



Comparing 5S and Work Area Management Which will suit your site best?

5S was developed in Japan to establish the discipline within their workforce to be able to follow standards and identify problems at the earliest possible time to allow the successful implementation of the Toyota Production System.

Work Area Management was developed in Australasia to establish the discipline initially within the production and maintenance workforce to be able to follow standards and identify problems at the earliest possible time to allow the successful implementation of Total Productive Maintenance (TPM) recognising that the Australasian workplace culture is quite different to that found in Japan where 5S and TPM were developed.

Total Productive Maintenance (TPM) was developed in Japan, and like 5S, is recognised as a key concept in Lean Production and World Class Manufacturing models, however few organisations understand how these two concepts should come together to generate far greater benefits than either one can by themselves. The unfortunate thing is, many companies treat the two as separate activities rather than integrating them so as to significantly improve Safety & Environment, Quality, Delivery, Plant & Equipment performance, Productivity, Morale and most importantly Financial performance by creating a workplace environment that is the envy of their industry.

Overview of 5S

As the name suggests there are five steps to the 5S methodology. They correspond to five words in Japanese all beginning with the letter “S”. The words focus on effective workplace organisation and standardised work practices.

5S ‘a systematic method of industrial housekeeping and organisation for the workplace’				
	Japanese Words *	Meaning	Activity	Alternate English Words
S1	Seiri	Organisation	Clearing Up	Sort
S2	Seiton	Orderliness	Organising	Set in Order / Straighten
S3	Seiso	Cleanliness	Cleaning	Shine
S4	Seiketsu	Standardising	Standardising	Standardise
S5	Shitsuke	Self Discipline	Training & Discipline	Sustain
* Each word refers to a specific principle or set of established rules of organisation and housekeeping				

Unfortunately, many people get so focused on the activity (getting things done) and outcomes (making the workplace look good), they forget the real reason 5S was developed by the Japanese. That reason, was to develop the discipline within their people to be able to follow standards and identify problems at the earliest possible time to allow the successful implementation of the Toyota Production System.

Overview of TPM

TPM has developed significantly over the years since being identified by the Japan Institute of Plant Maintenance (JIPM) in 1970 while conducting a PM audit at Nippondenso. Originally there were 5 Pillars or Activities of TPM that are now referred to as **first** generation TPM (Total Productive Maintenance). It focused on improving equipment performance or effectiveness from an equipment focus perspective.

Late in the 1980's it was realised that even if the shopfloor were committed fully to TPM and the elimination or minimisation of the "six big losses", there were still opportunities being lost because of poor production scheduling practices resulting in line imbalances or schedule interruptions. Hence the development of **second** generation TPM which focused on the whole production process and incorporated an extra Pillar of TPM activity called Support Department Improvement – Production Planning.

In more recent times it has also been recognised that quality and safety are linked to equipment performance in that if equipment fails or breaks down, quality loss occur and often there is a higher probability that someone could be injured trying to respond to the unexpected event.

As such it was seen that the whole company can benefit from your equipment operating perfectly resulting in significant improvements in output, quality and safety hence the expansion of the Support Department pillar to include all support areas along with the addition of two further pillars focusing on quality and safety to create **third** generation TPM, which encompasses 8 Pillars of TPM Activity as shown below.

The 8 Pillars of 3 rd Generation TPM (company focus)	
1	Focused Improvement (of Equipment)
2	Autonomous Maintenance (by Production Department)
3	Planned Maintenance (by Maintenance Department)
4	Education & Training (of Operators and Maintainers)
5	Early (Equipment) Management
6	Quality (Product) Maintenance
7	Administration & Support Department Activities
8	Safety & Environmental Management
<i>TPM In Process Industries, JIPM / T Suzuki, 1992 / 1994</i>	

Autonomous Maintenance by Operators (or Production Department) is recognised as the key activity of TPM, however, unfortunately many companies incorrectly interpret TPM as only involving Autonomous Maintenance and see TPM as purely a means to get Operators to carry out maintenance checks and minor maintenance on the equipment.

Correctly interpreted, TPM is an integrated approach to achieving specific goals in both equipment and company performance where Autonomous Maintenance is used to develop the skills and abilities of Operators to identify equipment defects and quality problems at the earliest possible time and ensure their prompt rectification. Without TPM, the Toyota Production System could not function.

Autonomous Maintenance consists of 4 stages involving 7 steps aimed at developing Operators so they are able to manage their workplace so as to achieve Zero Breakdowns, Zero Quality Problems and Zero Accidents or Incidents.

Overview of TPM & Lean / CI

In Australasia, where our workplace culture is quite different from the Japanese, we have developed an enhanced Australasian approach to applying the principles and practices of the Toyota Production System and the Toyota Way which we call TPM & Lean / CI.

This involved expanding Focused Improvement into covering not only the Equipment but also the Processes associated with such, along with taking both a Macro (big picture perspective to understand all losses and pick some early wins to create time for further improvement) and Micro (specific loss perspective to tackle the tricky problems) view to improvement.

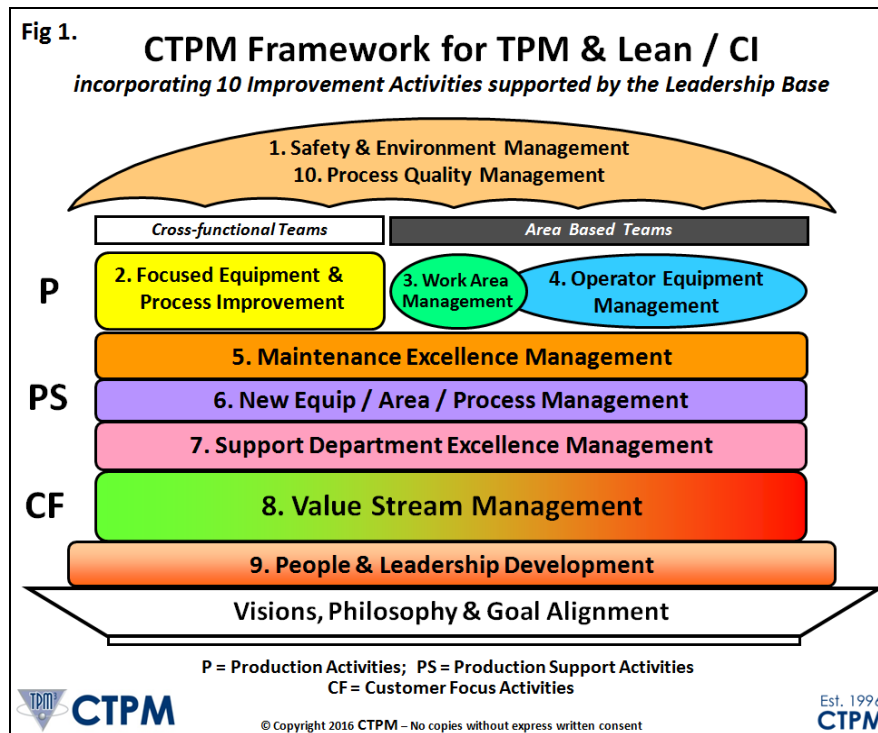
We also found it appropriate to change the language from Pillars to Improvement Activities and alter the names of some of the Improvement Activities to make them more relevant to our work environment.

There was also the addition of two extra Improvement Activities:

- Work Area Management (an enhanced people development version of 5S) to address the need for the transition to an inductive or pull approach to improvement while establishing the disciplines to follow standards (fundamental for the success of TPM); and
- Value Stream Management to address the need to stabilise the production plan (Flow) to support regular TPM activities, and improved customer service.

We also changed the Safety & Environment Improvement Activity to number 1 in the order rather than number 8 for obvious reasons.

How these 10 Improvement Activities integrate is shown in Figure 1.



Getting the Terminology and Understanding Right

We have found that in most Australasian plants, shopfloor personnel tend to relate to simple language rather than complex 'program' language such as 5S etc.

For this reason we have taken the simple view that the workplace can be divided into 2 sections: firstly the **work area**, which involves everything surrounding the equipment; and secondly the **equipment** itself.

Hence the development of Work Area Management, which focuses on the **Work Area** using a prescriptive 10 part process spanning the 5 steps of 5S, and Operator Equipment Management, which focuses on the **Equipment** using the 7 steps of Autonomous Maintenance spanning the 5 steps of 5S with more purpose and meaning as 5S 'cleaning' goes from superficial cleaning of the equipment to detailed 'cleaning for inspection'. This 'cleaning for meaning' approach identifies many hidden equipment defects which can lead to serious and expensive problems (breakdowns or product quality issues).

The other important language issue we find is the word 'maintenance' in Autonomous Maintenance. Many people do not realise the different interpretation the word maintenance has in Japan. In Japan the word 'maintenance' means '**care of the asset**', while in Australasia the word maintenance tends to relate to '**repair of the asset**'. As such, many people interpret Autonomous Maintenance as a means to get Operators to do maintenance repairs on the equipment and in some cases spend considerable time and money trying to train Operators in maintenance skills which is not the intention of TPM.

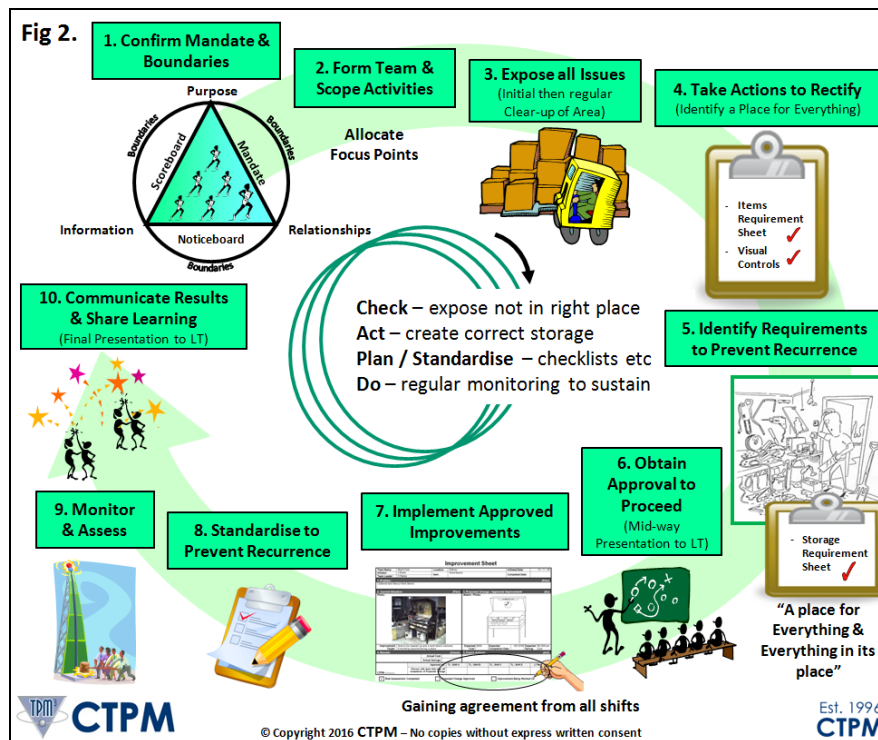
Autonomous Maintenance is about training Operators to recognise equipment defects at the earliest possible time, arrange for their prompt rectification and to learn about the functioning (not just the operation) of their equipment so as to be able to quickly diagnose problems (equipment and product quality). Hence we have found the words Operator Equipment Management send a much clearer message of what is intended.

TPM & Lean / CI, like TPM, is based on the premise that the most effective workplaces are made up of Area Based Teams consisting of 4 – 8 personnel including a dedicated Frontline Leader with clear responsibilities. The team has a clear purpose, get regular timely feedback on their performance, and have clear and direct relationships with support staff (e.g. maintenance, quality etc). As such, Work Area Management and Operator Equipment Management are core activities used to establish and develop Frontline Leaders and their Area Based Teams.

Overview of Work Area Management (WAM)

The Work Area Management (WAM) activity has been created to develop your production Frontline Leaders and commence the engagement of *all* personnel in a defined work area by addressing the fundamental question: ***Do you ever waste time trying to find something when you are about to do a task?*** (rather than telling them they need to 'have a place for everything, and everything in its place').

There are ten parts to Work Area Management, which are summarised in Figure 2.



It requires all personnel in a defined work area, to work together and improve their work area and standardise practices across all shifts / areas. It also recognises that in many situations we find Frontline Leaders are poor at delegating improvement tasks to team members and as such some team members tend to sit back and let other people do the tasks. To address this in a positive way, we have developed the role of Focus Points within the Area Based Team so that each team member (other than the Frontline Leader) is given a Focus Point such as information or change-over parts or inventory etc, and they will work with their Frontline Leader to identify the storage needs and locations for their Focus Point before getting agreement from their team members.

A key objective of WAM in a multi shift environment is to improve communications between shifts, so as to gain agreement on standardised practices. To facilitate this, we have each team across all shifts allocated in a fair and equitable way, a defined Improvement Area within their workplace.

The teams then, through their WAM activities of having everything they need at their finger tips by establishing 'a place for everything and everything in its place', establish agreed practices (standards) for Work Area Management across all shifts and introduce the discipline of Area Based Team self-assessments so as to improve safety, productivity and morale. This is also supported by the introduction of compliance audits by Supervision or Management where a routed audit is conducted on a regular basis to ensure compliance to the agreed standards established by the teams.

Once the teams have improved their work area, established the basic disciplines for on-going continuous improvement, significantly reduced wasted time looking for things, and improved communications and standards between shifts, they are much better prepared to take on the introduction of Operator Equipment Management.

Overview of Operator Equipment Management (OEM)

Operator Equipment Management (OEM) further develops the Area Based Teams by moving the improvement focus onto the Equipment rather than just the Work Area, while sustaining and further enhancing their WAM improvements. The objective of Operator Equipment Management is to develop world class Operators who are equipment-competent and create a sustainable failure-free (Zero Breakdowns), trouble-free (Zero Quality Problems), safe workplace (Zero Accidents and Incidents).

This is achieved by restoring equipment to its "ideal" state by establishing Basic Equipment Conditions (no looseness, no contamination, perfect lubrication), training Operators in how equipment functions so they can better diagnose problems, improving Design Weaknesses, reducing early deterioration through daily checks and proper operation, and assisting their maintenance colleagues in establishing the necessary conditions and systems to keep equipment properly maintained.

Operator Equipment Management has seven steps, which are divided into 4 stages as outlined below:

The 4 Stages and 7 Steps of Operator Equipment Management			
Stage	Objective	Step	Description
1	Cleaning for Inspection* Activities Learn how to recognise, rectify and prevent equipment defects so as to achieve and maintain Basic Equipment Conditions and thus reduce variation in Equipment Component Life (to allow Maint to enhance their PMs / PdMs) while improving Safety and Quality. Note: PM = Preventive Maintenance PdM = Predictive Maintenance	1	Identify & Rectify Equipment Defects
		2	Address Sources of Contamination and Difficult to Access Areas
		3	Establish Perfect Lubrication and Clean for Inspection Standards & Procedures
2	Training for Inspection* Activities Learn how equipment functions so as to diagnose equipment, quality and safety problems at the earliest possible time, be able to identify and contribute to improving Design Weaknesses and contribute to achieving a workplace that has Zero Breakdowns while improving Safety and Quality.	4	Understand Equipment Functioning (by each inspection category or module)
		5	Finalise Inspection Standards & Procedures for Equipment Care
3	Consolidate Quality Assurance Activities Develop a deeper understanding of the relationships between Quality and Equipment Conditions so as to create a workplace that has Zero Quality Problems while improving Safety.	6	Understand Quality and Equipment Relationships
4	Consolidate On-going Improvement Activities Manage own Workplace as a successful Mini Business (eg mature synergistic Area Based Team) so as to always achieve the Production Plan with Zero Breakdowns, Zero Quality Problems and Zero Accidents or Incidents.	7	Manage own Workplace

* To Find Equipment Defects

What are the main differences between 5S and Work Area Management?

5S has been around for a long time and as such there has been many books, courses, videos and resource materials created and available in the marketplace. Unfortunately there is also a lot of 'war stories' around where 5S has taken a massive amount of effort, cost a lot of money and time, then failed to sustain.

Over the past 20 years we have visited many sites including large multi-national sites, national sites and stand alone sites throughout Australia and New Zealand, and to a lesser extent Indonesia, Thailand and China. During our first visits we have always seen examples of where 5S thinking has tried to be applied however with very few on-going sustainable success stories.

Our conclusion in most cases, is that the focus of the 5S has been on fixing up the workplace (work area and equipment) rather than developing the Frontline Leaders and their Area Based Teams to fix up their work area, then continue the improvement activities as part of their normal work.

In other words, create the environment where each Area Based Team (4-8 people including a Frontline Leader) spend some 4-5% of their normal work time each week improving their work area through Work Area Management and their equipment through Operator Equipment Management.

Professor Jeffrey Liker confirmed this learning in his book 'The Toyota Way to Continuous Improvement' in Chapter 5: Lean Out Processes or Build Lean Systems? where he related to sites being too focused on applying the Lean Tools such as 5S without recognising the need to keep people engaged through on-going continuous improvement, and wondering why their efforts did not sustain. 'Mechanistic or tool focused approaches to Lean do not sustain'. Liker's message is that you need to take an Organic approach to Lean that recognises the need to develop your people through on-going continuous improvement.

The table below outlines the steps and parts of 5S, Work Area Management (WAM) and Operator Equipment Management (OEM):

5S (5 steps)		Work Area Management (10 Parts)		Operator Equipment Management (4 Stage 7 Steps)	
Workplace Focus		Work Area Focus		Work Area + Equipment Focus	
Divide up the workplace into 5S areas		Parts 1 & 2: Establish Teams, Allocate Focus Points and Allocate Improvement Area to each Shift / Team		Part 1 & 2 of each Step: Confirm Teams, Confirm Focus Points and Confirm Improvement Area for each Shift / Team	
S1 Seiri	Organisation	Part 3	Expose all Issues (Initial then regular Clear-up of Area)	Step 1	Identify & Rectify Equipment Defects (Initial then Regular Clean for Inspections)
S2 Seiton	Orderliness	Part 4	Take Actions to Rectify (Identify a Place for Everything)	Step 2	Address Sources of Contamination and Difficult to Access Areas
		Part 5	Identify Requirements to Prevent Recurrence		
		Part 6	Obtain Approval to Proceed		
S3 Seiso	Cleanliness	Part 7	Implement Approved Improvements	Step 3	Establish Perfect Lubrication and Clean for Inspection Standards
S4 Seiketsu	Standardising	Part 8	Standardise to Prevent Recurrence	Step 4	Understand Equipment Functioning
				Step 5	Finalise Inspection Standards for Equipment Care
S5 Shitsuke	Self Discipline	Parts 9	Monitor & Assess	Step 6	Understand Quality and Equipment Relationships
		Part 10	Communicate Results & Share Learning	Step 7	Workplace Management

The key features of Work Area Management (WAM) often not seen in Production focused 5S implementations are outlined in the table below:

Features / Tools	Purpose
Improvement Time	There is an agreed amount of improvement time each week allocated to each team on each shift for a meeting to plan out activities and activity time to carry out the improvements. This time is scheduled into the Production Plan at a fixed time and day with agreed rules for any deferment or cancellation. (This time would have been made available through previous Cross-functional team improvement activities so there is no disruption to achieving the production plan)
Structure	Proper Area Based Teams with 4-8 permanent members including a designated Frontline Leader are established, and they have designated support staff to assist them eg Maintenance person who are on a similar or supporting roster.
Frontline Leader	The Frontline Leader of each team has clear roles and responsibilities including achieving the Production Plan and leading on-going continuous improvement activities. The WAM activities are seen as a means to further develop their leadership skills.
Improvement Areas	Depending on shifts involved, each shift is allocated an equal share of the total work area for their improvement activities so as to ensure communication and agreement between shifts.
Team Noticeboard	Central communication medium to keep all shifts informed of team's activities and progress.
Financial Boundaries	To contain expectations of team members while allowing management to review and if appropriate, approve cost justified improvements exceeding the boundaries.
Improvement Sheets	Communication tool to confirm agreement between shifts and share learning across site / company.
Focus Points	To assist Frontline Leaders to delegate and engage all team members into doing their share of the improvement work while being able to easily benchmark their work area to other work areas.
Location Map	Record of the location of all agreed WAM standards to support compliance audits.
Compliance Audit	Process of following the agreed route on the Location Map to conduct specific compliance audit (no scores, just complies or doesn't) for each agreed standard to embed required behaviours and disciplines.
Self-Assessment Tool	To allow teams to evaluate their progress (verified by their Improvement Co-ordinator) on their WAM activities to ensure achieving a required improvement capability before progressing to Operator Equipment Management.
Team Skills Assessment	To allow team members to identify weaknesses in the team skills of their team so that Team Skills Modules (10 off x 2 hr) can be provided on a just-in-time, as needed basis during further improvement cycles.
Mid-way Presentation	To allow team members to develop their presentation skills using their Improvement Sheets in front of their Noticeboard in their Work Area where they can point out what they would like to do, so as to gain approval from management to proceed.
Final Presentation	To allow team members to develop their presentation skills using their Improvement Sheets in front of their Noticeboard in their Work Area where they can point out what they have achieved, what they have learnt and what further recommendations they have for their Work Area so as to gain approval from management to proceed to Operator Equipment Management.

A key learning from the introduction of Work Area Management is that care needs to be taken regarding the interpretation of the third S (Seiso – Cleanliness). When Area Based Teams are allocated specific areas for their on-going continuous improvement activities to encourage communication and agreement between shifts, it is important that they realise they have a responsibility to maintain general cleanliness and housekeeping of the entire workplace during their normal shift and only focus on their allocated improvement area for improvement activities.

If this is not stressed, often we find teams keeping their allocated areas clean but not worrying about the other shift's areas, which is not the intention of WAM or 5S. This issue is best addressed by giving specific purpose to cleaning by calling it 'cleaning for inspection' to distinguish it from just keeping the workplace clean.

Work Area Management is typically implemented over a 12 week cycle where teams spend about 3-5% of their normal work time each week (1.0 – 2.0 hours) having a brief planning meeting and conducting their improvement activities. We have found doing a little bit each week over a 12 week period starts to embed the

behaviours required for sustaining the improvements. This is further reinforced when the team moves onto Operator Equipment Management while continuing to further enhance their WAM activities.

Operator Equipment Management (OEM) also uses the framework of 5S. For example, OEM Step 1 (Identify & Rectify Equipment Defects) and Step 2 (Address Sources of Contamination and Difficult to Access Areas) focus on regular cleaning and inspection of the equipment so as to identify and rectify equipment defects. Thus giving purpose to the third S (Seiso) in the 5S methodology. Without this focus the cleaning often becomes very superficial and you end up with clean looking machines that still have a lot of hidden defects behind the guards and covers of the equipment.

Hence the methodology not only incorporates the third S in 5S (Seiso – regular cleaning for good housekeeping), but further enhances it to work towards restoring equipment to its “ideal” state by establishing ‘basic equipment conditions’ (no looseness, no contamination, perfect lubrication), so as to reduce the variability in the life of the components of the equipment.

The fourth S in 5S (Seiketsu – Standardising) involves establishing and maintaining best practice standards in the workplace to ensure that the previous 3 S’s are kept in place. OEM Step 3 (Establish Perfect Lubrication and Clean for Inspection Standards) partially does this however it is the OEM Step 5 that really locks in the Standardising.

The key to it all is being able to sustain all the above activities, which is of course the fifth and last S (Shitsuke – Self Discipline) in 5S. OEM Steps 6 & 7 provide this sustainability.

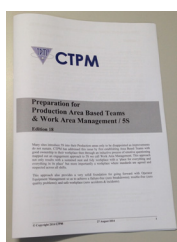
Summary

By integrating the 5S philosophy into the TPM & Lean / CI methodology we have been able to successfully implement 5S and TPM into the Australasian workplace with great enthusiasm from the workforce rather than being frustrated by passive resistance. We have also been able to place realistic timeframes on the process by aiming for WAM and each step of the 7 Steps of OEM to be achieved within 3-4 years (based on 12 weekly cycles of improvement activity resulting in regular recognition and acknowledgement of achievements).

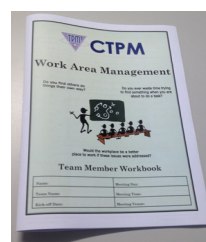
The other significant benefit from the TPM & Lean / CI approach to Work Area Management and Operator Equipment Management rather than traditional 5S and TPM is the development of synergistic Area Based Teams in the workplace which is evident by the significant gains in Safety & Environment, Quality, Delivery, Plant & Equipment performance, Productivity, Morale and most importantly Financial performance being achieved by companies covering a broad spectrum of industries.

To assist sites implement Work Area Management, CTPM has written a booklet titled *Preparation for Production Area Based Teams & Work Area Management / 5S*, along with a Team Leader Manual and Team Member Workbook. These can be purchased from CTPM by sending through an email to ctpm@ctpm.org.au or calling CTPM Head Office on +61 2 4226 6184.

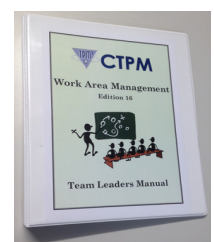
**Preparation for
Production Area
Based Teams &
Work Area
Management
/ 5S**



**Work Area
Management
Team Member
Workbook**
(56 pages covering the
10 Parts of WAM)



**Work Area
Management
Team Leader
Manual**
(includes Leader
Guide, Forms &
Charts, WAM Team
Member Workbook,
and 25 Clear-up Tags)



For more information about CTPM’s approach to TPM & Lean / CI and Work Area Management (enhanced Australasian people development version of 5S) please contact Ross Kennedy at CTPM’s Head Office on +61 2 4226 6184 or email: ross.kennedy@ctpm.org.au or visit CTPM’s web page at www.ctpm.org.au