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FACILITY LAYOUT PLANNING

PLANT LAYOUT & MATERIAL HANDLING

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Introduction

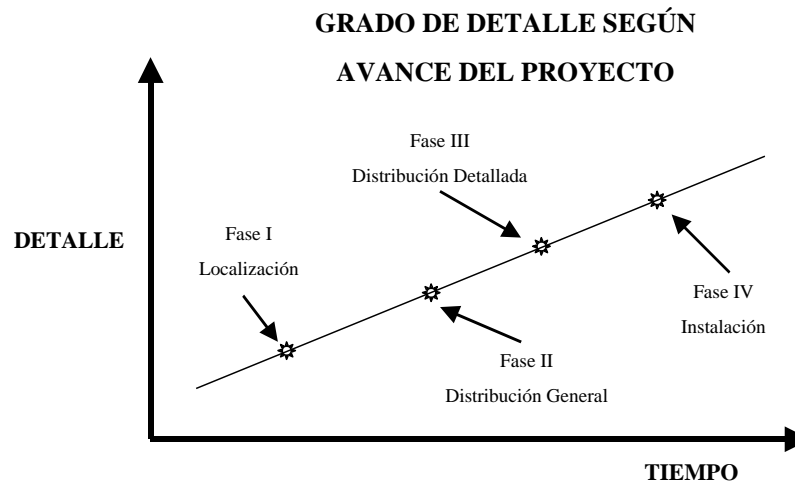
- Plant layout planning includes decisions regarding the physical allocation of the economic activity centers in a facility.
 - An economic activity center is any entity occupying space.
 - The objective of plant layout planning is a more effective work flow at the facility, allowing workers and equipment being more productive.
- Facility layout techniques apply to the case where several physical means have to be located in a certain area, either industrial processes or services.
- The objective of the chapter is not only Plant layout but re-layout also (most common situation for a company).
- To carry out an appropriate plant layout, it's important to take into account the business strategic and tactical objectives

Introduction

- To make a decision about layout planning, 4 different questions must have an answer:
 - Which centers do we have to consider?
 - How much space and capacity is required for each center?
 - If there is not enough space, productivity may be reduced.
 - Too much space is expensive and may also reduce productivity.
 - How must the space be configured at each center?
 - Space quantity, shape and the elements of the work center are related to each other.
 - Where should each center be located at within the facility?
 - The allocation of the different centers may affect productivity.

Introduction

- The plant layout process starts at an aggregate level, taking into account the different departments. As soon as we get into the details, the different issues arise, and the original configuration may be changed through a feedback process.
- Most (if not all of them) layouts are designed properly for the initial conditions of the business, although as long as the company grows and has to be adapted to internal and external changes, a re-layout is necessary.

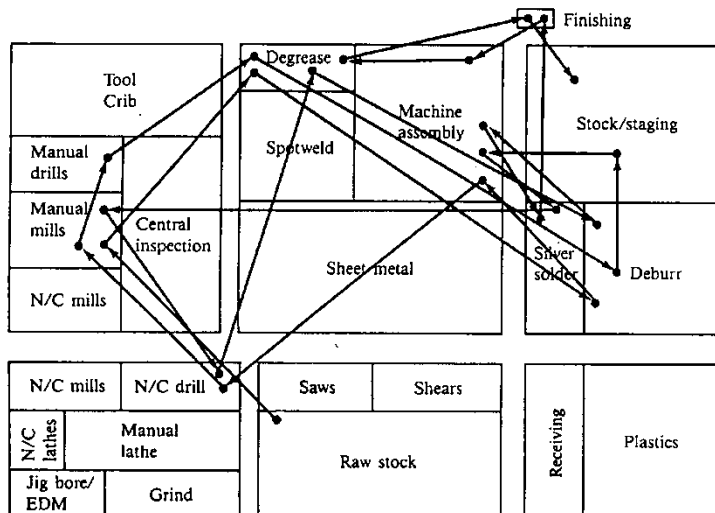


Introduction

- The reasons for a re-layout are based on 3 types of changes:
 - Changes in production volumes.
 - Changes in processes and technology.
 - Changes in the product.
- The frequency of the re-layout will depend on the requirements of the process.

Introduction

- Symptoms that allow us to detect the need for a re-layout:
 - Congestion and bad utilization of space.
 - Excessive stock in process at the facility.
 - Long distances in the work flow process.
 - Simultaneous bottle necks and workstations with idle time.
 - Qualified workers carrying out too many simple operations.
 - Labor anxiety and discomfort. Accidents at the facility.
 - Difficulty in controlling operations and personnel.

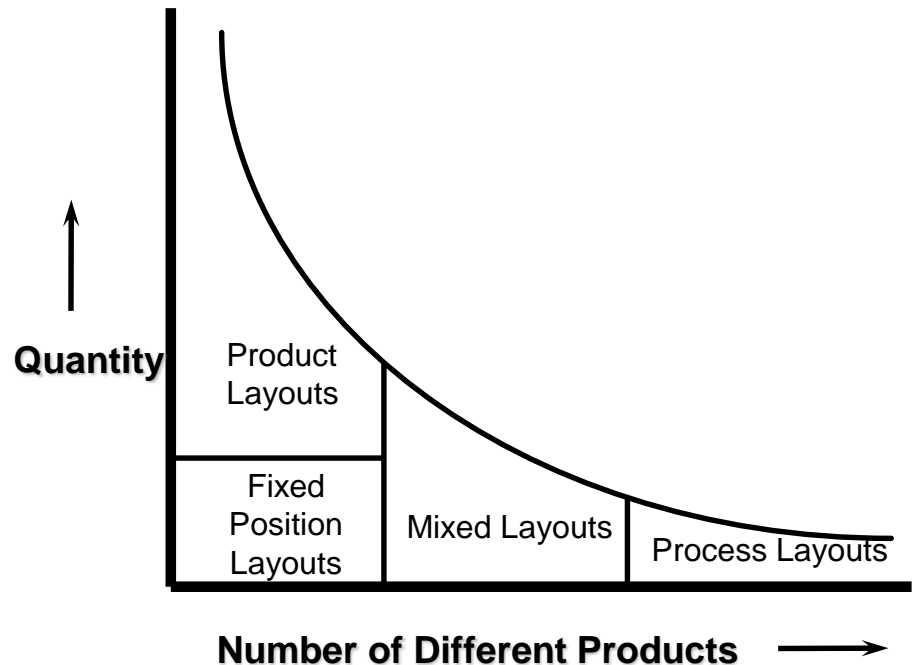


Facility Layout Definition

- A *facility layout* is an arrangement of everything needed for production of goods or delivery of services. A *facility* is an entity that facilitates the performance of any job. It may be a machine tool, a work centre, a manufacturing cell, a machine shop, a department, a warehouse, etc.

➤ The layout design generally depends on the products variety and the production volumes.

Four types of organization are referred to, namely *fixed product layout*, *process layout*, *product layout* and *cellular layout*.

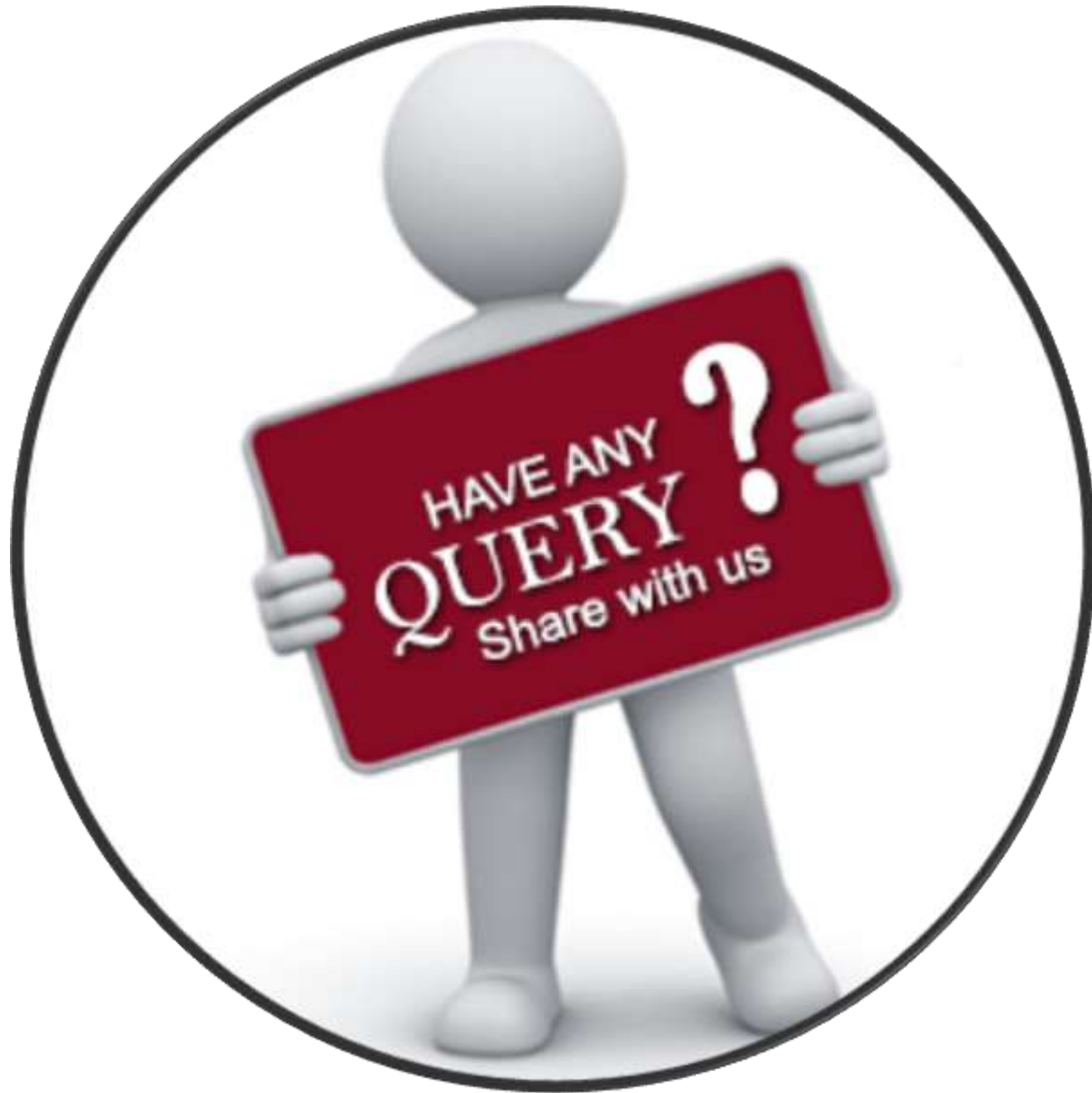


Objectives of Plant Layout

- The main objective consists of organizing equipment and working areas in the most efficient way, and at the same time satisfactory and safe for the personnel doing the work.
 - Sense of Unity
 - The feeling of being a unit pursuing the same objective.
 - Minimum Movement of people, material and resources.
 - Safety
 - In the movement of materials and personnel work flow.
 - Flexibility
 - In designing the plant layout taking into account the changes over short and medium terms in the production process and manufacturing volumes.

Objectives of Plant Layout

- These main objectives are reached through the attainment of the following facts:
 - Congestion reduction.
 - Elimination of unnecessary occupied areas.
 - Reduction of administrative and indirect work.
 - Improvement on control and supervision.
 - Better adjustment to changing conditions.
 - Better utilization of the workforce, equipment and services.
 - Reduction of material handling activities and stock in process.
 - Reduction on parts and quality risks.
 - Reduction on health risks and increase on workers safety.
 - Moral and workers satisfaction increase.
 - Reduction on delays and manufacturing time, as well as increase in production capacity.
- All these factors will not be reached simultaneously, so the best solution will be a balance among them.



*Thank
you*

