10 Steps to become a Lean Enterprise

Lean Expert Training Course

Step 8

Standard Work

Part 1

Lean Expert Course Workbook - Step 8 Standard Work Part 1

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Please note that some of the screens in the online course have been omitted from this workbook. This is to protect any proprietary information that may be included in the pictures.

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Welcome.

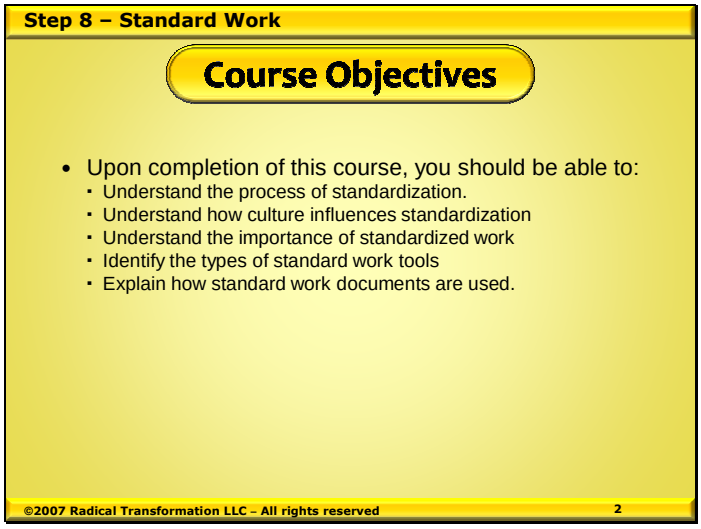
We would like to welcome you back to our next module in this online training course.

This training module is called “Step 8 – Standard Work Part 1.”

This module is a continuation of our Lean Expert online course series called “10 steps to become a Lean Enterprise.”

This program has been specifically designed to demonstrate our step by step methodology that will allow any organization to become a Lean Enterprise.

Let’s continue your lean journey!



Course Objectives

Here are the course objectives for Step 8 – Standard Work Part 1.

We specially designed this course to give the information you need to get a full understanding of each step required to become a Lean Enterprise.

Upon completion of this course, you should be able to:

- Understand the process of standardization.
- Understand how culture influences standardization.
- Understand the importance of standardized work.
- Identify the types of standard work tools.
- Explain how standard work documents are used.

Now we are going to work through each course objective.

What is Standardization?

First thing is to understand the definition of a standard. Here is one example of a definition;

"A standard is a basis for comparison, a reference point against which other things can be evaluated".

All continuous process improvement methods depend on identifying, setting and improving standards.

The only way to know if something has been improved is to compare the data collected 'before the change' with data collected 'after the change'.

This data comparison is the only method to qualify and quantify a change process to determine if an improvement occurred and by how much.

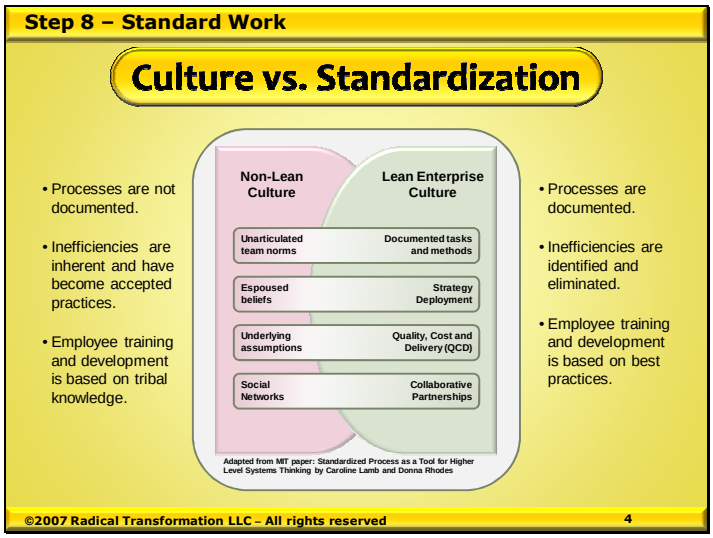
Once a process has been standardized and established as a best practice, it will create a baseline for the next process improvement.

Standardization is the practice of setting, communicating, following, and improving defined standards.

Standardization promotes consistency through the establishment of uniform criteria and defined best practices.

In a lean environment, the stability of every process depends on standardization.

Without standardization there are fluctuations in process variation which creates havoc for any business trying to deliver a consistent product or service.



Culture vs. Standardization.

Many organizations will often say they have already developed and implemented standard processes.

However, what they really mean is they follow common practices that re-occur on a regular basis.

This does not mean they have identified and eliminated waste and developed a best practice for a process.

The culture in a traditional non-lean company will need to change to a culture that embraces lean principles to become a Lean Enterprise.

If this does not happen the business will not be able to become a Lean Enterprise.

How do I know this?

The diagram in the screen demonstrates the differences between a non-lean culture versus a lean culture.

In a non-lean culture:

- Processes are not documented. Unarticulated team norms are in place.
- Inefficiencies are inherent and have become accepted practices. Work practices have been developed based on assumptions and beliefs.
- Employee training and development is based on tribal knowledge.

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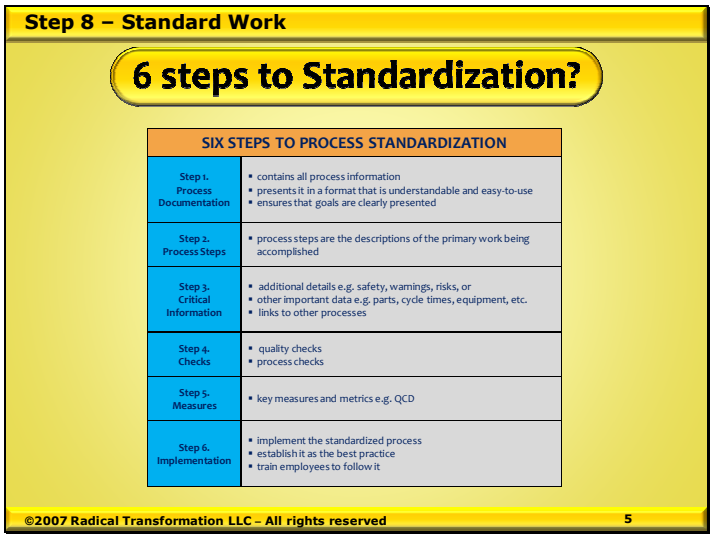
In a lean culture:

- Processes are documented. Everyone knows what is expected of them.
- Inefficiencies are identified and eliminated. Strategy development and execution is focused on waste.
- Employee training and development is based on best practices. Collaboration is encouraged to develop effective solutions for problems that cross several departments.



6 Steps to Process Standardization.

In this screen, there is information about the Process Standardization Model.

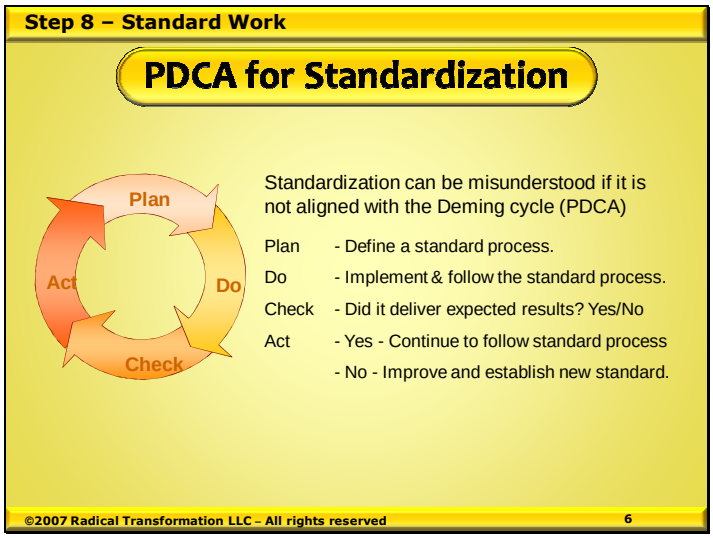
There are six defined steps involved in this standardization process.

The six steps are:

1. Process Documentation: Compile information.
2. Process Steps: Identify and describe work activity being accomplished.
3. Critical Information: Compile important support data/information.
4. Checks: Identify evaluation procedures to ensure compliance.
5. Measures: Identify and document critical success factors.
6. Implementation: Train employees to understand and use best practices.

Standard Work is a critical activity for a Lean Enterprise because:

- It reduces process variability.
- It will help to stabilize a process.
- It will identify and eliminate waste.
- It establishes Quality, Cost and Delivery targets
- It moves the focus from optional to required behavior.
- It defines the best practices to deliver the best results.



PDCA for Standardization.

Standardization can be easily misunderstood if it's not recognized as an integral part of continuous process improvement.

The Deming cycle (PDCA) can help to direct an organization to establish a plan for developing, implementing, evaluating and improving a process.

The PDCA cycle ensures all aspects of the standardization process are being applied:

Plan - Create a standard process plan.

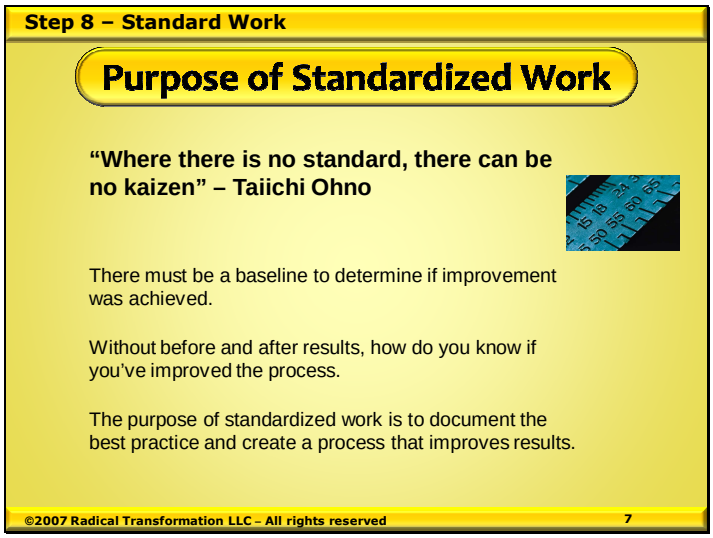
Do - Work the standard process plan.

Check - Verify the output & results of the standard process plan.

Act - If standard process did not meet expected results, improve and update standard process plan.

The PDCA cycle is something that needs to be taught to every employee.

It has value because it helps direct their focus on what actions are necessary to achieve the best result.



The Purpose of Standardized Work.

"Where there is no standard, there can be no kaizen".

This statement by Taiichi Ohno explains why there is a need for standard work.

There must be a baseline to determine the current standard and the delta or difference above or below this baseline number will define the level of improvement.

Otherwise, how do you know if you've improved the process?

Without, a baseline, you don't know! A business can only assume they have improved.

What is the purpose of Standardized Work?

It is a method of defining, documenting and maintaining the best practices.

Once a process has been improved and accepted, it is very important to establish the new method as a best practice.

All workers who perform repeatable tasks are encouraged to use the standard work to ensure they are completing their tasks in alignment with the documented method.

It is preferable to make these documents visual by using pictures or drawings to depict the methods or processes.

The reason for establishing standard work is to create a repeatable and consistent methodology to stabilize the process, to improve the quality and to reduce process variation.

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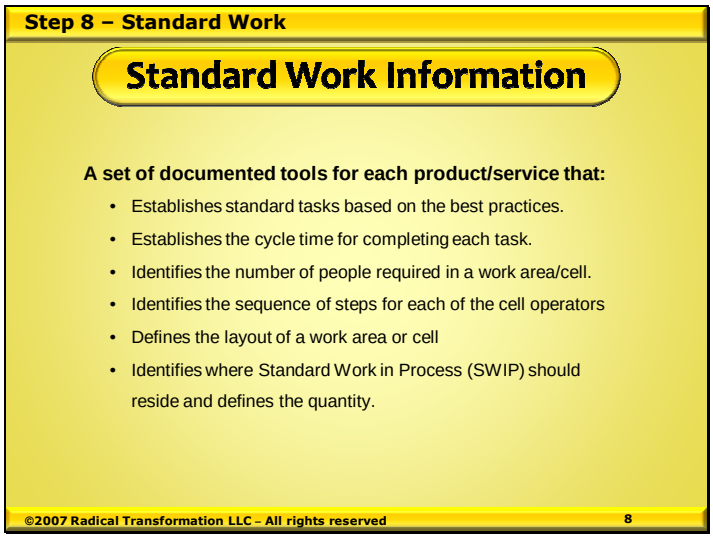
A standard work document is an excellent tool for training new workers or maintaining the standards of current workers.

In many cases, standard work will identify and document existing waste or non-value added activities.

When any process is improved, it is necessary to update the standard work document to define the new method. This document is used to train the workforce to the new standard.



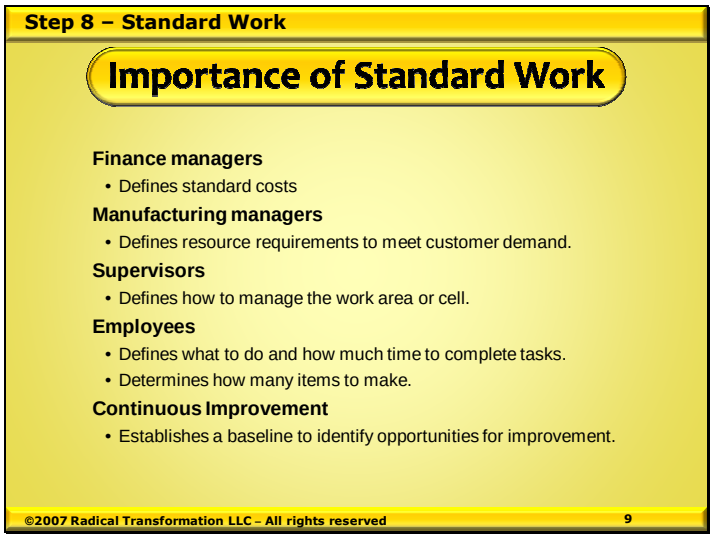
Standard Work Information.

Standard Work Information is a set of documented procedures for each product or service that:

- Establishes standard tasks based on the best practices.
- Establishes the cycle time for completing each task.
- Identifies the number of people required in a work area/cell.
- Identifies the sequence of steps for each of the cell operators
- Defines the layout of a work area or cell
- Identifies where Standard Work in Process (SWIP) should reside and defines the quantity.

Standard Work Information will define the level of communication between management and employees.

The best information will communicate the best activities to the workers and direct them to follow the best practices.



Importance of Standard Work.

As a first impression, most people think that standard work is not very important.

In reality, there are several departments in every organization that are practicing standard methods on a daily basis.

The importance of standard work is to achieve consistency.

Here are some examples of how standard work practices will help:

Finance managers:

- Defines standard costs for products and services

Manufacturing managers:

- Defines resources requirements to meet customer demand

Supervisors:

- Defines how to manage the work area or cell

Employees:

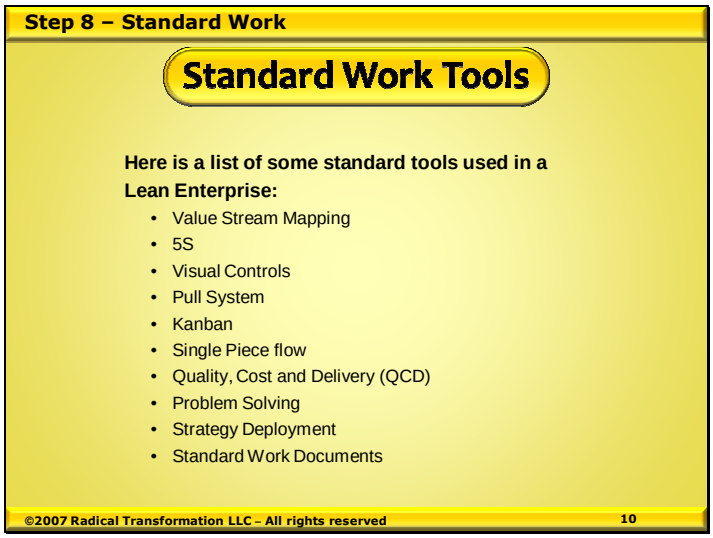
- Defines what to do and how much time it takes to complete tasks.
- Determines how many to make to maintain Standard Work in Process (SWIP) levels.

Continuous Improvement:

- Establishes a baseline to identify opportunities for improvement.

It is important for everyone in the organization to be focused in the same direction.

Standard Work helps every part of the organization to be aligned and to eliminate sub-optimization.



Standard Work Tools.

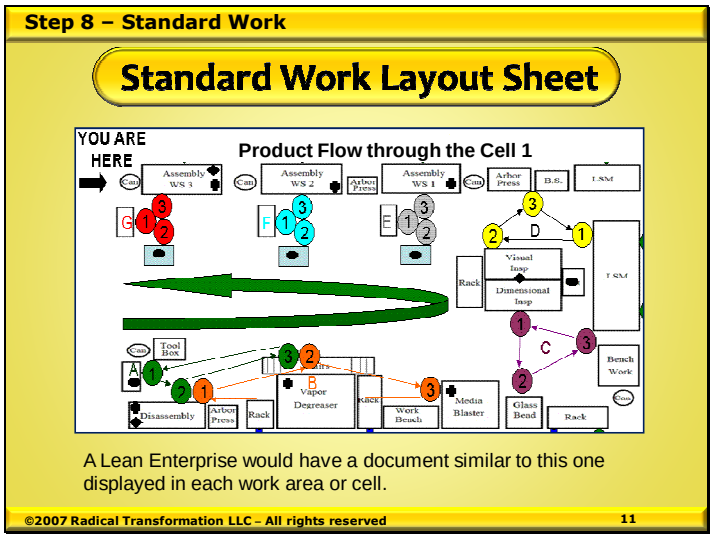
Standard Work must be established in any business that wants to become a Lean Enterprise. Without it, a business will find it difficult to make the transition to a lean culture.

Many tools and techniques have been developed over the years to help organizations to achieve the best alignment.

Here is a list of some of the standard tools used in a Lean Enterprise:

- Value Stream Mapping
- 5S
- Visual Controls
- Pull System
- Kanban
- Single Piece flow
- Quality, Cost and Delivery (QCD)
- Problem Solving
- Strategy Deployment
- Standard Work Documents

All of these standard tools are presented and taught in the “10 Steps to become a Lean Enterprise” training series.



Standard Work Layout Sheet.

Here we show an example of a Standard Work Layout Sheet (SWLS).

Any organization that is involved in the implementation of Lean principles should display one of these documents in each of their work areas or cells.

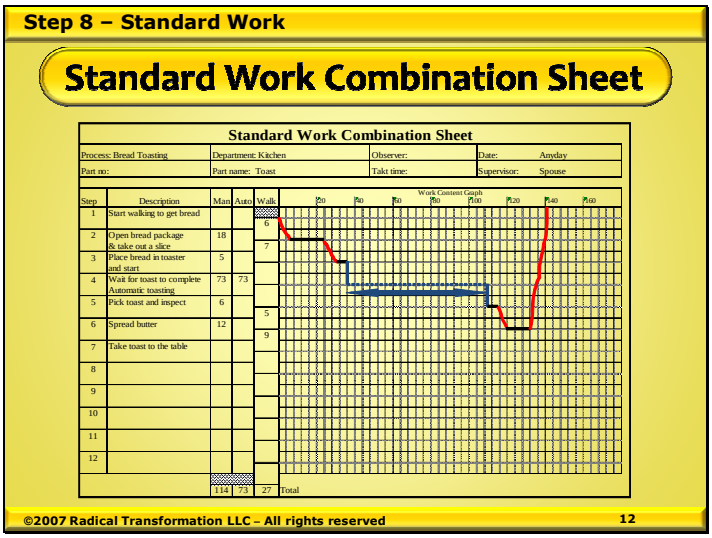
The purpose of this Standard Work Layout Sheet (SWLS) is to visually document the location of each piece of equipment and the staging areas for materials in the work area.

A Standard Work Layout Sheet (SWLS) will show the amount of Standard Work In Process (SWIP) required inside the work area or cell.

It also shows the direction and flow of the products and the movement of each of the workers inside the work area.

Anyone who walks up to this work area should be able to use the Standard Work Layout Sheet (SWLS) to follow the operation as it is being performed.

They should see each of the operations being conducted as defined in the Standard Work Layout Sheet (SWLS).



Standard Work Combination Sheet.

In this screen, you can see an example of a Standard Work Combination Sheet (SWCS).

This document was originally designed to graphically demonstrate the work content of both manual and machine cycle times.

Now it has become generally accepted to use it for visually identifying only manual activities.

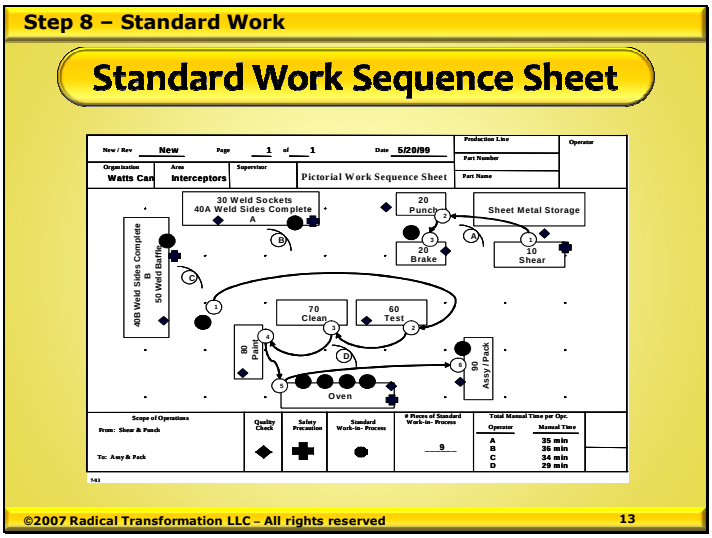
Each specific task is listed in the column on the left hand side of the document.

The cycle time for each task is graphically represented on the sheet to show how the operation must be completed to meet takt time.

There are four different symbols used to identify specific types of activities, these can be seen in the upper right-hand corner of the Standard Work Combination Sheet (SWCS).

These four symbols used in the document to represent the following:

1. Manual cycle time (solid black line).
2. Machine cycle time (dotted blue line).
3. Travel time. (undulating red line).
4. Waiting time (solid blue line with double arrows).



Standard Work Sequence Sheet.

A work sequence sheet (SWSS) is used to visually display the work sequence of the operators in a work area or cell while performing their tasks.

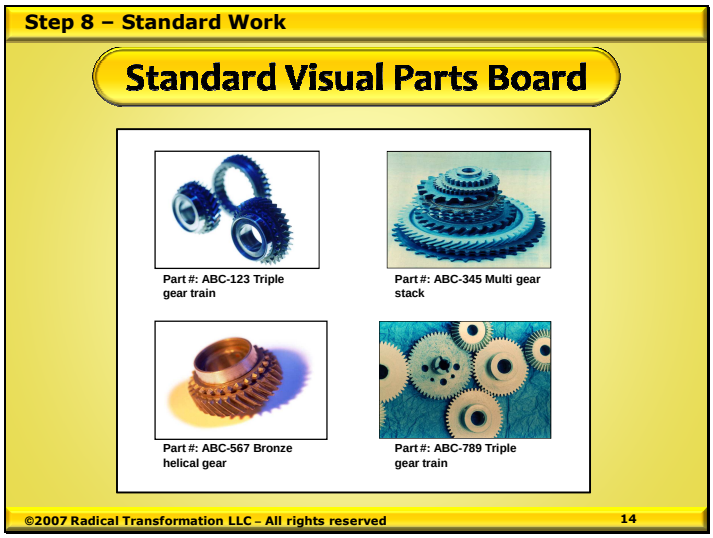
The sheet is designed to demonstrate the operators work sequence relative to the physical work area.

This is represented by the numbered circles and flow of the lines inside the work area.

Other items that are highlighted on the work sequence sheet are the standard work in process (SWIP) requirements, quality check points, and safety points

A standard work sequence sheet can be used as an audit tool to determine the level of compliance in the work area or cell against an established standard layout in the area.

This document can be used for training new operators about work flow, equipment and inventory locations.



Standard Visual Parts Board.

In this screen, there is a mockup of a Standard Visual Parts Board.

Why does it use pictures and text together?

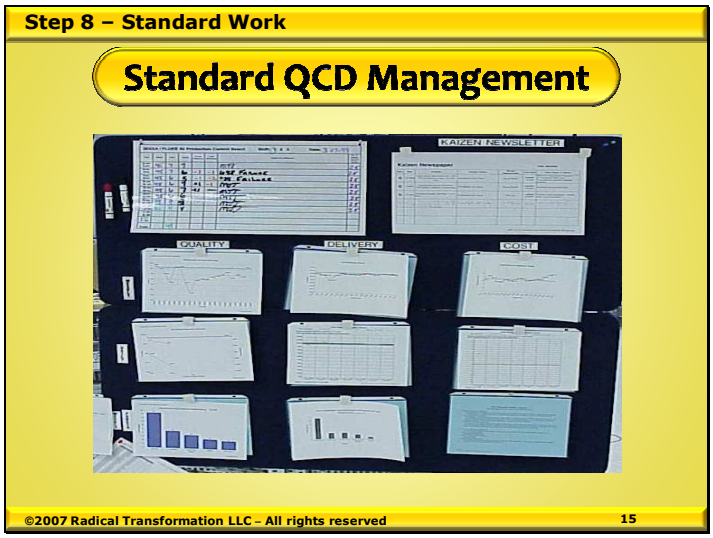
Pictures of parts allow operators to compare a physical part with the part number on the visual parts board.

This helps to eliminate mistakes where a part is incorrectly added to a product.

Another advantage when using a visual parts board is that employees can easily check the board to see what items should be available at their workstation prior to starting the assembly operation.

If any parts are missing an employee can flag the issue with the material supply person or water spider.

Employees in charge of replenishment can use the parts board to refill part bins and ensure they are delivering the correct parts and quantities.



Standard QCD Management Board.

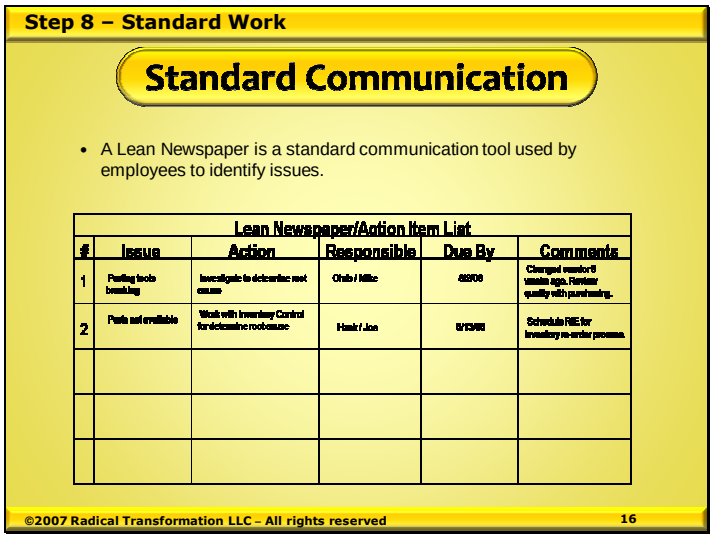
In this screen, you can see a picture of a QCD board.

It is a metrics board that tracks the progress of a work area or cell team in meeting specific goals for Quality, Cost, and Delivery.

These boards are used to track the current status of a cell and to highlight potential improvements to the process.

Problem solving techniques are used to identify the root causes of the issues.

It will allow the cell and management teams to develop countermeasures to eliminate the root causes of the issues.



Standard Communication.

A Lean Newspaper is a document that is located inside a work area or cell.

The purpose of the document is to allow anyone in the work area or cell to record issues they experienced during their production shift. The information is captured on the newspaper for everyone to see and read.

Over a given period a supervisor or manager will read the list of issues and talk them over with the employees in the work area or cell.

Based on these conversations the supervisor or manager would reach an agreement with the employees about what needs to happen to mitigate the problems.

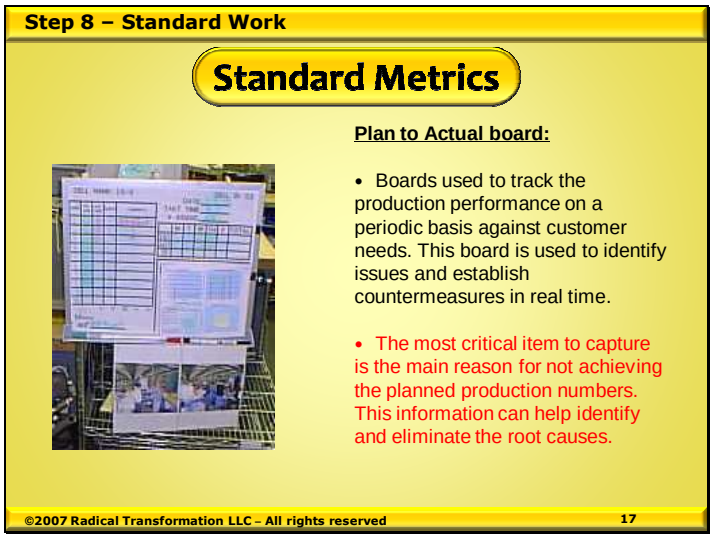
The supervisor or manager would define action items, assign responsibilities, determine due dates for completion, and track progress.

The information would be given to the improvement team to let them know if any events are required to identify and eliminate waste.

The action items will break down into three categories:

1. Just Do It's (JDI).
2. Rapid Improvement Event (RIE).
3. Short or Long Term Project. (STP or LTP)

Any updated status or results of these categories of action items are placed inside the work area or cell for employees to see and read.



Standard Metrics

In this screen, you can see an example of a "Plan to Actual board".

These boards are used to track the process performance over a specific period against the customer's needs.

Some boards are designed to track and monitor daily numbers, while other will be used for weekly or monthly.

Some are designed to track several performance periods on the same board e.g. daily, weekly, monthly and quarterly.

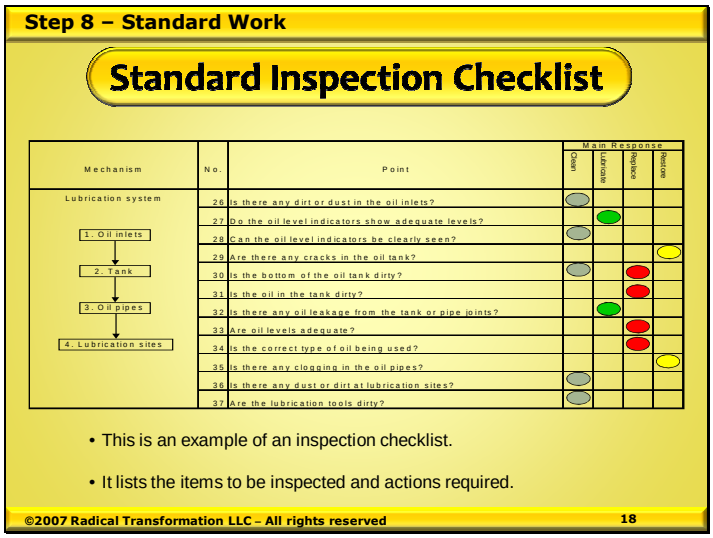
The "Plan to Actual" board can include a document similar to a Lean Newspaper (which was discussed in the previous screen), to identify issues and establish countermeasures in real time.

The most critical item to capture is the main reason for not achieving the planned production numbers. This information can help identify and eliminate the root causes.

The information on these boards answers a key question:

Did we give the customer what they wanted, when they wanted it?

If not, what do we need to do differently to be able to achieve this on a consistent basis?



Standard Inspection Checklist.

In this screen, is an example of an inspection checklist.

The document is separated into three sections:

Section 1 - has a flow process demonstrating the sequence of activities.

Section 2 - defines the requirements in a numbered order or sequence.

Section 3 - defines the actual location in the flow process to perform the activity.

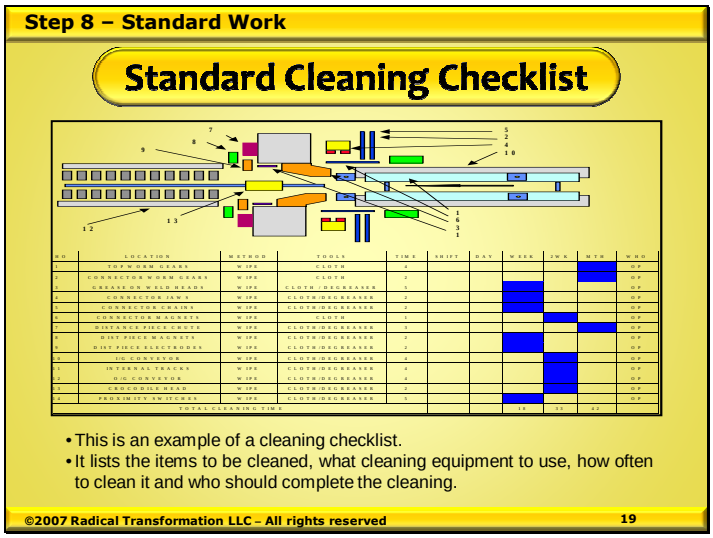
The checklist clearly defines the sequence of activities, which items need to be inspected and what should happen during the inspection activity e.g. should it be cleaned, lubricated, replaced or restored.

This design of inspection checklist can be adapted to any process where an employee needs to go through a pre-check of a work area or equipment before starting it.

Employees can be trained to follow simple checklists and the paybacks are huge.

Analysis suggests that 85% of maintenance issues can be eliminated if employees are involved in the inspection process.

If they find anything wrong during their inspection procedure they would inform the maintenance department.



Standard Cleaning Checklist

In this screen, there is a diagram of a cleaning checklist.

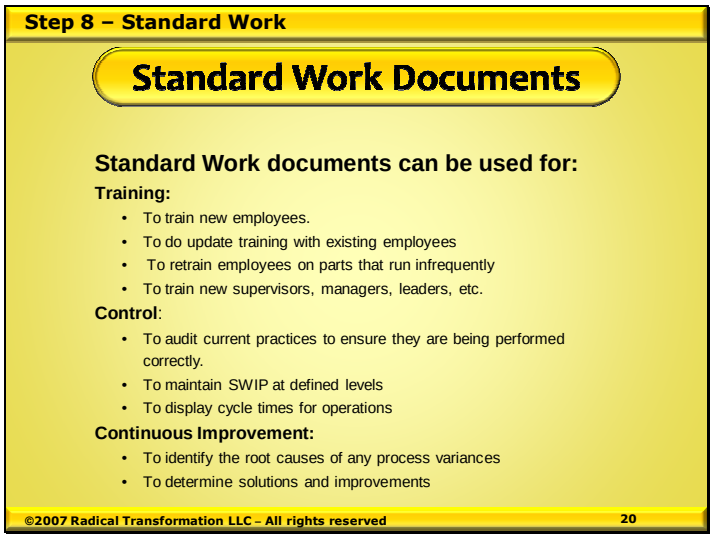
The purpose of creating this type of document is to use it as a guide for employees.

The document will let them know about the cleaning schedule for their work area or equipment.

It focuses the employee on specific locations and activities to fulfill the cleaning requirements.

1. It identifies the items to be cleaned.
2. It defines the cleaning equipment to use for each location.
3. It informs the employee about the frequency of cleaning at each location.
4. It identifies who is responsible for the cleaning.

When an organization uses a cleaning checklist the employee knows exactly what they must do and when they need to do it.



Standard Work Documents.

Standard Work documents can be used in three key disciplines of any business:

Training:

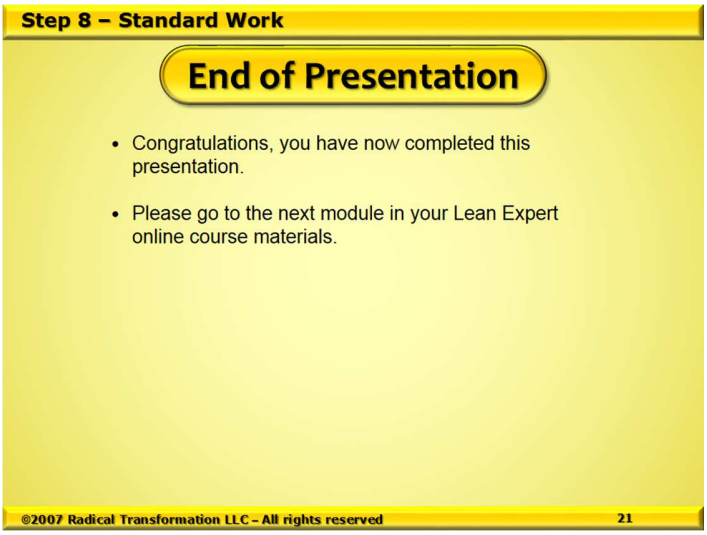
- To train new employees.
- To do update training with existing employees.
- To retrain employees on parts that run infrequently.
- To train new supervisors, managers, leaders, etc.

Control:

- To audit current practices to ensure they are being performed correctly.
- To maintain SWIP at defined levels.
- To display cycle times for operations.

Continuous Improvement:

- To identify the root causes of any process variances.
- To determine solutions and improvements.



End of Presentation.

Congratulations, you have now completed this presentation.

Please go to the next training module in your Lean Expert online course materials.

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Reference Materials

1. **Standard Work for the Shopfloor.**
   By: Productivity Press Development Team. Published by Productivity Press 2002.
2. **Creating A Lean Culture: Tools to Sustain Lean Conversions.**
   By David Mann. Published by Productivity Press 2005.

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Documents List

There are no required documents for this training module.

