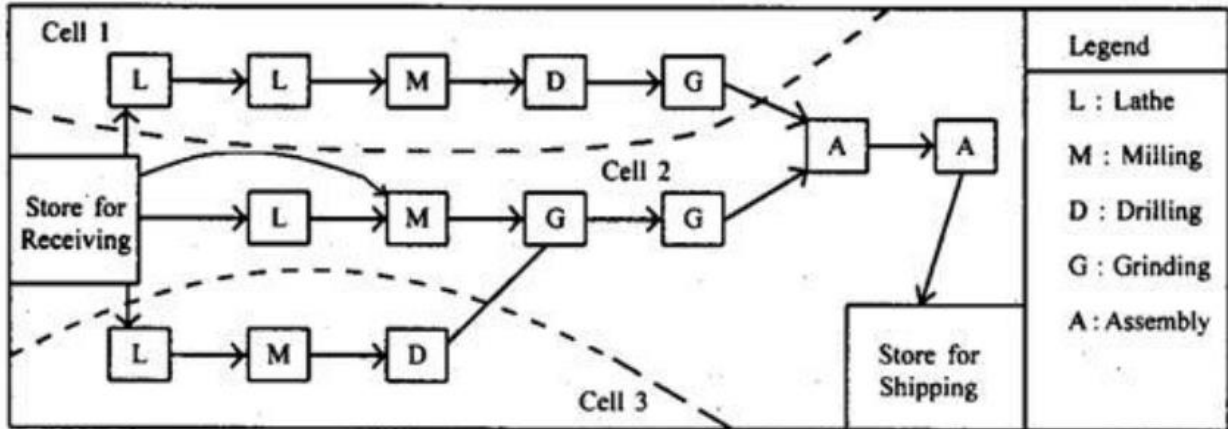


4. Cellular or group layout

Cellular layout is based on the group technology (GT) principle. Therefore, it is also called as group layout. This layout is suitable for a manufacturing environment in which large variety of products are needed in small volumes (or batches). The group technology principle suggests that parts, which are similar in design or manufacturing operations, are grouped into one family, called part-family. For each part-family a dedicated Cluster of machines (called machine cell) are identified. Generally, all the processing requirements of a particular part-family are completed in its corresponding machine cell. In other words, the intercell transfer UT part should ideally be zero."

The cellular layout is thus a combination of process and product layout. Therefore, it possesses the features of both. Cellular manufacturing system (CMS) involves decomposition of manufacturing system into subsystems of similar parts/machines. CMS allows batch production to give economical advantages similar to those of mass production with additional advantages of flexibility, normally associated with job shop production systems

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MAINTENANCE

‘Maintenance’ as – “the combination of all technical and administrative actions, including supervision actions, intended to retain an item in, or restore it to, a state in which it can perform a required function”.

Need for maintenance:

The main purpose of regular maintenance is to ensure that all equipment required for production is operating at 100% efficiency at all times. Through short daily inspections, cleaning, lubricating, and making minor adjustments, minor problems can be detected and corrected before they become a major problem that can shut down a production line. A good maintenance program requires company-wide participation and support by everyone ranging from the top executive to the shop floor personnel.

The prime aim of maintenance is to preserve a building in its initial stage, as far as practicable, so that it effectively serves its purpose. Some of the main purposes of maintaining buildings are:

1. Retaining value of investment
2. Maintaining the building in a condition in which it continues to fulfill its function, and
3. Presenting a good appearance.

Types of Maintenance

- Breakdown Maintenance
- Scheduled Maintenance
- Preventive Maintenance
- Predictive Maintenance

Maintenance Types

Corrective / Breakdown	Scheduled	Preventative	Predictive
<ul style="list-style-type: none"> Repairs made after the equipment has failed and can not perform its normal function anymore Justified in small factories where - down times are non-critical : repair costs are less than other type of maintenance : where financial justification for scheduling not felt 	<ul style="list-style-type: none"> It is a stitch-in-time procedure and incorporates – inspection, lubrication, repair and overhaul of equipments If neglected can result in breakdown Eg. overhaul of machines, change heavy equipment oils etc 	<ul style="list-style-type: none"> “Prevention is better than cure” Locates weak spots on machinery and equipment Provides periodic/ scheduled inspections and minor repairs to reduce the danger of unanticipated breakdowns Lower maintenance and repair costs Increases plant life 	<ul style="list-style-type: none"> Machinery conditions are periodically monitored and this enables the maintenance crews to take timely action - machine adjustment, repair or overhaul It makes use of human sense and other sensitive instruments - gauges, vibration analyser, pressure, temperature etc

1. Breakdown maintenance:

The maintenance carried out after a failure has occurred and intended to restore an item to a state in which it can perform its required function is called as breakdown maintenance. Breakdown maintenance is maintenance performed on equipment that has broken down and is unusable. It may be either planned or it can be unplanned. Planned maintenance is “The maintenance organized and carried out with forethought, control and the use of records to a predetermined plan.” Unplanned maintenance is carried out to no predetermined plan.

2. Scheduled maintenance:

Scheduled maintenance is the one where the preventive maintenance carried out to a predetermined interval of time, number of operations, mileage, etc.

Scheduled maintenance is planned component repair or replacement, often triggered by preventive maintenance inspections, pre-trip and post-trip inspections, regular oil changes and grease jobs, etc., all of which are also scheduled maintenance activities whereas the unscheduled maintenance is work that results from breakdowns, unexpected failures, often triggering road calls and usually causing expensive downtime of labor crews.

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3. Preventive Maintenance:

Preventive maintenance can be defined as the Actions performed on a time- or machine-run-based schedule that detect, preclude, or mitigate degradation of a component or system with the aim of sustaining or extending its useful life through controlling degradation to an acceptable level.

The maintenance carried at predetermined intervals or corresponding to prescribed criteria and intended to reduce the probability of failure or the performance degradation of an item is termed as preventive maintenance.

4. Predictive Maintenance:

Predictive maintenance can be defined as follows: Measurements that detect the onset of degradation mechanism, thereby allowing causal stressors to be eliminated or controlled prior to any significant deterioration in the component physical state. Results indicate current and future functional capability.