Continuous Improvement Toolkit

Visual Management



The Continuous Improvement Map

Managing			Deciding	& Sel	ecting		P	lann	ing & Pr	oject	Mana	gement*
Risk PDPC	C De	ecision Bala	ance Sheet	Impo	ortance-Urge	ency l	Mapping	D	aily Planni	ing	PERT	/CPM
FMEA RAID L	og* Ford	e Field An	alysis	Cost	Benefit Anal	ysis	M	<u>OST</u>	RACI M	<u>atrix</u>	Activity	Networks
Risk Assessmen	t* Brea	k-even Ana	alysis Vo	oting	TPN Analy	ysis	<u>S\</u>	NOTA	<u>Analysis</u>	<u>Stak</u>	eholder	Analysis
Fault Tree Analysi	<mark>is</mark> Decision ⊓	Free	Pick Chart	Fo	our Field Mat	rix	Proje	ect Ch	arter	Improv	ement	Roadmaps
Traffic Light Assess	ment Critica	al-to Tree	QFD	Port	folio Matrix			PDCA	A Policy [Deployi	ment <u>G</u>	antt Charts
Lean Measures	Kano Analy	sis Mat	rix Diagram	Paireo	d Compariso	n	DMAIC	Kaiz	en Events	Со	ntrol Pla	inning
Bottleneck Analysis**	Cost of Q	uality* Pu	ugh Matrix	Prioritiz	zation Matrix	1	A3 Thinki	ng	Standard	work	Docum	ent control
Process Yield	OEE k	<u>(Pls</u> P	areto Analys	is C	&E Matrix	dor	standin	σ	Cross Tra	aining	Imple	ementing
Canability Indices	Descriptive	Statistics	ANOVA	Chi-S	quare Ca	luse	e & Effe	ct	Value An	alysis	So	lutions**
	Probabilit	y Distributi	ons Hypo	thesis T	esting Des	sign	of Experi	ment	Mistake	Proofi	ng E	rgonomics
Gap Analysis	Histograms &	& Boxplots	Multi var	i Studie	s Confid	ence	e Intervals	s Si	mulation	TPN	A	utomation
Reliability Analysis	Graphical /	Analysis	Scatter Plo	ts C	orrelation	Re	gression		Pull	Flow	Just	in Time
Performance	MSA Run	Charts	5 Whys R	loot Cau	use Analysis	Da	ata Snoo	oing	Visual M	anagei	ment	5S
Benchmarking**	Control Cl	narts	Fishbone I	Diagram	n Tree Diag	gram	* SIPC	DC*	Waste Ana	alysis	Quick C	hangeover
Data collection plan	ner* Sampl	ing Mor	phological Ai	nalysis	How-How	Diag	gram**	Proc	ess Rede	sign	Time \	/alue Map
Check Sheets Inte	erviews Bra	ainstorming	SCAMP	ER**	Attribute Ar	nal <mark>ys</mark>	sis Spa	ighetti	Diagram	Valu	e Strea	m Mapping
Questionnaires F	Focus Groups	Affinity	Diagram	Rela	tionship Map	opi <mark>ng</mark>	y* Flo	ow Pro	ocess Cha	rts S	Service	Blueprints
Data		Mino	Mapping*	Later	al Thinking	I	Flowchar	ting	IDEF0	Р	rocess N	Mapping
Collection C	oservations	Suggesti	on systems	Creat	ting Ideas		D	esigr	ning & A	nalyz	ing Pro	ocesses

□ A business management technique and a system of:

- Information displays.
- Visual controls.
- Labels and signs.
- Color coding and other markings.
- Communicates important information in the physical workplace.

V.M	



Think of the visual controls in an airplane

Lean organizations rely heavily on visual management to:

- Detect abnormalities.
- Reinforce standards.
- Ensure stability and safety in the workplace.



Employees also need visual displays to:

- □ Show what is expected from them.
 - Research shows that people tend to learn and process information more visually.
- Keep them informed about production status and customer needs.
 - Ideally, everyone should be able to assess the status of a situation at a glance.



□ An effective visual management system seeks to:

- Display production status and customer needs.
- Display performance information.
- Communicate standards and work instructions.
- Make problems and abnormalities as apparent as possible.
- Communicate safety requirements.
- Show location, directions and identity.



Visual controls are used to:

- Highlight abnormalities and deviations. Employees will quickly identify and react to safety, quality, efficiency problems.
- Share goals and ideas.
- Share performance metrics.
- Report team and Kaizen progress.
- Indicate safety risks.
- Promote safe behavior at work.
- Provides an immediate insight to what needs to be done next.



Benefits:

- Creates stability to the environment, equipment and work.
- Reduces errors and mistakes.
- Reduces downtime and maintenance costs.
- Increases the awareness of waste and waste management.
- Improves compliance to safety.
- Reduces the opportunity for miscommunication.
- Improves the communication between different shifts.
- Improves employees involvement and morale.
- Eliminates the need for time consuming meetings.
- Eliminates the need for constant supervision.

- Many lean techniques and principles rely on visual management.
- Visual management serves as a sustaining force for 5S, standard work, TPM, quick changeover, and pull production.
- It is important to implement visual management during the early phase of Lean implementation (when using 5S and TPM to establish operational stability).

5s

TPM

Safety

SOP

5S:

- One of the most fundamental principle in Lean.
- Involves visual activities to create a better work environment.
- Suggests the use of colors and labels to clearly mark storage locations.
- Defines inventory levels and reorder triggers to ensure everything is available at the point of use.



If something is not normal we want to make that as apparent as possible



5S:



Reject Pareto Stack

5S Audit Board



TPM:

- □ Simplifies preventive maintenance activities.
- Ensures equipment remains in optimal running condition with minimal breakdowns.
- Used to identify and prevent abnormalities from turning into failures.
- Examples: Labeling and marking gauges, oil levels and lube points.
- Enables employees to easily detect abnormalities and out-of-specification conditions at a glance.



Safety:

- □ VM is important to keep the facility safe.
- Alerts employees and visitors to potentially hazardous locations and situations.

Important to properly identify:

- Fire protection equipment.
- Safety showers and eye wash stations.
- Personal protective equipment.
- First aid stations.
- Signage, hazard warnings & safety instructions should be provided at the point of need.

Color coding are used to convey the degree of hazard





Safety:



A map for the areas which have the most safety incidents that resulted in lost time

Standard Work:

A strong visual management system seeks to promote consistency and create process stability.

Standard work visuals include:

- Procedures, instructions and flowcharts.
- Check sheets and checklists.
- Photos and one-point-lessons.



Standard Work:

Benefits of standard work visuals:

- Ensure tasks are always performed in the most efficient way.
- Ensure that workplace standards are adhered to by all.
- Minimize production errors.



More Applications:

□ Marking the floor and the piping system.



Standard Floor Markings



More Applications:

- Marking the materials and products being produced.
- Marking the machines, equipment and production lines.
- Marking the offices, rooms, cells and storage areas.
- Way-finding visuals to help people find the way around.
- □ Signs such as **Do-Not-Enter** and **No-Smoking** signs.





More Applications:

□ Using color coded cards and Kanban boards in a pull system.



More Applications:

- Boards to prioritize problems & communicate countermeasures.
- Posters and banners to reinforce Lean goals and principles.
- Tracking boards to facilitate communication in multi-shift operations.
- Scoreboards to communicate and track process metrics in a real time basis.
- Production summary boards to display information such as efficiency, Takt time, etc.



The more visually information is displayed, the more communication will improve

Andon Display:

- A multi-colored lighting system that provides a simple and consistent mechanism for communicating information.
- An effective communication tool that brings immediate attention to problems as they occur at a machine.

Example:

- A light may turn on or change color to indicate a shortage of raw materials or the need for maintenance.
- May include means to stop production so the issue can be corrected.





Production Summary Boards:

- □ Everyone should be able to see where production stands.
- Communicate the current status of a production system.
- Used to monitor the process output and see if it meets customer demand.
- Allows maintenance and production teams to quickly resolve process and quality problems.

tarq	et	480
actū	al	343
effic	ienc	4.84
takt	tim	e 10



Production Monitor

Hour	Target	Actual	Cum	Cum + F
1	1000	250	200	-50
2	1000	1020	197 0	-30
3	1000	1020	2990	-10
L.	1000	500	3690	-110
5	500	600	4490	-10
6	1000	1050	5540	+40
7	1000	970	6510	+10
8	1000	360	7460	-40

Production Monitor / hour

Tips to Create a Cohesive Visual Management System:

- Remember that the goal is to make the area more informative.
- Determine where to implement visual management.
- Decide who are going to be involved.
- Identify information deficits and determine what needs to be shown (use a checklist).
- □ Mark floors, add signs, label storage areas, etc.
- Information has to be easily understandable, concise, accurate, relevant, up-to-date and accessible to everyone.
- Create a guide that describes the key elements associated with each visual type.



Further Information:

- Visual management is not just making charts and metrics visible on a wall, it is a real-time, hourly or daily visuals that allow the team to respond promptly to signals to solve issues or support the production process.
- This often generates a sense of urgency among the team and allows solving problems on spot eliminating possible complications.
- Process metrics need to be displayed at the machine or manufacturing cell, while general plant information need to be posted in a central location where everyone can see it at a glance.



Further Information

- It is very common to conduct Kaizen events where the main focus is to enhance the visuality of a specific work area or a process.
- For example, stabilizing the work environment using 5S, stabilizing how work is performed using standard work, or stabilizing equipment performance and reliability using TPM.





After

Examples of how to eliminate waste using VM:

- Reduce waiting by visually defining work sequence and in-process stock.
- Prevent excess transportation by labeling and marking locations and paths.
- Reduce motion by assuring all parts and tools are accessible and distinguishable.
- Eliminate excess inventory by improving visibility of storage and displaying levels verses target .



Examples of how to eliminate waste using VM:

- Prevent overproduction by visually displaying production targets and actuals.
- Eliminate over-processing by assuring processing standards are visually posted.
- Minimize defect and rework levels by displaying problem solving results.
- Minimize the non-use of skills by visually communicating problems to all making them participating in finding solutions.

