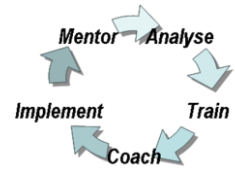


Business Improvement Lean Manufacturing Toolkit



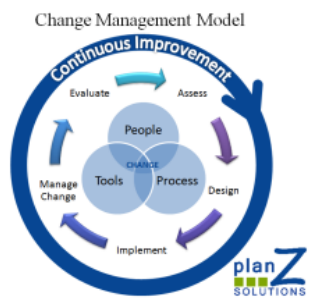
Lean Introduction. Lean is an influential and established set of principles and methods which can be used in any environment and setting. Lean is essentially a continuous journey to systematically identify and eliminate waste (non-value added activity). It promotes the relentless pursuit of perfection through a PDCA cycle with the support of employee ideas and involvement.



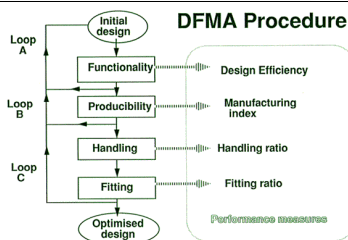
5S Workplace Organisation is a powerful and proven improvement and waste reduction method. It can be used in any environment and setting. The aim of 5S is to provide a step by step process to ensure that working environments are systematically kept clean and organised, ensuring employee safety and improved organisational efficiency.



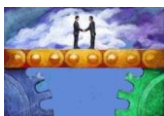
Andon supports continuous improvement by providing a methodology for empowering operators to signal to supervision that they have identified an abnormal situation. This signalling is usually via a Green / Yellow / Red light system. The signal will lead to a support response process being implemented to help the signalling operator.

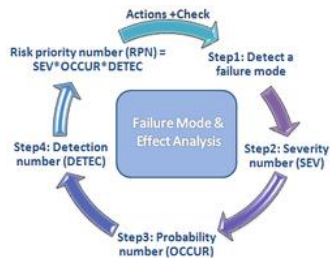
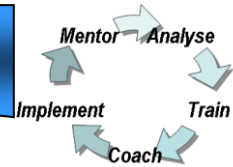


Change Management. Change seems to be inevitable in the world of today. Change might not always translate in to success. However, well managed change that is linked to Lean principles and tools will have a greater chance of moving the organisation to one that continues to learn and improve, leading to success.



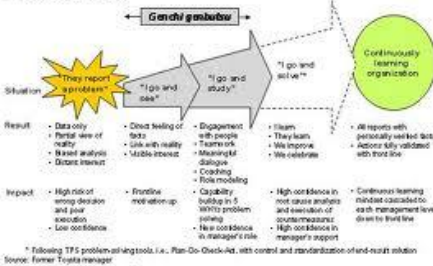
Design For Manufacturing and Assembly (DFMA) supports continuous improvement by providing a team centred methodology to identify and remove product and process waste. DFMA's aim is to assist the operations side of the business plan and execute design intent in the most efficient way possible.





Failure Mode and Effects Analysis (FMEA) supports continuous improvement by providing a methodology to systematically evaluate a system, design or process to: Identify where and how it may fail, assess the risks of different failures, identify what improvement action is required to mitigate the identified risks and take action and document the process.

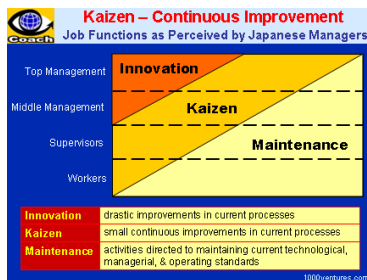
Managers "go and study" for themselves to build a continuously learning organization



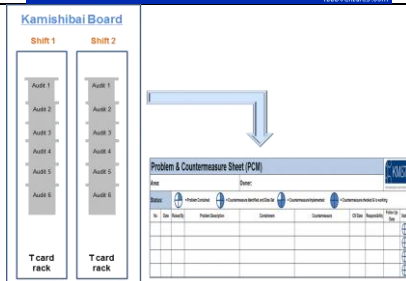
Gemba (or "Go-Look-See") is the manner of ensuring that everyone (with a particular emphasis on support staff and leadership) actually go to the place where problems have been highlighted. This allows for a full understanding of the issues at hand through actually seeing the current state, rather than hearing about it and discussing it remotely. Gemba supports a continuous improvement philosophy by ensuring that the correct resources are focussed on understanding processes through actually watching them (on a regular basis).



Just-in-time (JIT) is an inventory strategy that strives to improve an organisations profits and cash flows by reducing in-process inventory (stocks) and associated logistics costs. It is a "whole of value chain" philosophy requiring the development of a mature Lean supply base to ensure consistency of product / service quality and supply. JIT is a fundamental part of an effective and efficient Lean organisation and builds on the Lean foundation tools.



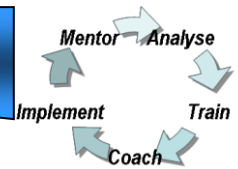
Kaizen. Continuous Improvement is a core value of Lean. Kaizen supports continuous improvement by providing a philosophy to encourage all staff to continue to look for incremental improvements in all organisational processes and activities. The Kaizen process provides a structured methodology to investigate and project manage larger improvements throughout the organisation at all levels, and on a consistent basis.



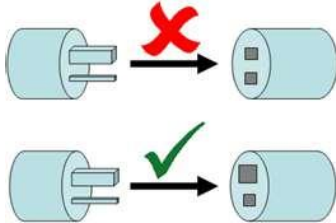
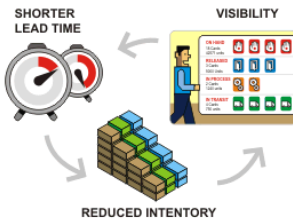
Kamishibai supports continuous improvement by providing a simply structured and visual methodology to carry out random and/or scheduled audits or tasks to ensure that standards are being maintained. If standards are not being adhered to, the process allows for appropriate improvement activity to be carried out quickly. These audits can be carried out by leadership personnel throughout all standard processes within the organisation (both production and transactional processes).

Kanban is a signal process to internal and external suppliers to communicate that a product or service is required – thus providing a system to authorise a product / service to be produced and released for use. This ensures that waste is reduced and material /



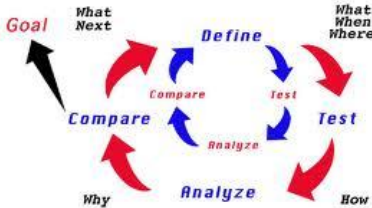


information flows are regulated.



Poka Yoke (error proofing) provides a methodology of identifying potential process errors and implement techniques to detect or prevent these errors. This can result in a defect free process leading to improved safety, productivity and product / service quality.

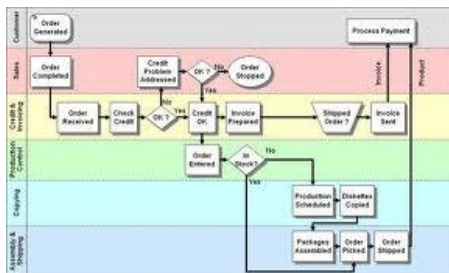
Problem Solving Process



Problem Solving provides a structured methodology and a common language to allow teams to: identify, systematically interrogate issues and solve problems at the root cause and thus, prevent a re-occurrence.



Problem and Countermeasure (PCM) is a structured yet simple methodology for visually capturing problems to allow them to be tracked, investigated, contained and eventually solved. It is an inclusive process, allowing all personnel to be involved.



Process Mapping is a tool to visually illustrate how a process works. It maps the process inputs, outputs and decisions points to help teams to understand what is currently happening and to identify areas for improvement through reducing non value adding activity.



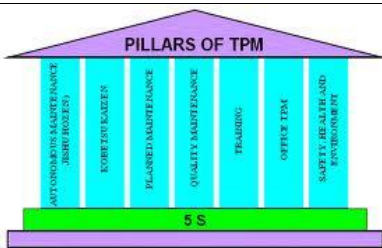
Quick Change Over (QCO) minimises downtime (or non-value added time) by reducing / eliminating set-up / change-over waste.



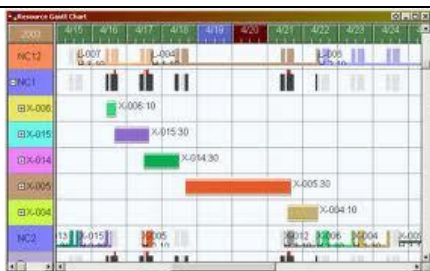


Synchronous Material Flow (SMF) utilises multiple Lean tools and principles to drive down inventory and other wastes. SMF will assist in the delivery of a more efficient system that will improve and organisations Return On Investment.

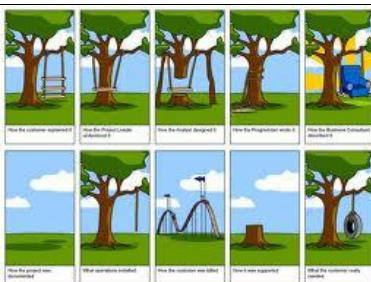
Standardisation is critical to business success. Standardised Work aims to find the optimum way of performing a procedure (e.g. filling out a form, making a part etc...) and then standardising the way this work is done so that all employees do it the same way, every time. This allows for an appropriate foundation to seek further process improvement.



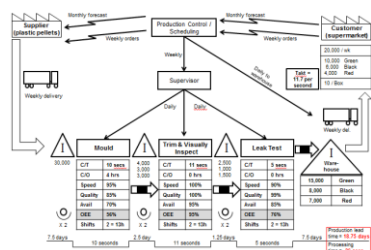
Total Productive Maintenance (TPM) reduces equipment related waste thus maximising efficiencies. This is achieved by using an inclusive approach to provide a comprehensive maintenance system for the life of the equipment.



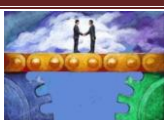
Visual Management is the application of any visual aid or device that promotes safer, more efficient, and less wasteful processes. The goal of visual management is to create "status at a glance." This means an operating environment enabling all members to differentiate between the normal and abnormal quickly in "real-time". This motivates the workforce to take ownership of key performance issues, leading to a continuous improvement cycle.



Voice Of the Customer (VOC) is the process of obtaining and understanding the needs (and aversions) of customers and using this information to improve business processes to satisfy and exceed those needs. To identify the needs of customers we must identify who they are. SIPOC (Suppliers, Inputs, Processes, Outputs, and Customers) is an effective and quick way of understanding who the customers (both external and internal) are. A SIPOC map clearly identifies this and can ensure that the improvement project is not too small / big to take on.



Value Stream Mapping (VSM) allows a team to investigate a current process, visualise all processes and information flow activity (through the creation of a 'map') and collect value stream data to determine where value add / none value add activities occur. The team then create a future state map with the aim of reducing / eliminating non value added activity. Lean tools are then used to improve the process to meet the future state desires.





Yamazumi is a process for investigating the work content of operators and visualising this via a multi-coloured stacked bar chart. The aim is to identify and visualise value adding and non-value adding work activity. This information is then used to carry out improvement and **“line balancing”** so that employee work activity is balanced across the team whilst ensuring that cycle times meet customer pull demands – i.e. that the combined work activity meets takt time requirements in a safe, consistent and efficient way.



Heijunka (Production leveling or production smoothing) is the levelling of production by both volume and product mix to reduce waste and is vital to the development of production efficiency. The goal is to produce goods/products/services at a constant rate so that further processing may also be carried out at a constant and predictable rate. The benefits of levelling the schedule include: the flexibility to make/supply what the customer wants when they want it; reduced risk of unsold goods; balanced use of labour and machines; Smoothed demand on the upstream processes and suppliers.

