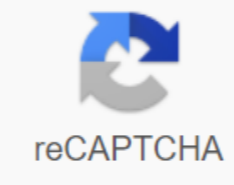




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What are the 4 basic layout types

In an industrial setting, once upon a time, machines and equipment are located in the same line depending on the sequence of operations required for the product. Layout types There are basically four types of plant layout: a) The product or layout line (b) Process or functional layout (c) Fixed position or layout location (d) Combined or group layout in industrial settings, then, machines and equipment are arranged in one line depending on the sequence of operations required for the product. Raw materials and semi-finished products move from one workstation to another consistently without any pullback or deviation. At the same time, the machines are grouped into one sequence. Therefore, the materials are fed to the first machine and the finished goods automatically move from the machine to the machine, the exit of one machine becomes the input of the other, for example, in a paper factory, bamboo is fed into the machine at one end, and the paper goes out at the other end. The raw material moves very quickly from one workstation to another station with minimal storage and processing work. The grouping of machines is based on general principles. 1. All machines or other equipment must be placed at a point in demand by Operation 2. There should be no points where one line crossed another line. 3. Materials can be served where they are needed for assembly, but not necessarily at one point. All operations, including assembly, packaging testing, must be included in line 1. Low cost of processing material, due to direct and short route and lack of rollback 2. Smooth and continuous operations 3. Continuous work flow 4. Little inventory and work in the process 5. Optimal use of area 6. Simple and effective check-up and simplified control of production 7. Reducing production costs per unit 1. Higher initial investment in Special Purpose Machines (SPM) 2. High overhead 3. The breakdown of one machine will interfere with the production process. 4. Thus, with less flexibility in physical resources, these types of layouts are able to make greater use of available equipment, with greater flexibility in the allocation of work to equipment, and employees should be more careful about any imbalances caused in one section, not allowed to affect the work of other sections. In this type, a model of a similar type of machine is located together in one place. For example, the drilling department has machines that perform drilling, the casting machines are grouped into the casting department. Therefore, the machines are installed in factories, in accordance with different processes in the layout of the plant. Thus, such layouts tend to be Department, milling department, welding department, heating department and painting department, etc. It evolved from the craft method of production. The work should be allocated to each department so that no machine is selected for as long as possible, i.e. the emphasis is on the general purpose machine. The work that needs to be done is allocated to the machines according to the download schedules in order to ensure the full loading of each machine. 1. 2. 2 to reduce initial investment. There is a high degree of machine use, as the machine is not blocked for one product 3. Overheads are relatively low 4. The breakdown of one machine does not disrupt the production process 5. Surveillance can be more effective and specialized. 6. Greater flexibility of resources 1. The processing costs of materials are high due to rollback 2. A more skilled workforce is required, which increases the cost of 3. Working in the inventory process is a high need for more storage space 4. More frequent inspections are required, which results in costly oversight so the process scheme or functional layout is suitable for factories/enterprises that have production orders to work; this is due to the reasons and specifications of customers and non-standardized products, such as tailoring, light and heavy machine-building products made for the order of furniture industry, jewelry, etc. Fixed position layout involves investment of manpower and machine to the product, which remains stationary. The movement of people and machines is advisable as the cost of moving them will be less. This type of layout is preferred where the job size is bulky and heavy. An example of this type of layout are locomotives, ships, boilers, generators, car-building, aircraft construction, etc. 1. Investments in planning are very small. The layout is flexible because changes in work design and operations sequence can be easily incorporated. 3. Adjustments can be made to address material shortages or lack of workers by changing the sequence of operations. 1. Because the production period is very long, capital investments are very high. 2. A very large space is required to store material and equipment next to the product. 3. Since multiple operations are often carried out simultaneously, there is a possibility of confusion and conflict between different working groups. Some production units may require all three processes, namely intermittent process (workers), continuous process (mass production facilities) and representative process of the combined process (i.e. different workshops). In most industries, there is only a layout or a process layout or a fixed location layout. So in the manufacturing industry the problem is when a few produced in repetitive numbers without the likelihood of continuous production, followed by a combined layout. Typically, a combination of product layout and process or other combinations, such as parts and assembly industries, is usually found to use a process layout, while product layout is often used in assembly areas. On soap, manufacturing plant, machine production of soap is arranged on the principle of product line, but support services, such as heating, glycerin production, power plant, drainage plant, etc., are organized on a functional basis. Tags : Operations Management - Introduction to Operations Management Last 30 days 11317 views 0 SlideShare utiliza cookies para otimizar a funcionalidade e o desempenho do site, assim como para apresentar publicidade mais relevante aos nossos usuários. Se você continuar a navegar o site, você aceita o uso de cookies. Leia nosso Contrato do Usuário e Nossa Política de Privacidade. O SlideShare usa cookies para otimizar a funcionalidade e o desempenho do site, assim como para apresentar publicidade mais relevante aos nossos usuários. Se você continuar a navegar o site, você aceita o uso de cookies. Leia nosso Contrato do Usuário e Nossa Política de Privacidade. O SlideShare usa cookies para otimizar a funcionalidade e o desempenho do site, assim como para apresentar publicidade mais relevante aos nossos usuários. Se você continuar a navegar o site, você aceita o uso de cookies. Leia nosso Contrato do Usuário e Nossa Política de Privacidade. The next step in production planning is to decide on the design of the plant At the facility equipment, machines and people to make the production process as efficient as possible. - How equipment, equipment and people will be organized to make the production process as efficient as possible. In this section, we'll look at four common types of object layouts: process, product, cellular, and fixed position. Process Layout Is now a group of employees or departments that perform similar tasks. groups together are employees or departments that perform similar tasks. Goods in the process (goods are not finished yet) move from one workstation to another. In each position, workers use special equipment to perform a certain step in the production process. To better understand how this layout works, we'll look at the manufacturing process at the Vermont Teddy Bear Company. Let's say you've just placed an order for a personalized teddy bear - a tourist bear with khaki shorts, a white T-shirt with an embroidered name on it, faux-leather hiking boots and a nylon backpack with a sleeping bag. Your bear starts at a fur workstation where his honey-brown fur coat is cut out. He then goes on to the stuffing and sewing workstation to his insides and his sides are stitched together. Next, he moves to the locker room where he is equipped with all the cool clothes and gear that you want. Finally, it ends at the shipping station and begins its journey to your home. For a more colorful online mini-tour of the process, log on to the Vermont Teddy Bear website on (or see Drawing 11.3 Process Layout in Vermont's Teddy Bear Company). Figure 11.3 Process Layout in Vermont's Teddy Bear Company In product layout, layout, in which products are manufactured by people, equipment or departments located in the assembly line, large volumes of goods are produced effectively by people, equipment or departments located in the assembly line, that is, a number of workstations at which already made parts are assembled. Just Born, a candy maker based in Bethlehem, Pennsylvania, produces a product called Marshmallow Peeps on the assembly line. First, the ingredients are combined and whipped in huge teapots. Then, sugar is added for color. At the next workstation, the mixture - colored warm marshmallow - is poured into forms in the form of chicken, which were carried on conveyor belts. The conveyor belt parades the candy pieces then moves forward to the stations where workers add eyes or other details. When the finished candy reaches the packing area, it is wrapped for shipment to stores around the world. To take an online tour of the production process of Marshmallow Peeps, log on to the just-born website at (or see Figure 11.4 Product Layout at Just Born, Inc.). Figure 11.4 Layout Product in Just Born, Inc. Product and Process Models organizes function work. For example, in Vermont, the Teddy Bear Company has a cutting function in one place, a topping and sewing function elsewhere, and a dressing function in third place. If you're a cutter, you've cut out all day; if you're a sewer, you sew all day; it's your function. The same goes for the production of Marshmallow Peeps on Just Born: if your function is to decorate peeps, you stand on the assembly line and decorate all day; if your function is to pack, you pack all day. Function organization, however, is not always effective. Production lines can back up production, stocks can be created, workers can get bored with repetitive jobs, and time can be wasted in transporting goods from one workstation to another. To counter some of these challenges, many manufacturers have adopted a cellular layout in which teams of workers perform all tasks related to creating a component, a group of related components, or a finished product, in which small teams of workers handle all aspects of component creation, family components, or even a finished product. Each team works on a small area, or a cell equipped with everything they need to work as a Block. Machines are sometimes configured in U-form, with people working inside U. Because the team is a team often share responsibilities, they are trained to perform several different jobs. Groups monitor both the quantity and quality of their own products. This location often leads to faster completion times, lower inventory levels, better quality, and better employee morale. Cellular manufacturing is used by major manufacturers such as Boeing, Raytheon and Pratt & Whitney, as well as by small companies such as Little Enterprise, which manufactures components for robots. Figure 11.5 Cellular Layout illustrates a typical cellular layout. Figure 11.5 Cellular Layout Easy to move teddy bears and marshmallow candy around the factory while you make them, but what about planes or ships? In the production of large products, manufacturers use a composite with a fixed position, in which workers move to a product that remains in one place, in which the product stays in one place and the workers (and equipment) go to the product. This is the mechanism used by the General Housing Corporation in the construction of modular homes. Each home is built at the company's factory in Bay City, Michigan, according to the client's design. As carpenters, electricians, plumbers and others work on every building inside a climate-controlled plant, this process cannot be hampered by the weather. Once this is done, the house is transported in modules to the owner's construction site and installed in one day. For a more detailed view of the manufacturing process of the General Housing Corporation, go to the General Housing website in . Key takeaway managers have several production layout options, including process, product, cellular and fixed position. The process layout groups together employees or departments that perform similar tasks. In each position, workers use special equipment to perform a certain step in the production process. In the layout of the product large volumes are produced in the assembly line, that is, in a series of workstations, which are collected already made parts. In cellular layout, small groups of employees process all aspects of component building, component family or even finished product. A fixed-position layout is used to produce large items (such as ships or buildings) that remain in one place while workers and equipment go to the product. (AACSB) I am not Analysis As a Purchasing Manager for a company that flies corporate executives around the world, you are responsible for buying everything from airplanes to onboard snacks. You plan to visit all the factories that do the things you buy: planes, passenger seats, TV/DVDs that go in the back of passenger seats, and specifically uniforms (with embroidered company logos) were worn by flight attendants. What type of layout should you expect to find on each object - process, product or fixed position? What will each layout look like? Why is it suitable for manufacturing process? Can any of these plants switch to cellular? What will this type of layout look like? What will be its benefits? Advantages?

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