

Phases of production planning and control Planning Phase Planning is an exercise of intelligent anticipation in order to establish how an objective can be achieved or a need fulfilled in circumstances, which are invariably restrictive.

Production Planning and Control - December 30th, Quote: Also, it prepares alternative plans of action as a means of meeting emergencies. Control also maintains raw material inventories at levels that neither tie-up excessive amounts of working capital nor lead to shortages that interrupt production. Scheduling is a time-table for performing the job on the available machines so that delivery dates are maintained. It refers to follow-up which is done after the dispatching function. To issue relevant orders to production personals to implement the production plan. To ensure production of goods in the required quantities of the specified quality at the pre-determined time. To keep the plant free from production bottleneck. To maintain spare capacity to deal with rush orders. To maintain cordial industrial relations. In this office, incoming orders are recorded in order book. Budget allocation is done to execute each order. In case the customer gives a required date of delivery, the date is noted for further action. No sooner the planning engineer receives the product to be produced, the production planning department prepares material requirement plan. Material can be applied either internally from the store or ordered from outside. The planner is expected to prepare a time table of machine allocation for different jobs. Activities of Production Control section: This centre implements the plan. The scheduling activities must be carried out strictly as per time table. Phases of PPC 1. It has two categories of planning , a. Active planning is actual production planning. Prior planning refers to all the planning efforts that take place prior to active planning. The modules of prior planning are: Active planning includes various activities directly related to the production. The modules of active planning are: Action phase directly deals with dispatching. Dispatching is the transition from planning phase to action phase. The employee is ordered to start manufacturing the product. The tasks that are included in dispatching are: Progress reporting helps to make comparison with the present level of performance. Corrective action makes provisions for an unexpected event e. This means to ensure smooth flow of work. Production planning starts with routing. The demand for a more systematic method of carrying the work through the shop gave rise to the practice of routing. In fact, production planning starts with routing which includes the following activities: Determining the quality of the product to be manufactured; b. Determining the place of production. Routing has the following objectives: It determines the sequence of manufacturing operations. It ensures the strict adherence to the sequence so determined. Well chalked out division of labour. Production of goods according to schedule. Reduction in cost of production. Optimum use of all factors of production. It includes all requisites of production like scheduling of parts, materials, machines, etc. It is like a timetable of the production plan. Essentials of master scheduling:

Chapter 2 : Phases Ppc Assignment Help - Phases Ppc Homework Help Online

In this lesson different phases of production, planning and control have been explained in a very lucid manner. The three phases are planning phase, action phase and control phase.

Production planning and control plays a major role in any organization that is into production, using the case study of a bakery producing bread going through the planning phase to the control phase. Product development and design entails the type of the bread shape and size to produce either the normal family loaf size, sliced, round, ring shaped e. Forecasting looks into the future demand of the product, while aggregate planning makes set of decision to match production with the level of demand expected. Master scheduling ensures that the level of production is enough to meet the demand for the product while material requirement planning ensures availability of materials such as flour, butter, sugar etc at the right time. Tools planning ensure tools needed for production are available. Action phase entails dispatching which is the translation of planning phase into action phase. Control phase involves progress reporting and corrective action, progress reporting uses data processing and are used for corrective action which gives rise to expediting and re-planning. Planning has been described over the years as the focal point of management. This phase is divided into two categories namely: Prior Planning and Active Planning. This can be referred to as pre-production planning. It includes all the efforts that take place before active planning. Prior planning involves product development and design, forecasting, aggregate planning, master scheduling, material requirement planning Product development and design: Product development is the process of creating a new product to be sold by a business or enterprise to its customers. Using a Bread producing company that want to start producing bread, product development and design involves designing the types of bread either the normal loaf, round, sliced, ring shape e. At the design stage, several aspect of design such as design for selling, design for manufacturing and design for usage. This can be described as an estimate of demand which will happen in future. It is a futuristic guess of what the demand for a product will look like. A baking company has to take into consideration the current demand for bread and compare it with previous demand for it, so as to be able to guess what the future demand will look like. Proper care must be taken while forecasting so as not to plan less which can lead to loss of opportunity. This is an operational activity that does an aggregate plan for the production process, in advance of 6 to 18 months, to give an idea to management as to what quantity of materials and other resources are to be procured and when, so that the total cost of operations of the organization is kept to the minimum over that period. With regards to the bakery this would help the management know the quantity of flour, salt, sugar, margarine, yeast, equipment and manpower needed, shift running, rate of production etc. In other words aggregate planning is a set of decision made in order to meet up with the forecasted demand for a certain period of time. This is a plan for individual commodities to be produced in each time period such as production, staffing, inventory, etc. It is a detailed planning process that tracks output production and matches it against orders that has been placed. Regards a baking company master scheduling helps to ensure that customer orders are met by ensuring the production of adequate quantity to meet the level of demand. The of breads and pastries produced should at least match with the level of demand if it does not exceed it. This aimed at the efficient scheduling of the requirements of raw materials and intermediate products, in order for the necessary quantities to be available in the right time. Operation Sheets and Bills of Materials are employed. Using a backward procedure, the MRP module defines the requirements in intermediate products and, finally, in raw materials in order to fulfill the production schedules. By aggregating the material requirements for each production order, Material Requirement Planning derives analytical schedules of what is needed both quantities and due dates. The Material Requirement Planning module also collaborates with the Inventory Control and Purchasing modules providing information concerning quantities of materials already available and ordered respectively. Material requirement planning in a Bakery will help to ensure that the materials needed for production such as the quantity in bags of flour, sugar, number of labour etc are available in the right quantity at the right time. Active planning involves process planning, tools planning, materials planning, routing, loading and scheduling. This is the process of

determining the amount of work a machine or equipment can handle without having an adverse effect on it. Over working a machine can lead to the breakdown of the machine which will in turn affect the level of production. Taking for example in bakery, if the oven or mixer is made to work more than its capacity it can lead to the breakdown of the machine which will in turn lead to drop a in the level of production. This is to ensure that all the materials needed for the production process is readily available. For production to take place successfully materials must be readily available in the right proportion, else production will be adversely affected and the desired level of production will not be achieved. Looking at the bakery, materials needed for production to take place include whole wheat grain, sugar, salt, manpower, mixer, baking pans, oven etc. For example if the company wants to produce loaves of breads and there is only 1 bag of flour available which can only produce 90 loaves of bread. After deciding on the level of production that is needed to be met and the quantity of materials needed, it is then necessary to schedule all of the inputs that will be needed to produce the required amount of product. These does not only include the component of the product but also the number of staff required especially if they are hired on weekly or daily basis , cleaning materials etc. Loading can be either finite or infinite, finite loading takes time into consideration and also the capacity of the machine thus excess work is not apportioned to the work station while infinite loading has no limit of work, excess work are allocated which is unhealthy to the equipments and their operators. This is the term used to refer to the quantity of work allocated to a work station. Regards to the bakery, the bakery can have two separate mixing station, loading simply refer to the amount of production carried out in each of the mixing station. Finite loading which has a limit of work and time based can be employed which means there are a defined quantity of flour to be mixed or infinite which is as more quantity of flour as they can mix. This involves contacting the suppliers at pre-set intervals so as to inform managers of delay in schedule at the earliest possible moment. It offers the opportunity of working around the late delivery. This simply means finding the best possible way to carry out production. It involves finding the way that is cost effective and efficient means by which production can be carried out. Process planning states how work is to be carried out. For a baking company, process planning involves knowing the way to operate the machine especially the scalers and mixers to avoid wasting materials such as flour, sugar, salt, margarine, water e. The process and steps in bread production involves the following steps

Step One: We measure all of our ingredients including liquids in grams on a scale. Scaling is much faster and more accurate than working in volume. **Mixing** - There are two stages to the mixing process: Dough can be kneaded by hand, or mixed in a tabletop mixer. **Primary Fermentation** - Also referred to as rising, or proofing, this is where the yeast starts to do its work, converting sugars into carbon dioxide, alcohol and organic acids. **Divide and Pre-Shape** - When the dough is properly fermented, it is time to divide it to the desired size and give the divided pieces a preshape. **Bench Rest** - After the dough has been preshaped, it needs to rest for a short time before final shaping. Bench rest is typically minutes long and during that time, the gluten network, which has been made more elastic through handling, will relax and become more extensible. **Final Shaping** - There are four basic shapes in bread making: **Final Fermentation** - After shaping, the dough must rest and continue to ferment. The length of the final fermentation varies from dough to dough; it could be anywhere from 15 minutes to 12 or more hours. **Scoring** - Most loaves will be scored, or cut, just before they are baked. **Baking** - Lean doughs those like baguettes and levain breads made without fats, sugars, eggs, etc. In most cases, a smaller loaf should be baked at a higher temperature than a larger one, so that it will take on the right amount of color in its baking time. When bread first comes out of the oven, it is still filled with excess moisture and carbon dioxide. The bread needs time to cool so that the moisture and gas will dissipate. After cooling, the texture, flavor and aroma of the bread will have developed into what they should be and you will have a flavorful, palate-pleasing loaf

PHASE 2: Dispatching can be described as the transition from planning phase to action phase. This is the phase where workers are ordered to start production. Task included in dispatching includes job orders, tool order, time ticket, store issue order, inspection order, move order etc. Job order is very key to production, it gives the instruction for the start of production, in a bakery the worker are given authorization to start the production process of the bread and other pastries and store issue order gives instruction to the store to release materials for production of breads and pastries. Tool order instructs the tool room to release tools for production. Time ticket is used to record the actual time taken at various processes.

Inspection order has the responsibility of timely testing and inspecting production process so as to reduce amount of rework. For a baking company, job order signals the start of production, tool order ensures the release of equipment used in production, store issue order ensures the release of raw materials to be used such as flour, sugar, eggs, yeast, margarine, salt etc. Control phase is divided into two major categories which are; progress report and corrective action. It also helps to make comparison with the present level of performance. Data pertaining to materials rejection, process variations, equipment failure, operator efficiency, operator absenteeism, tool life etc. These data are used for performing variance analysis that would help identify critical areas that deserve immediate attentions for corrective actions. Some examples of corrective actions are; creating schedule flexibility, schedule modifications, capacity modifications. Expediting is the follow up which is carried out after dispatching function. It helps to implement re-planning which allows engineer to re-strategize. A Bakery, data such as product rejection or complaint by the public, breakdown of a mixer or the oven, lackadaisical attitude of an operator etc. This data will help in making corrective actions so that such occurrence is prevented in future and also re-planning and product development. Product development and design entails the determining the bill of materials as well as the drawing of the product. Forecasting looks into the future demand for the product, while aggregate planning makes set of decision to match production with the level of demand expected. Master scheduling ensures that the level of production is enough to meet the demand for the product while material requirement planning ensures availability of materials inappropriate at the right time. Quality Control and Industrial Statistics. A , The phases of production planning and control case study:

Production planning and control plays a major role in any organization that is into production, using the case study of a bakery producing bread going through the planning phase to the control phase.

The more the system is automated, the more it enables informed decisions that in turn speed response times. Each stage of the system has a purpose and varies by the level of details that are considered in it as well as by the planning horizon in attempting to answer three questions: How much needs to be produced and when? What is the available capacity? How can differences between priorities and capacity be resolved? Strategic Business Plan The strategic business plan is a statement of strategic and forward-looking company goals and objectives and focuses on profitability, productivity, customer lead times, and other key areas for the business. The plan gives general direction about how the company hopes to achieve its objectives. It also provides direction and coordination among various functions of the company. The level of detail in the strategic plan is not high as it contains general market and productions requirements and not sales of individual items. A well laid out strategic business plan drives everything in the business. Actual demand is repeatedly compared with the sales plan. Market potential is assessed and future demand is forecasted. The updated marketing plan is communicated with manufacturing, engineering, and finance. During this process, decisions related to trade-offs between volume and product mix are made so that demand and supply are in balance. The planning horizon depends on the production and purchasing lead times, but is generally smaller units of time. MPS delivers a master schedule with an anticipated build schedule by specific product configurations, quantities and dates. It makes recommendations to release replenishment orders for material. And since it is a time-phased output, MRP makes recommendations to reschedule open orders. It establishes when the components and parts are needed, to make each end product. The planning horizon depends on the leads times for manufacturing and purchasing. Time-phased MRP is achieved by exploding the bill of materials, adjusting for quantity on hand or on order and offsetting the net requirements for lead times. MRP, being at the detailed level, also considers finite capacity through capacity requirements planning. Purchasing and Production Activity Control PAC Purchasing is responsible for establishing and controlling the flow of raw materials into the factory. The level of detail is high since it involved individual components, work centers, and ordersâ€”including reviewing plans and revising them as needed daily. PAC manages routing and dispatching at production facility and performing supplier control. PAC also schedules, controls, measures, and evaluates the effectiveness of production operations. Additional activities performed by PAC include: Assigning priority to orders for each shop. Maintaining work in process WIP information. Conveying shop order status. Providing quantity by location, by work center, and by shop order for accounting. Measuring the efficiency, utilization, and productivity of workforce and machines. The output of a well-managed PAC is a manufactured product with full visibility and high quality across the supply chain.

Chapter 4 : Steps in Production Planning and Control

THE PHASES OF PRODUCTION PLANNING AND CONTROL CASE STUDY: TABLE WATER COMPANY PRODUCING BOTTLED WATER BY OSORE DAVID ANJOLAOLUWA PMT/10/ SUBMITTED TO: MR OMONORI ABAYOMI DEPARTMENT OF PROJECT MANAGEMENT TECHNOLOGY FEDERAL UNIVERSITY OF TECHNOLOGY AKURE 1 TABLE OF CONTENT INTRODUCTION

Production Planning and Control: Meaning, Characteristics and Objectives Article shared by: Meaning, Characteristics and Objectives! Production planning and control is an important task of Production Manager. It has to see that production process is properly decided in advance and it is carried out as per the plan. Production is related to the conversion of raw materials into finished goods. This conversion process involves a number of steps such as deciding what to produce, how to produce, when to produce, etc. These decisions are a part, of production planning. Merely deciding about the task is not sufficient. The whole process should be carried out in a best possible way and at the lowest cost. Production Manager will have to see that the things proceed as per the plans. This is a control function and has to be carried as meticulously as planning. Both planning and control of production are necessary to produce better quality goods at reasonable prices and in a most systematic manner. Production planning is the function of looking ahead, anticipating difficulties to be faced and the likely remedial steps to remove them. It may be said to be a technique of forecasting ahead every step in the long process of production, taking them at a right time and in the right degree and trying to complete the operations at maximum efficiency. Production control, on the other hand, guides and directs flow of production so that products are manufactured in a best way and conform to a planned schedule and are of the right quality. Control facilitates the task of manufacturing and see that everything goes as per the plans. Specifically, it consists of the planning of the routing, scheduling, dispatching and inspection, co-ordination and the control of materials, methods, machines, tooling and operating times. The ultimate objective is the organization of the supply and movement of materials and labour, machine utilization and related activities, in order to bring about the desired manufacturing results in terms of quantity, time and place. Overall sales orders or plans must be translated into specific schedules and assigned so as to occupy all work centres but overload none. The forgoing discussion brings out the following traits of production planning and control: It is the planning and control of manufacturing process in an enterprise. The questions like “What is to be manufactured? When it is to be manufactured? How to keep the schedule of production etc.? All types of inputs like materials, men, machines are efficiently used for maintaining efficiency of the manufacturing process. Various factors of production are integrated to use them efficiently and economically. The manufacturing process is organized in such a way that none of the work centres is either overworked or under worked. The division of work is undertaken very carefully so that every available element is properly utilized. The work is regulated from the first stage of procuring raw materials to the stage of finished goods. Objectives of Production Planning and Control: Planning of production precedes control. Whatever is planned needs to be controlled. The ultimate objective of both planning and control is to use various inputs in an efficient way and to have a proper control over various targets and schedules fixed earlier. The following details will bring out the objectives of production planning and production control: To determine the requirements for men, materials and equipment. Production of various inputs at a right time and in right quantity. Making most economical use of various inputs. Arranging production schedules according to the needs of marketing department. Providing for adequate stocks for meeting contingencies. Keeping up-to-date information processes. Making efforts to adhere to the production schedules. Issuing necessary instructions to the staff for making the plans realistic. To ensure that goods produced according to the prescribed standards and quality norms. To ensure that various inputs are made available in right quantity and at proper time. To ensure that work progresses according to the predecided plans.

Chapter 5 : Production Planning and Control

Methods and stages of advanced production planning and control follow-up techniques. Our APS software, when enabling agile manufacturing, lean manufacturing or JIT, using Gantt scheduling for types of production planning and control, serves you best with your scheduling methods in production needs.

Initial two steps i. Routing and Scheduling, relate to production planning. Last two steps i. Dispatching and Follow-up, relate to production control. Routing Routing is the first step in production planning and control. Routing can be defined as the process of deciding the path route of work and the sequence of operations. Routing fixes in advance: The quantity and quality of the product. The men, machines, materials, etc. The type, number and sequence of manufacturing operations, and The place of production. Routing may be either very simple or complex. This depends upon the nature of production. In a continuous production, it is automatic, i. However, in a job order, it is very complex. Routing is affected by the human factor. Therefore, it should recognize human needs, desires and expectations. It is also affected by plant-layout, characteristics of the equipment, etc. The main objective of routing is to determine fix the best and cheapest sequence of operations and to ensure that this sequence is followed in the factory. Routing gives a very systematic method of converting raw-materials into finished goods. It leads to smooth and efficient work. It leads to optimum utilization of resources; namely, men, machines, materials, etc. It leads to division of labor. It ensures a continuous flow of materials without any backtracking. It saves time and space. It makes the work easy for the production engineers and foremen. So, routing is an important step in production planning and control. Production planning starts with it. Read article on procedure of routing in production. Scheduling Scheduling is the second step in production planning and control. It comes after routing. Fix the amount of work to do. Arrange the different manufacturing operations in order of priority. Fix the starting and completing, date and time, for each operation. Scheduling is also done for materials, parts, machines, etc. So, it is like a time-table of production. It is similar to the time-table, prepared by the railways. Time element is given special importance in scheduling. There are different types of schedules; namely, Master schedule, Operation schedule and Daily schedule. Scheduling helps to make optimum use of time. It sees that each piece of work is started and completed at a certain predetermined time. It helps to complete the job systematically and in time. It brings time coordination in production planning. All this helps to deliver the goods to the customers in time. It also eliminates the idle capacity. It keeps labor continuously employed. So, scheduling is an important step in production planning and control. It is essential in a factory, where many products are produced at the same time. Dispatching Dispatching is the third step in production planning and control. It is the action, doing or implementation stage. It comes after routing and scheduling. Dispatching means starting the process of production. It provides the necessary authority to start the work. It is based on route-sheets and schedule sheets. Dispatching includes the following: Issue of materials, tools, fixtures, etc. Issue of orders, instructions, drawings, etc. Maintaining proper records of the starting and completing each job on time. Moving the work from one process to another as per the schedule. Starting the control procedure. Recording the idle time of machines. Dispatching may be either centralized or decentralized: Under centralized dispatching, orders are issued directly by a centralized authority. Under decentralized dispatching, orders are issued by the concerned department. Follow-up Follow-up or Expediting is the last step in production planning and control. It is a controlling device. It is concerned with evaluation of the results. Follow-up finds out and removes the defects, delays, limitations, bottlenecks, loopholes, etc. It measures the actual performance and compares it to the expected performance. It maintains proper records of work, delays and bottlenecks. Such records are used in future to control production. Follow-up is necessary when production decreases even when there is proper routing and scheduling. Production may be disturbed due to break-downs of machinery, failure of power, shortage of materials, strikes, absenteeism, etc. Follow-up removes these difficulties and allows a smooth production.

Steps in Production Planning and Control. According to the British Standards Institute, there are four stages, steps, techniques or essentials in the process of production planning and control.

Production Planning and Control Introduction For efficient, effective and economical operation in a manufacturing unit of an organization, it is essential to integrate the production planning and control system. Production planning and subsequent production control follow adaption of product design and finalization of a production process. Production planning and control address a fundamental problem of low productivity, inventory management and resource utilization. Production planning is required for scheduling, dispatch, inspection, quality management, inventory management, supply management and equipment management. Production control ensures that production team can achieve required production target, optimum utilization of resources, quality management and cost savings. Planning and control are an essential ingredient for success of an operation unit. The benefits of production planning and control are as follows: It ensures that optimum utilization of production capacity is achieved, by proper scheduling of the machine items which reduces the idle time as well as over use. It ensures that inventory level are maintained at optimum levels at all time, i. It also ensures that production time is kept at optimum level and thereby increasing the turnover time. Since it overlooks all aspects of production, quality of final product is always maintained. Production Planning

Production planning is one part of production planning and control dealing with basic concepts of what to produce, when to produce, how much to produce, etc. It involves taking a long-term view at overall production planning. Therefore, objectives of production planning are as follows: To ensure right quantity and quality of raw material, equipment, etc. To ensure capacity utilization is in tune with forecast demand at all the time. A well thought production planning ensures that overall production process is streamlined providing following benefits: Organization can deliver a product in a timely and regular manner. Supplier are informed will in advance for the requirement of raw materials. It reduces investment in inventory. It reduces overall production cost by driving in efficiency. Production planning is done at three different time dependent levels i. Production

Control Production control looks to utilize different type of control techniques to achieve optimum performance out of the production system as to achieve overall production planning targets. Therefore, objectives of production control are as follows: Regulate inventory management Optimum utilization of resources and production process The advantages of robust production control are as follows: Ensure a smooth flow of all production processes Ensure production cost savings thereby improving the bottom line Control wastage of resources It maintains standard of quality through the production life cycle. Production control cannot be same across all the organization. Production control is dependent upon the following factors: Nature of production job oriented, service oriented, etc.

Chapter 7 : Production Planning System

The planning horizon depends on the production and purchasing lead times, but is generally smaller units of time. MPS delivers a master schedule with an anticipated build schedule by specific product configurations, quantities and dates.

Product development and design entails the design of bottle to be used, the types of material to be used for the bottle, the size and shape of the bottle, the bill of materials as well as the drawing of the product. Forecasting looks into the future demand of the product, while aggregate planning makes set of decision to match production with the level of demand expected. Master scheduling ensures that the level of production is enough to meet the demand for the product while material requirement planning ensures availability of materials such as bottles, water treatment etc at the right time. Tools planning ensure tools needed for production are available. Action phase entails dispatching which is the translation of planning phase into action phase. Control phase involves progress reporting and corrective action, progress reporting uses data processing and are used for corrective action which gives rise to expediting and re-planning 3 1. Planning has been described over the years as the focal point of management. This phase is divided into two categories namely: Prior Planning and Active Planning. It includes all the efforts that take place before active planning. Prior planning involves product development and design, forecasting, aggregate planning, master scheduling, material requirement planning 3. Using a table water company that want to start producing bottled water, product development and design involves designing the type of bottle that will be used for the water, designing the sticker that will be attached to the bottle. At the design stage, several aspect of design such as design for selling, design for manufacturing and design for usage. Product design is the collection of information regarding the specifications, bill of materials, drawing etc. It is a futuristic guess of water the demand for a product will look like. A table water company has to take into consideration the current demand for bottled water and compare it with previous demand for it, so as to be able to guess water the future demand will look like. Proper care must be taken while forecasting so as not to plan less which can lead to loss of opportunity. More specifically, the managerial decisions involved in the problem concern the specification of aggregate production rates, and work force and inventory levels for each period within the above planning horizon. The decisions taken refer to overtime, work subcontracted, number of shifts, inventory levels, and production rates. Its inputs originate from Forecasting and refer to demand estimated for period of the planned horizon. The table water company will use aggregate planning to determine how they can meet their forecasted demand which involves making some decisions such 5 as number of workers needed, decision on shift running, rate of production etc. In other words aggregate planning is a set of decision made in order to meet up with the forecasted demand for a certain period of time. It is a detailed planning process that tracks output production and matches it against orders that has been placed. For a table water company master scheduling helps to ensure that customer orders are met by ensuring the production of adequate quantity to meet the level of demand. The carton of bottled water produced should at least match with the level of demand if it does not surpass it. Operation Sheets and Bills of Materials are employed. Using a backward procedure, the MRP module defines the requirements in intermediate products and, finally, in raw materials in order to fulfill the production schedules. By aggregating the material requirements for each production order, Material Requirement Planning derives analytical schedules of what is needed both quantities and due dates. The Material Requirement Planning module also collaborates with the Inventory Control and Purchasing modules providing information concerning quantities of materials already available and ordered respectively. Material requirement planning in a table water company will help to ensure that the materials needed for production such as the number of bottles, litres of water, number of labour etc are available in the right quantity at the right time. This is the actual production planning which includes various activities directly related to the production at micro level immediately following prior planning. Active planning involves process planning, tools planning, materials planning, routing, loading and scheduling. This is the process of determining the amount of work a machine or equipment can handle without having an adverse effect on it. Pannerselvam, Over working a machine can lead to the breakdown of the machine which will in turn affect the level of

production. Taking over a case study, if the bottling machine is made to work more than 6 its capacity it can lead to the breakdown of the machine which will in turn lead to drop in the level of production. This helps to ensure that all the materials needed for the production process is readily available. For production to take place successfully materials must be readily available in the right proportion, else production will be adversely affected and the desired level of production will not be achieved. Looking into our case study, materials needed for production to take place include water, bottles, manpower, bottling machine etc. For example if the company wants to produce bottles and there is only bottles available, they will have no other choice than to drop to bottles because the bottle is not available in the quantity. After deciding on the level of production that is need to be met and the quantity of materials needed, it is then necessary to schedule all of the inputs that will be needed to produce the required amount of product. These does not only include the component of the product but also the number of staff required especially if they are hired on weekly or daily basis , cleaning materials etc. This is the term used to refer to the quantity of work allocated to a work station. Loading can be either finite or infinite, finite loading takes time into consideration and also the capacity of the machine thus excess work is not apportioned to the work station while infinite loading has no limit of work, excess work are allocated which is unhealthy to the equipments and their operators. Taking our case study, the company can have two separate bottling work station, loading simply refer to the amount of production carried out in each of the work station. Finite loading which has a limit of work and time based can be employed which means there are a defined number of bottles of water to be produced or infinite which is as many bottle of water as they can produce. This simply means finding the best possible way to carry out production. It involves finding the way that is cost effective and efficient means by which production can be 7 carried out. Process planning states how work is to be carried out. For a bottle water company, process planning involves knowing the way to operate the machine to avoid wasting materials such as bottles and water so as to reduce the cost of production to the barest minimum. Dispatching can be described as the transition from planning phase to action phase. This is the phase where workers are ordered to start production. Task included in dispatching includes job orders, tool order, time ticket, store issue order, inspection order, move order etc. Job order is very key to production, it gives the instruction for the start of production, and store issue order gives instruction to the store to release for manufacturing of product. Tool order instructs the tool room to release tools for production. Time ticket is used to record the actual time taken at various processes. Inspection order has the responsibility of timely testing and inspecting production process so as to reduce amount of rework. For a table water company, job order signals the start of production, tool order ensures the release of equipment used in production, store issue order ensures the release of raw materials to be used such as bottles, water treatments etc. Control phase is divided into two major categories which are; progress report and corrective action. In progress reporting, the data regarding what is happening with the Job is collected. It also helps to make comparison with the present level of performance. Data pertaining to materials rejection, process variations, equipment failure, operator efficiency, operator absenteeism, tool life etc. These data are used for performing variance analysis that would help identify critical areas that deserve immediate attentions for corrective actions. Corrective action primarily makes provisions for an unexpected event. Some examples of corrective actions are; creating schedule flexibility, schedule modifications, capacity modifications. Expediting is the follow up which is carried out after dispatching function. It helps to implement re-planning which allows engineer to re-strategize. A table water company, data such as product rejection by the public, breakdown of a bottling machine, lackadaisical attitude of an operator etc collected by staffs carrying out inspection order and are analyzed for the purpose of progress reporting. This data will help in making corrective actions so that such occurrence is prevented in future and also re-planning and product development. Product development and design entails the determining the bill of materials as well as the drawing of the product. Forecasting looks into the future demand for the product, while aggregate planning makes set of decision to match production with the level of demand expected. Master scheduling ensures that the level of production is enough to meet the demand for the product while material requirement planning ensures availability of materials in appropriate at the right time. Production and operation management. Lujan publications Rastogi, M.

Chapter 8 : 5 Steps to a Successful Manufacturing Planning and Control System

Production planning and control is a predetermined process which includes the use of human resource, raw materials, machines etc. PPC is the technique to plan each and every step in a long series of separate operation.

Practice Test Operations planning and scheduling systems concern with the volume and timing of outputs, the utilization of operations capacity at desired levels for competitive effectiveness. These systems must fit together activities at various levels, from top to bottom, in support of one another, as shown in the following fig. Note that the time orientation ranges from long to short as we progress from top to bottom in the hierarchy. Also, the level of detail in the planning process ranges from broad at the top to detail at the bottom. It also specifies the overall inventory and backlog levels that will be maintained during the planning period. The business plan is not concerned with all the details and specific timing of the actions for executing the plan. Instead, it determines a feasible general posture for competing to achieve its major goals. The resulting plan guides the lower-level, more details decisions. It identifies the overall level of outputs in support of the business plan. A statement of desired output is useful only if it is feasible. As for aggregate output plans, each plant, facility, or division requires its own aggregate capacity plan. Capacity and output must be in balance, as indicated by the arrow between them in Fig. Although these basic capacities are fixed, management can manipulate the short-term capacities by the ways they deploy their work force, by subcontracting, or by using multiple work shifts to adjust the timing of overall outputs. As a result, the aggregate planning process balances output levels, capacity constraints, and temporary capacity adjustments to meet demand and utilize capacity at desired levels during the coming months. The resulting plan sets limits on the master production schedule. Its purpose is to meet the demand for individual products in the product group. This more detailed level of planning disaggregates the product groups into individual products and indicates when they will be produced. The MPS is an important link between marketing and production. It shows when incoming sales orders can be scheduled into production, and when each shipment can be scheduled for delivery. It also takes into account current backlogs so that production and delivery schedules are realistic. This step ensures that a proposed MPS does not inadvertently overload any key department, work centre, or machine, making the MPS unworkable. Thus, the master production schedule is the driving force for material requirements planning. MRP provides information such as due dates for components that are subsequently used for shop floor control. Once this information is available, it enables managers to estimate the detailed requirements for each work centers. CRP is a companion process used with MRP to identify in detail the capacity required to execute the material requirement planning. At this level, more accurate comparisons of available and needed capacity for scheduled workloads are possible. It coordinates the weekly and daily activities that get jobs done. Individual jobs are assigned to machines and work centers loading , the sequence of processing the jobs for priority control is determined, start times and job assignments for each stage of processing are decided detailed scheduling and materials and work flows from station to station are monitored and adjusted expediting. **LOADING** Each job customer order may have its unique product specification and, hence, it is unique through various work centers in the facility. As new job orders are released, they are assigned or allocated among the work centers, thus establishing how much of a load each work centre must carry during the coming planning period. This assignment is known as loading sometimes called shop loading as machine loading. Priority sequencing specifies the order in which the waiting jobs are processed; it requires the adoption of a priority sequencing rule. Calendar times are specified when job orders, employees, and materials inputs , as well as job completion outputs , should occur at each work centre. By estimating how long each job will take to complete and when it is due, schedulers can establish start and finish dates and develop the detailed schedule. Manufacturing or service operations disruptions-equipments breakdowns, unavailable materials, last-minute priority changes, require managers to deviate from plans and schedules and expedite an important job on a special handling basis. Output plans and schedules call for certain levels of capacity at a work centre, but actual utilization may differ from what was planned. The important components of operations planning and scheduling system has been explained in detail in the following paragraphs.

Production planning and control is one of the most important phases of production management, it is, as a matter of fact, the nervous system of a manufacturing organization. In manufacturing organization, it is essential that production is carried on in the best manner at the lowest cost, and the goods are of right quality and are produced at.

Phases of production planning and control

Planning Phase Planning is an exercise of intelligent anticipation in order to establish how an objective can be achieved or a need fulfilled in circumstances, which are invariably restrictive. Production planning determines the optimal schedule and sequence of operations economic batch quantity, machine assignment and dispatching priorities for sequencing. It has two categories of planning namely Prior planning Active planning. This includes all the planning efforts, which are taking place prior to the active planning. Modules of pre-planning The modules of prior planning are as follows: Product development and design is the process of developing a new product with all the features, which are essential for effective use in the field, and designing it accordingly. At the design stage, one has to take several aspects of design like, design for selling, design for manufacturing and design for usage. Forecasting is an estimate of demand, which will happen in future. Since, it is only an estimate based on the past demand, proper care must be taken while estimating it. Given the sales forecast, the factory capacity, the aggregate inventory levels and size of the work force, the manager must decide at what rate of production to operate the plant over an intermediate planning horizon. Aggregate planning aims to find out a product wise planning over the intermediate planning horizon. Material requirement planning is a technique for determining the quantity and timing for the acquisition of dependent items needed to satisfy the master production schedule. Process planning and routing, Materials planning. Tools planning, Loading, Scheduling etc. Process planning and routing is a complete determination of the specific technological process steps and their sequence to produce products at the desired quality, quantity and cost. It determines the method of manufacturing a product selects the tools and equipments, analyses how the manufacturing of the product will fit into the facilities. Routing in particular prescribes the flow of work in the plant and it is related to the considerations of layout, temporary locations for raw materials and components and materials handling systems. Loading is the process of assigning jobs to several machines such that there is a load balance among the machines. This is relatively a complex task, which can be managed with the help of efficient heuristic procedures. Scheduling is the time phase of loading and determines when and in what sequence the work will be carried out. This fixes the starting as well as the finishing time for each job. Action Phase Action phase has the major step of dispatching. Dispatching is the transition from planning phase to action phase. In this phase, the worker is ordered to start manufacturing the product. The tasks which are included in dispatching are job order, store issue order, tool order, time ticket, inspection order, move order etc. Stores issue order gives instruction to stores to issue materials for manufacturing the product as per product specifications. As per tooling requirements for manufacturing the product, the tool Order instruct the tool room to issue necessary tools. Time ticket is nothing but a card which is designed to note down the actual time taken at various processes. This information is used for deciding the costs for future jobs of similar nature and also for performing variance analysis, which helps to exercise control. Job order is the official authorization to the shop floor to start manufacturing the product. Generally, the process sequence will contain some testing and inspection. So, these are to be instructed to inspection wing in the form of inspection order for timely testing and inspection so that the amount of rework is minimized. This is done by a well-designed materials handling system. Movements which involve less distance and fewer loads are managed at the shop floor level based on requests from operators. Control Phase The control phase has the following two major modules: Progress reporting, and Corrective action. Also, it helps to make comparison with the present level of performance. The various data pertaining to materials rejection, process variations, equipment failures, operator efficiency, operator absenteeism, tool life, etc. These data are used for performing variance analysis, which would help us to identify critical areas that deserve immediate attention for corrective actions. Some examples of corrective actions are creating schedule flexibility, schedule modifications, capacity modifications, make or buy

decisions, expediting the work, pre-planning, and so on. Due to unforeseen reasons such as, machine breakdown, labor absenteeism, too much rejection due to poor material quality etc. Under such condition, it is better to reschedule the whole product mix so that we get a clear picture of the situation to progress further. Under such situation, it is to be re-examined for selecting appropriate course of action. Expediting means taking action if the progress reporting indicates deviations from the originally set targets. Pre-planning of the whole affair becomes essential in case the expediting fails to bring the deviated plan to its right path.