

# Understanding Lean Production

Lean production is a term that has come into widespread use within UK industry over the last 15 years. The idea of Lean production, encompasses theories of modern Japanese industrial management, that are all designed to achieve reduction and removal of waste within a business.

Lean production methods teach us that waste is any process that does not give 'value added' to a product. So raw materials lying around unused can be seen as waste. Work in progress which is sitting in parts bins waiting to be used in production, can be seen as waste. The finished product sitting in a warehouse waiting to be delivered to customers is of an example of waste. Skills and knowledge of workers not being used by management is an example of waste. Lean production aims to remove all these elements of waste from the production process.

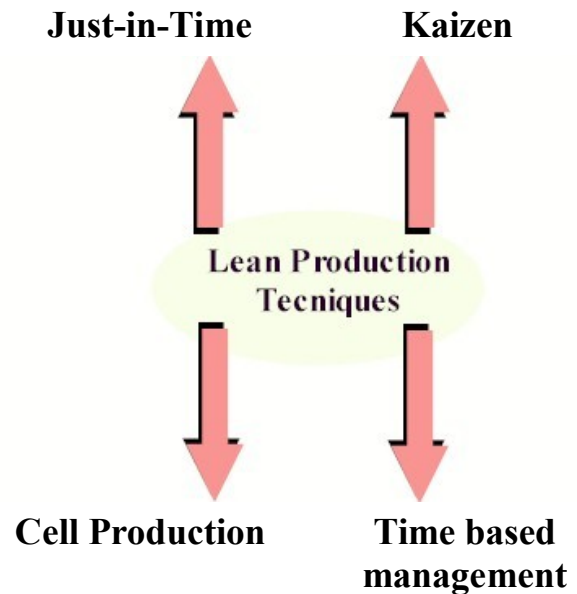
## Lean Production in Practice

For lean production to work there must be complete change of business approach, away from the traditional hierarchical, function centred business - which is typical of many UK businesses, to a more modern flexible, people based structure. Also a number of complex systems must be adopted before effective lean production can take place.

**The most important component parts of an effective Lean Production system are:**

- **Just-in-time—also see stock management notes**
- **Kaizen—see kaizen notes**
- **Cell Production**

- **Time-based management methods.**



## Just-in-Time

Perhaps the best known of the lean production processes is just-in-time. Just-in-time (JIT) tries to ensure that parts, raw materials and components are received and products are made, only when there is demand for the parts and demand for the products.

In other words; - **If it isn't wanted don't order it, if it isn't sold don't make it.**

## Supplier relationships and stock holding.

Effective incorporation of just-in-time systems requires that relationships with suppliers are strong and communications systems are effective. There is no point in reducing stock holdings if stock cannot be topped up at the appropriate time. Suppliers

must be told when stock is needed and how much stock is required.

Some firms actually have bar codes on work-in-progress, which are read as the product moves along the production line. These bar codes, when read, automatically order stock from suppliers at the appropriate time. Some car manufacturers use such sophisticated just-in-time systems, that suppliers can be automatically notified when a car starts on the production line, so that components, such as seats, can be made and delivered to the production line at exactly the right time.

### **Kanban**

Another example of a just-in-time system is the idea of Kan ban; this involves the use of order cards to ensure a regular and timely supply of components. It is not unusual when using a Kanban system to find an employee of

the supplier continually working on a shop floor, ensuring that the parts arrived in the right place and the right time.

**It is always worth involving employees when designing a just-in-time system, as employees often understand their part of the process of manufacturing better than management**

### **Involvement of Employees**

An important part of any JIT system is a strong relationship with employees. There must be a people centred approach from managers.

Employees must be trained effectively to use the systems of lean production and understand their role in ensuring system continues to work. Cells of production are an important part of this process. Cell working

will encourage the use of job enrichment There will be more employee control over tasks. This helps ensure employee commitment to the JIT system .

It is always worth involving employees when designing a just-in-time system, as employees often understand their part of the process of manufacturing better than management. Often when the commitment of employees has been gained, then the opportunity arises to move to different production structures such as cell production.

### **Cell production**

Cell production involves workers, working in teams, or cells of production. In this type of productive, or service situation, each cell has one or more complete tasks to fulfil. For example, there is a shoe factory in Northampton that switched from line to cell production. In this case after reorganisation, cells of production were created. These cells between them completed the task of making a pair of slippers. For the first time all the processes such as cutting, gluing, stitching packing, were brought together. Now full responsibility could be passed to the cell, they were to check and maintain quality of output.

This switch to cell working brought several immediate benefits:

- reduction in work-in-progress
- opportunity for job enrichment and enlargement
- improvement in quality
- increase in worker knowledge and skills

### **Customer Relationships.**

In all JIT systems it is very important not to forget the customer. Often customers are

able to use electronic point of sales systems (EPOS), and these can be tied in with the manufacturing process. Orders can be placed electronically, so that finished product can go straight from the production line to delivery, rather than being stored in a warehouse where storage can lead loss of value.

### **Time Based Management**

With time based management, emphasis is placed on reducing time taken in all aspects of the whole production process. It involves concepts such as just-in-time, the use of CAD (computer aided design) and CAM (computer aided manufacture), critical path analysis, and simultaneous engineering.

#### **Simultaneous engineering.**

This is an important concept. With simultaneous engineering, emphasis is placed on carrying out as near as possible at the same time, the functions involved in designing, producing and marketing the product. Obviously it is impossible to manufacture a product before it has been designed, but it may be possible to get the production lines ready, or to work out at least the basics of a marketing plan. This strategy can be effective in reducing the time a product takes to reach the market, and is of increasing importance as product life cycles continue to shorten.

For simultaneous engineering to work, there must be effective communication between the functions or departments involved, and also regular product meetings involving all those taking part in the product development - production - marketing chain.

### **Notes**