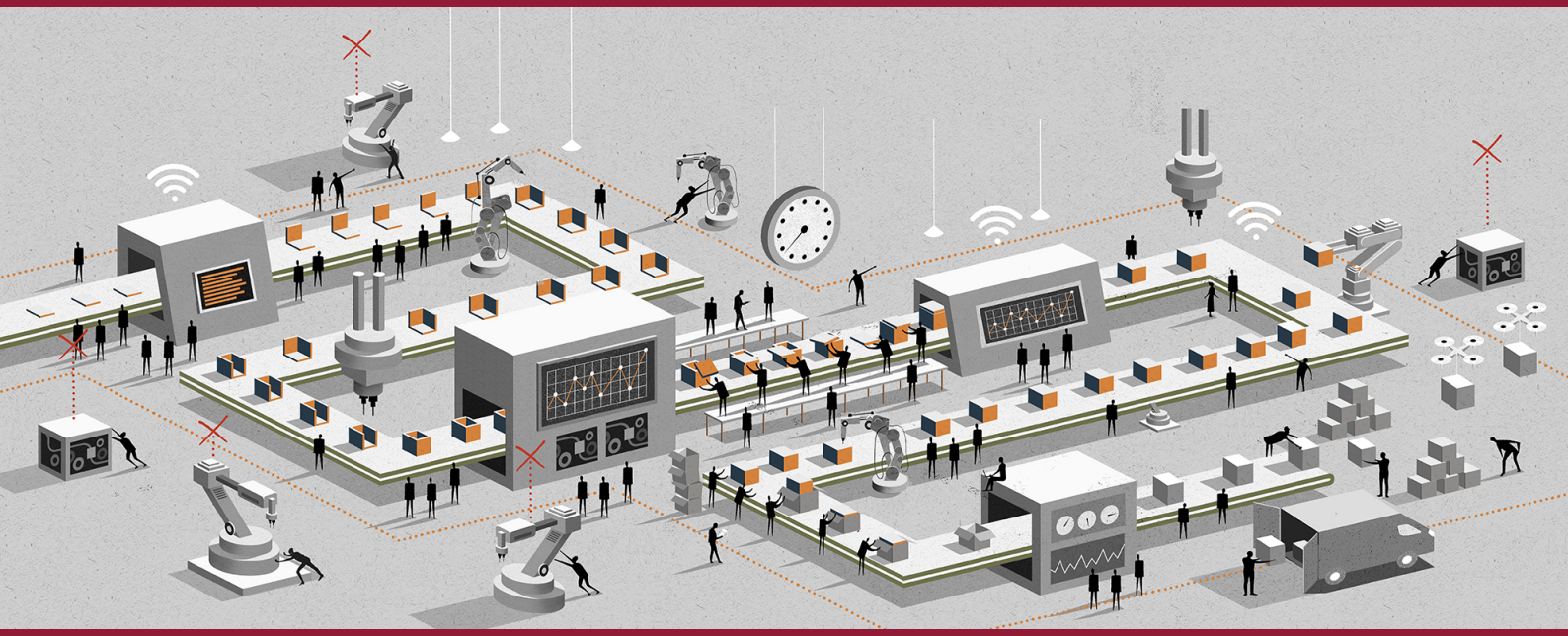

LEAN MANUFACTURING & TPM

FP

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BACKGROUND

The core area of any manufacturing facility is the shop floor. Manufacturing is most often also the largest function within an organisation. In some cases, there are multiple processes required to manufacture a single product while in other cases just a few. In any case, to be considered as a successful or world class manufacturing organisation it is imperative that your operational process performance is strong and consistent. This ensures long-term profitability and future growth by fulfilling customer expectations.

CHALLENGES

One of the major challenges within manufacturing is to cope with the everyday and everywhere present process variation that impedes product flow and causes quality issues. For example, in production scheduling an inefficient planning process causes variation in production schedules, which puts extra stress on manufacturing. A complex facility layout disrupts flow and extends lead times. Not maintaining the machines results in variations in machine availability and performance. Quality issues arise from variations in material, workers and processes, and cause re-work and defects.

As a result, the constant firefighting within manufacturing results in increased efforts and costs to ensure customer demand is met with a high-quality product delivered on time.

FOCUS AREAS

Waste in manufacturing can be identified, classified and minimised as well as creating tremendous savings potential. Lean principles, Kaizen methods, and re-engineering approaches can be applied to manufacturing to improve the flow of work through the value stream, to ensure the product is pulled from customer demand and to reduce process and quality issues. Reducing waste along the process will reduce lead time, increase the value add in the process and improve overall process efficiency and capability.

AREAS OF WASTE OFTEN IDENTIFIED IN AN INNOVATION AND PRODUCT DEVELOPMENT ENVIRONMENT:

TRANSPORTATION & HANDLING

The unnecessary movement of products and people (e.g. because of amending express orders or sudden changes to the production schedule, shop floor layout isn't optimal with long distances between machines and storage areas, batch processes cause extra handling of products...).

INVENTORY

Building inventory when the next process does not require it (e.g. due to unlevelled production, machine breakdown, planned maintenance, quality issues, just in case a big order comes in, great deal on a larger quantity from the supplier.

MOVEMENT

Excess motion (e.g. due to poor workplace ergonomics with unnecessary reaching, twisting, bending and walking, repetitive work in strained position, walking between stations...).

WAITING

People waiting for material, systems and tools (e.g. due to line stoppages, batch processing leading to excessive work-in-process, waiting for quality approvals, waiting for data or for clarification or correction of work received from upstream processes, production schedule not clear, system downtime...).

OVER-PRODUCTION

Producing more than needed or faster (e.g. keep the machine running until the end of shift instead of starting machine tooling changeover, making more products than required to save setup time...).

OVER-PROCESSING

Doing more than what the customer requires (e.g. lengthy case notes when a simple explanation would be more helpful, overdesigning a product with features not wanted by the customer, having both electronic records and paper records, painting areas that never will be seen, double checking work...).

DEFECTS

Work that contains errors (e.g. producing products not meeting specifications, mistakes made when reporting orders in the business system, ordering the wrong supplies...).

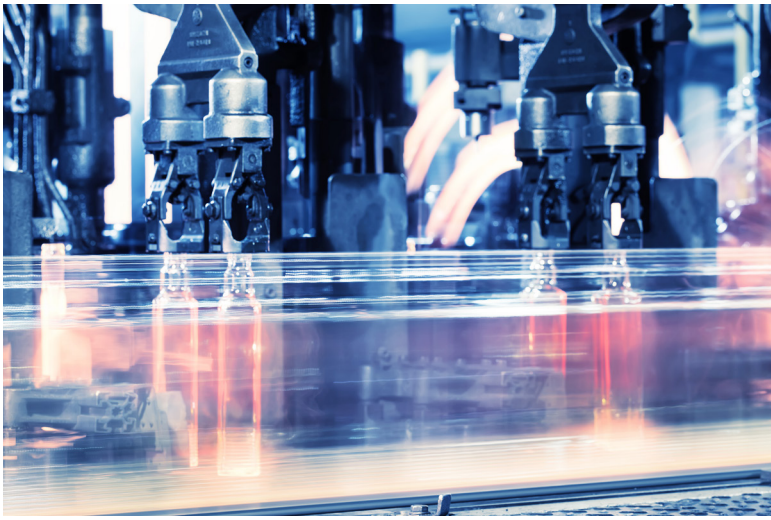
LEAN SOLUTIONS

Improving processes availability, performance and quality and at the same time having products pulled through the value stream by customer demand is a good start to be more competitive in serving your customers.

We implement Lean Solutions in manufacturing in a similar way to other functions. The solutions must fit the challenges.

PULL

- Enable FIFO at the batch level
- Reduce inventory levels throughout processes
- Avoid over-production
- Increase visibility of bottlenecks in the process



ONE PIECE FLOW

- Enable FIFO to a single product / service level
- Create transparency of the real process lead time
- Reduce lead time
- Reduce inventory levels throughout process
- Increase quality
- Reorganise the processes in the right sequence

TAKT

- Process transparency
- Balanced distribution of the workload across resources
- Process flexibility
- Ability to plan resource capacity and / or improve forecasting
- Optimal efficiency in resource utilisation

ZERO DEFECTS

- Enables problem root cause analysis and solving
- Prevents problems snowballing through the process
- Increases quality
- Enables an open culture of problem solving vs. finger pointing

TANGIBLE IMPROVEMENTS

LEAD TIME

- Total production lead time at a container packaging plant reduced by 72% due to introduction of a Lean production programme
- TPM project reduced order production lead time by 24% due to paper machine unplanned down time reduction

QUALITY

- Lean production project reduced defects at a food company bottling line by 33%
- Joint Lean project between food manufacturer and packaging supplier led to discovery of real OEE and to OEE improvement of filling lines by over 70%
- Re-work at end of printing line reduced by 19% through implementation of Lean workshop findings and recommendations

COSTS

- Lean programme at capital equipment manufacturer resulted in additional capacity allowance which increased output by 15%
- TPM programme at printing line increased machine productivity by 35%
- Lean manufacturing workshop resulted in 22% of skilled workforce being freed up and diverted to other production lines where they were needed
- Working capital reduced by 20% via work in process reduction in cylinder plant due to Lean manufacturing implementation

Should you be interested to know more about our Lean services regarding this topic, then please contact us:

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