



**JYOTHISHMATHI INSTITUTE OF TECHNOLOGY & SCIENCE**

**Nustulapur, Karimnagar - 505481**

**(Approved by AICTE, New Delhi & Affiliated to JNTUH)**

**DEPARTMENT OF MECHANICAL ENGINEERING**

# **PRODUCTION PLANNING AND CONTROL**

***BY***

***U SAIPRASANRAJ***

***ASST. PROFESSOR***

***IV B.TECH***

***MECHANICAL ENGG.***

***2018-19***

# PRODUCTION PLANNING

## Meaning:-

*Production planning involves management decisions on the resources that the firm will require for its manufacturing operations and the selection of these resources to produce the desired goods at the appropriate time and at the least possible cost.*

## Definition:-

*"The planning of industrial operations involves four considerations, namely, what work shall be done, how the work shall be done and lastly, when the work shall be done - kimball and kimball*

# OBJECTIVES OF PRODUCTION PLANNING

- 1.To determine the requirements of men, material and equipment.*
- 2.Arranging production schedules according to the needs of marketing demand.*
- 3.Arranging various inputs at a right time and in right quantity.*
- 4.Making most economical use of various inputs.*
- 5.To achieve coordination among various departments relating to production.*
- 6.To make all arrangements to remove possible obstacles in the way of smooth production.*
- 7.To achieve economy in production cost and time.*
- 8.To operate plant at planned level of efficiency.*
- 9.Making efforts to achieve production targets in time.*
- 10.Providing for adequate stocks for meeting contingencies.*

# *PRODUCTION CONTROL*

## *Meaning:-*

*Production control 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 every theme goes as per the plan.*

## *Definition:-*

*"Production control refers to ensuring that all which occurs is in accordance with the rules established and instructions issued."*

*-HENRY FAYOL*



# OBJECTIVES OF PRODUCTION CONTROL

- 1.To implement production plans by issuing orders to those who are supposed to implement them.*
- 2.To ensure that various inputs like men, machine, materials etc. are available in the required quantity and quality.*
- 3.Making efforts to adhere to the production schedules.*
- 4.To ensure that goods are produced according to the prescribed standards and quality norms.*
- 5.To undertake the best and most economic production policies.*
- 6.To introduce a proper system of quality control.*
- 7.To ensure rapid turnover of production and minimizing of inventories of raw materials and finished products.*

# **PRODUCTION PLANNING AND** **CONTROL**

## **Meaning:-**

*Production planning and control is concerned with directing production along the lines set by the planning department.*

## **Definition:-**

*"Production planning and control is the co-ordination of series of functions according to a plan which will economically utilize the plant facilities and regulate the orderly movement of goods through the entire manufacturing cycle from the procurement of all materials to the shipping of finished goods at a predetermined rate."*

**-CHARLES A. KOEPKE**

## *CHARACTERISTICS OF PRODUCTION PLANNING AND CONTROL*

- 1. It is the planning and control of manufacturing process in an enterprise.*
- 2. Questions like-what is to be manufactured? when it is to be manufactured? etc.*
- 3. All types of inputs like materials, men, machines are efficiently used for maintaining efficiency of manufacturing process.*
- 4. Various factors of production are integrated to use them efficiently and economically.*
- 5. The manufacturing process is organised in such a way that none of the work centres is either overworked or under worked.*
- 6. The work is regulated from the first stage of procuring raw materials to the stage of finished goods.*



# **Need/Importance of Production Planning and Control**

**For Increasing Production:-** The main purpose of production planning, function is to arrange various inputs like men, materials and machines and integrating them for making their best use. When various factors of production are economically used then production will certainly go up. Efforts are made to avoid production stoppages for want of various inputs. A production control Programme will minimize the idleness of men and machines.

**For Co-coordinating Plant Activity: -** Production planning helps in controlling plant activities. Production targets are set on the basis of sales forecasts. The raw materials, men and equipment are arranged by keeping in view production plans. Different production activities are adjusted as per the plans. If production is carried out in a number of processes then their activities are synchronized for smooth working.



■ **For Cost Control:** - It helps in controlling various costs. In the absence of a proper production plan, the idleness of men, material and equipment may not be noticed. Whenever performance is below standards then corrective measures are taken to rectify it. A properly planned system of production will help in controlling costs by not only making full utilization of various inputs but also by increasing output and lowering overhead expenses per unit.

■ **For Rationalisation of Production Activities:** - An important objective of production planning and control is also to regulate the flow of various inputs into the production system for running it smoothly. The system is planned in such a way that everything is done automatically. The supply of materials and men follows the demand for goods. The quality standards are followed in routine and sub-standard products are discarded in the processes. The process of entering of raw materials and converting them into finished

- **5. Consumers:** - *The consumer is ensured good quality goods. The process will help in raising quality standards of products. The supply of goods is also prompt and consumer has not to wait for them. Production schedules are prepared by keeping in mind the requirements of consumers. The supplies are regulated for meeting the demand for goods. The increase in production also helps the consumer in getting sufficient supply of goods.*

## Limitations of production planning and control

1. Based on Assumptions: - Production planning and control is based on certain assumptions. In case the assumptions prove correct then the planning and control will go smoothly, otherwise it may not. The assumptions generally are about plant capacity, orders, availability of raw materials and power etc. if these assumptions go wrong then the process of planning and control will go weak.
2. Rigidity: - Under production planning and control the things are pre-decided and fixed. There is rigidity in the behavior of employees and it may not help in smoothening the flow of work.
3. Difficult for Small Firms: - This process is time consuming and small firms may not be able to make use of production planning and control.
4. Costly: - It is a costly device as its implementation requires separate persons to perform the functions of planning, dispatching, expediting etc. Small firms cannot use the services of specialists due to cost factor.



**5. Dependence on External Factors:** - The external factors sometimes reduce the effectiveness of production planning and control. The factors like natural calamities, change in technology, change in fashion, breakdown of power, government controls etc. limit the use of production planning and control.

### **Techniques or Elements of Production Planning and Control**

**The following are the techniques of production planning and control:**

**A. Planning  
C. Scheduling  
E. Follow-up and Expediting**

**B. Routing  
D. Dispatching  
F. Inspection**



## Planning

- *It is the first element of production planning and control. Planning is given an important role in every business. A separate department is set up for this work. Planning is deciding in advance what is to be done in future. Control devices are also decided in advance so that all activities are carried on properly. An organizational set up is created to prepare plans and policies. Various charts, manuals and production budgets are also prepared. If production planning is defective then control will also be defective. Planning provides a sound base for control.*

## Routing

- *It is determining the exact path or routing which will be followed in production. The stages from which goods are to pass are decided after a proper thought. Routing may be compared to a train journey for reaching a particular place. If a passenger is to reach Delhi from Ambala Cantt then he has the option of going via Panipat and via Saharanpur. Both the routes will take him to Delhi. The question is – which route will be economical in time and money? The passenger will decide the route only after taking into consideration various factors affecting his journey. Similar is the case with production routing. It is the selection of the path from where each unit has to pass before reaching the final stage. The path must have the best and cheapest sequence of operations.*

# Routing Procedure:-

- **Deciding what part to be made or purchased:** - The product is thoroughly analyzed to find out which parts are required for it. The second decision is taken regarding the production or purchase of various components. Some components may be manufactured by the firm and others may be procured from the market. During slack periods most of the components may be manufactured by the firm but when industrial activity is at its peak then supplies from outside may be contracted.
- **Determining Materials Required:** - The analysis of the product will enable us to know the type of materials required for producing various components. The right type of quality, quantity, and time when needed should also be decided in advance.

- **Determining Manufacturing Operations and Sequences:** - *The manufacturing operations and their sequences can be determined from technical experience and layout of machines. A sound and economical operation is selected for manufacturing various components.*
- **Determining of Lot Sizes:** - *A decision has to be taken about the number of units to be produced in one lot. If production is carried on the basis of orders then size of the lot depends upon the quantity ordered plus some units for possible rejections during the process.*



- **Determining of Scrap Factors:** - *There may be some scrap during the course of manufacture. The finished products are generally less than the units introduced at the beginning. The scrap during manufacturing should be anticipated so that routing is facilitated. If products pass through three processes and a normal scrap is 5% of input at every stage then it will be easy to anticipate the units entering various processes and arrange equipments, and manpower*



- **Analysis of Cost of the Product: -** *The determination of cost of products may be the duty of department but still production department makes records of direct materials, labour, direct and indirect expenses. These estimates are greatly useful to costing department also.*

- **Preparation of Production Control Forms: -** *The carrying out of routing will be facilitated if forms are prepared to collect information for control purpose. The requirements are: job cards, inspection cards, move tickets, labour cards, tool tickets, etc.*

# *SCHEDULING*

- *Scheduling is the determining of time and date when each operation is to be commenced and completed. it includes the scheduling of materials, machines and all other requisites of production.*
- *Scheduling means'' fitting specific jobs into a general time table so that order may be manufactured in accordance with contracted liability or in mass production, so that each component may arrive at and enter into assembly in the order and as is required.''*
- *-ALFORD AND BEATY*

# Types of schedules

- **Master scheduling:** *Scheduling starts with the master schedule. this schedule is prepared by keeping in view the order or likely sales order in near future. Master scheduling is the break up of production requirements. This may be prepared for a week, a fortnight, a month etc. No definite pattern may be suggested for master schedules because these may differ from industry to industry.*
- **Operation scheduling:** *Manufacturing or operation scheduling is used where production process is continuous. when same product is produced repeatedly or comparatively small number of products are required then operation schedules are useful. the name and number of the product and the quantity to be produced in a given time are required to prepare a manufacturing schedule.*
- **Detail operation scheduling:** *It indicated the time required to perform each and every detailed operations of a given machine or process.*



# DESPATCHING

- *The term dispatching refers to the process of actually ordering the work to be done. It involves putting the plan into effect by issuing orders. it is concerned with starting the process and operation on the basis of route sheets and schedule charts.*
- *"Dispatches put production in effect by releasing and guiding manufacturing order in the sequence previously determined by route sheets and schedule."*



# *PROCEDURE:*

- *1.Moving of materials from process to process.*
- *2.Assigning of work to machines.*
- *3.Issuing of tools to production departments.*
- *4.Issuing of job orders.*
- *5.Recording of time taken.*
- *6.Ensuring necessary changes.*
- *7.Having proper liaison with routing*

# *IMPORTANT DOCUMENTS*

- 1. Material requisitions*
- 2. work order*
- 3. control sheet*
- 4. Internal delivery note*
- 5. Tool and gauge ticket*

# **FOLLOW UP AND EXPDITING**

*Follow up or expediting is that branch of production control procedure which regulates the progress of materials and part through the production process''.*

## **PROCEDURE:**

- 1. Progress should be checked*
- 2. Causes of differences should be ascertained*
- 3. Helping in removing the deviations*
- 4. Report with departments supplying materials.*

# INSPECTION

- *Inspection is also an important function of control. the purpose of inspection is to see whether the products manufactured are of requisite quality or not. It is carried on at various levels of production process so that pre-determined standards of quality are achieved. Inspection is undertaken both of products and inputs.*