

## Industrial Management and Productivity Enhancement of Various Products by Critical Path Method

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### **Abstract**

*This is the detailed study about industrial management and productivity enhancement of wire shielded tube by critical path method. Critical Path Method is the management methodology, the main objective of the method is to determine the best way to reduce time required to perform routine and repetitive tasks which needs to support an organization and also help to reduce time and increase productivity of the required product. The paper studies the critical path method for wire shielded tube process plan and also helps to find out the best way to obtain required time in various processes. The paper also covers the various methods to improve the industrial problems like waste management, time management, improper arrangement of workplace and improper layout. The aim of this paper is mainly to increase the efficiency of the industry.*

*Keywords— Critical Path Method (CPM), wire shielded tube, Traub machine.*

### **I. INTRODUCTION**

In any industry time is crucial factor which needs to be considered to enhance production rate. In the production of hollow pipe a production line in industries requires switching between solutions once or twice a day depending on production schedule. Hence the objective of this paper is reducing the setup time for batch production of hollow pipe. The paper provides production line with a concrete analysis of their current changeover methods, which tends to be lengthily and complicated and required to suggest alternatives in short and long term periods of time to reduce the setup time for the production of steel material. Factors that might lead to increases in productivity include technological innovation, capital accumulation, and increased skill of workers, increased access to natural resources, changes in business practices, and changes in patterns of trade.

Productivity growth is important because it can allow the company to remain competitive within the industry, through paying higher wages or returns to stockholders or to provide funds for investment. Again inspection or productivity increase in the production is mainly a necessity of an industry to meet the requirement of customer within a little amount of time and to give large output.

### **II. METHODOLOGY**

When the product is designed, certain specifications are established such as dimensions, tolerances, standards, quality etc. Then it becomes a matter of deciding the specific details of how to achieve the desired output. This is called as process planning. Process planning is the systematic determination of the methods by which a product is to be manufactured, economically and competitively.

### III. PROCESS FLOW



Critical Path Method is a management methodology has been used since mid-50s. The main objective of the CPM implementation was to determine how best to reduce the time required to perform routine and repetitive tasks that are needed to support an organization. Initially this method was used to conduct repeated tasks such as plant overhaul, maintenance and construction. The CPM uses a work breakdown structure where all projects are divided into individual tasks or activities. For any type of project there is a sequence of events that have to be undertaken. Some activities might be depends on the completion of the previous activity while other might be independent of the tasks ahead and can be done at any given time. Job period and completion times also differ significantly.

#### Advantages of using the Critical Path Method

- CPM encourages managers and project members to graphically draw and identify various activities that need to be accomplished for project completion. This will encourages the members in the project group to evaluate and identify the necessity of the project in a critical and logical fashion. This factor become very important if the activities are conducted at different physical location and the time and cost element is also subjected to external variables that have the potential to seriously impact the project time.
- The network diagram also offers a prediction of the completion time of the project and can help in the planning and scheduling of the activities needed for the completion of the project.

- CPM also encourages a disciplined and logical approach to planning, scheduling and managing a project over a long period of time. Often, the root cause of many project overruns is the failure to identify the factors that have the potential to seriously impact the project. By forcing individuals in the project team to identify activities, attention to details can be achieved. In turn, this helps a true and much more accurate picture of the processes that need to be set up for the project and the time and cost that is needed for every stage.
- CPM offers organizations a form of documentation that they can reuse for similar projects that they might undertake in the future. Documenting various activities and the root causes of the problems can help future-project manager avoid similar pitfalls. In addition, documentation can provide valuable data for estimation of time requirements and cost factors, as opposed to managers using estimations and guesses of the cost.
- CPM methods are based on deterministic models and the estimation of time activities are based on historical data maintained within the organization or data obtained from external sources (like request for proposals return information).

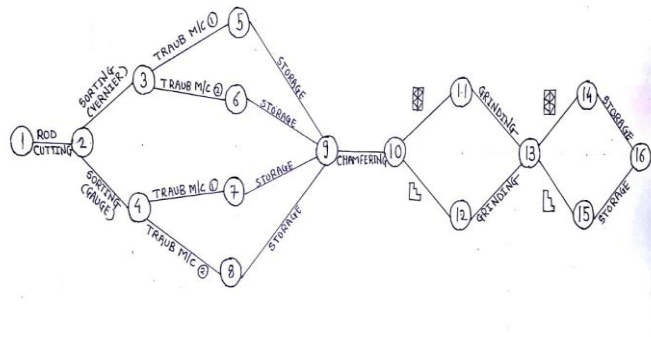


Fig.1. Construction of existing job production CPM network

#### IV. SCOPE

Work study is very important tool which helps in improvement and upgrading of process plan. It is technique which involves in time standardization and improving work method which help organization in different manner like cost saving and increase in efficiency.

Implementation of critical path method on the process plan of Wire Shielded Tube shows various benefits like reduction in time and cost saving. So company can horizontally deploy it on all other processes to gain more profit and benefits.

During work study it is observed that there are many more areas where chances of improvement available like disorganization of layout, time consumption due to improper sorting etc. So here also company can reduce manpower.

#### V. SUMMARY

The existing process plan for wire shielding tube is studied. The critical path method is implemented into process plan for obtaining the time reduction, increase in efficiency and effectiveness of activities and better process control. During work study it is observed that there are many more areas where chances of improvement available like disorganization of layout, time consumption due to improper sorting, tool wear, waste problem etc. So we will look forward for solving these problem.

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