

Glossary Lean Production – Adding Value without Wastage



Glossary Lean Production

CIP – Continuous Improvement Process

The principle of the continuous improvement constitutes a self-contained part of the management philosophy. The CIP workshop is used in order to constantly improve processes. Supervised by a moderator, employees of the most different departments optimize workstations, processes and procedures in a team. The aim is to secure and to enhance the standard step-by-step.

Key factors for success

- Constant improvement in small steps
- Avoiding wastage
- Involvement of all employees
- Strengthening individual responsibility



SMED – workshops for set-up time reduction

By using the SMED method (Single Minute Exchange of Dies – set-up in the single digit minute range) it is possible to reduce the set-up time significantly. In the SMED method every particular work step is analyzed whether it is really necessary, whether it can be combined with other work steps and whether it can be simplified. Furthermore it is possible to perform set-up processes „externally“, i.e. preparing and reworking in order to keep the stop of the machine during set-up as short as possible.

Key factors for success

- Reduction of set-up times
- This enables smaller batch sizes and increases flexibility
- Enhanced productivity and output



TPM – effective machinery by preventive maintenance

The total productive maintenance enhances the entire efficiency of the operational facilities continuously involving the active participation of employees. TPM is a standardized and supporting method for a medium to long term enhancement of machine availability and for the minimization of unscheduled downtimes during the manufacturing process.

Key factors for success

- Improvement of working situations
- Enhancement of machine and plant availability
- Deviations become transparent and can be rectified



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3S / 5S – cleanliness and orderliness at the workstation

Cleanliness and orderliness are basic prerequisites for efficient manufacturing. The 3S / 5S audit makes cleanliness and orderliness at the workstation measurable.

- Seiri – sorting out all redundant objects
- Seiton – straighten or set in order
- Seiso – sweeping / systematic cleaning
- Shitsuke – standardizing of work practices
- Seiketsu – sustaining the discipline

Key factors for success

- Avoidance of wastage caused by times for searching
- Enhancement of transparency
- More efficient working
- Quality starts at the working environment

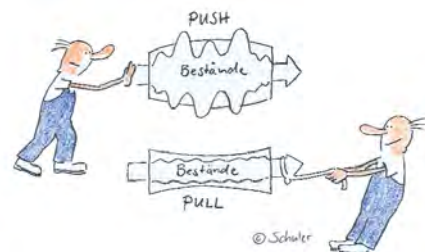


Pull Principle

The pull principle constitutes a method for production control. In this method, production processes are initiated by a downstream process, i.e. if no requirement is signaled by the downstream process (e.g. because all buffer stations are fully loaded), no production is initiated. This avoids an accumulation of orders in-between the processes which would increase the lead time.

Key factors for success

- Short lead times and on-time shipment
- Avoiding unnecessary work-in-process
- It is only produced what is really needed



One piece flow

According to the principle One piece flow, workpieces are immediately passed on from process step to process step without waiting times. This drastically reduces the lead time and unneeded work-in-process. It is nearly impossible to implement the One piece flow in its purest form for a typical component manufacturing in the woodworking and furniture industry. But smaller batch sizes with short transfer times result also in positive effects. In assembly systems it is even possible to enhance productivity by applying the One piece flow because unnecessary intermediate steps (depositing / receiving of components, transport) are avoided.

Key factors for success

- Shortest lead time
- Enhancement of productivity in assembly systems
- High degree of flexibility
- Avoiding unnecessary work-in-process



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Kanban – self-steering control loops

Kanban (Japanese: card, board, signal) is a method for steering production simply and according to demand. By means of a control mechanism – this may be an empty space, a card, a bin or an electronic signal – the demand of the internal customer is shown. This ensures that only the required quantity is produced (Pull principle). By this work-in-process is lowered and production to stock is avoided.

Key factors for success

- Decrement of work-in-process
- It is only produced what really is needed
- Enhanced transparency and disburdening of the indirect departments



The Supermarket / Minimarket Principle

With the Supermarket Principle it is possible to provide parts or fittings efficiently for assembly. When a product has reached the minimum inventory, production is continued with a defined batch size or a purchase order is issued. In the Minimarket the standard parts are available at each workstation which avoids an additional effort in time caused by searching of parts.

Key factors for success

- Reduction of times required for searching of parts
- Disburdening the planning / control
- Increased transparency



Poka Yoke – error prevention in the manufacturing process

Poka Yoke is a principle with Japanese origin aiming to avoid unnecessary errors. By applying simple actions or tools unintentional errors in the manufacturing process are eliminated. In most cases these actions can already be taken during the design of the products or when setting up the workstation.

Key factors for success

- Avoidance of errors
- Improving quality
- High process reliability



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Value stream mapping – design of lean processes

With Value stream mapping the actual process of material and information flow is displayed graphically along the entire value creation chain – from the supplier through to the customer. Based on this actual state the scope for improvement is shown and then concepts for increasing the value creation are developed.

Key factors for success

- Increased share of value-adding
- Avoiding unnecessary work-in-process
- Reduction of the lead time and on-time shipment
- Improvement of quality

