

CELLULAR MANUFACTURING

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Cellular manufacturing, one of the main tools of Lean Manufacturing, helps to create a concept known as single or one-piece flow. Equipment and the workstations are arranged in sequences to allow for a smooth flow of materials and components through the process. The cell is made up of workers and the equipment required to perform the steps in creating the product. The layout of the equipment and the workstations is determined by the logical sequence of production.

By grouping similar products into families that can then be processed on the same equipment in the same sequence, cellular manufacturing offers companies the flexibility to give customers the variety they require. Factories converted to cellular manufacturing benefit by the reduction of overproduction and waste, shorter lead time, improved quality and productivity, improved teamwork and communication.

Cell Requirements

The main requirement of Cellular Manufacturing is to ensure that all equipment required for production is operating at 100% efficiency at all times. Through short daily inspections, cleaning, lubricating, and making minor adjustments, minor problems can be detected and corrected before they become a major problem that can shut down a production line.

New Terms

Many new terms have emerged in the last few decades in virtually all fields of human endeavor. The field of manufacturing has also been affected by this trend - in fact, many buzzwords of the past have become just plain words of the present, used in daily conversations as well as various media. One such word - or rather a phrase, or a term - is **Lean Manufacturing**.

Even for those not familiar with management of modern manufacturing, the term Lean manufacturing can have different meanings to some people, some correct and some incorrect. The word **lean**, as an adjective, is mostly used as means to describe something as *non-fat*, for example, *lean meat*. It can also mean to describe a non-productive or non-prosperous situation or period. It means identification and elimination of inefficiencies and waste. It also means a concentrated effort to achieve this goal.

Cellular Manufacturing

The basic concept of cellular manufacturing is the integration of management practices with technological advances. To be truly successful requires a thorough understanding of the

causes and elimination of waste at all levels, and that means both operations and processes. There are several important considerations involved in order to achieve the best benefits:

- Reduction of lead time
- Maximizing flexibility
- Improving communications
- Utilization of available space
- Emphasizing teamwork
- Productivity and quality improvement

One Piece or Many

The question that comes up frequently is how many pieces to run at a given time? In this manufacturing environment, the product moves through the process based on customer's needs, one at a time, with no undesired interruptions. Various equipment and workstations are arranged in sequences to allow for a smooth flow of materials and components through the process. A particular cell is made up of the team members and the equipment that is required to follow the steps in manufacturing of the product.

Purpose of Cells

Joining machining technologies with tooling and setup technologies, and combining them with people skills and positive management (coaching rather than supervising), can all result in a very good manufacturing environment. As various processes and operations are at the core of manufacturing, it is important to understand that a cell is just a group of people and equipment working together toward a certain goal.

Although the concept of individual cells suggests certain independence from other cell operations, but how each cell interacts with other cells in the same manufacturing situation. Certain cooperation is not only needed but also necessary. Each cell should work towards its own goals and keep contact with other cells to the minimum. Typically, a single cell is designed to a family of similar parts; an example of such an approach is a work on a conveyor line or in assembly.

Cell Description

A cell is defined as a combination of people and equipment that work together in order to complete a process in a set sequence. This arrangement allows manufacturers to achieve the main goals of Lean manufacturing - multi-variety products and one-piece flow. In a typical cell, all machinery and other equipment is arranged in close relation to each other. This results in the

reduction or even elimination of time that is needed to move parts between machines in the cell. The most common cells used in industry are the C-shaped, U-shaped, or L-shaped cells.

Lean Manufacturing

Lean manufacturing represents a journey that should never end since it involves the identification and elimination of waste and inefficiencies. It is the continuous improvement of all operations and processes involved in manufacturing. It seems to imply that there will always be some waste and inefficiencies, and that better operations or processes will continue to emerge due to better equipment, newer technological developments and more informed management. The implementation of Lean production systems has saved many companies millions of dollars over the last 20 years or so. The fact that not every manufacturer has converted to a Lean system years ago remains a mystery because the rewards are so amazing.