Making Continuous Improvement Continuous: A Supervisor led approach

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Outline

- Introduction
- Background
- Foundation
  - *Heijunka*
  - Standardized Work
  - Kaizen
- Lessons Learned
- Questions/Discussion

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Introduction

255 Patillo Rd., Tecumseh, ON Canada

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Senior Management Team

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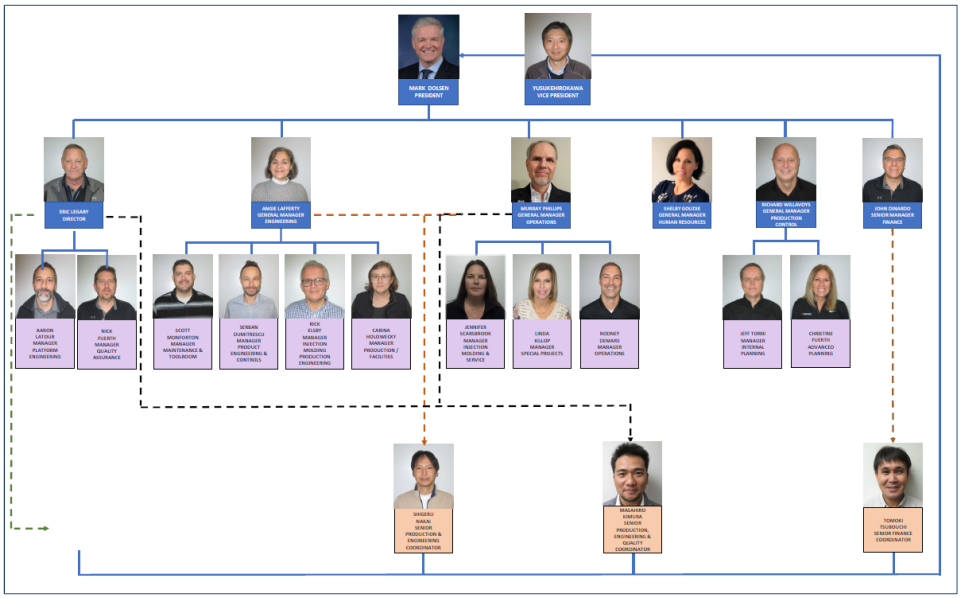
TOKAI RIKA GROUP



Total: 700
D/L: 450
Team Leaders: 30

Products

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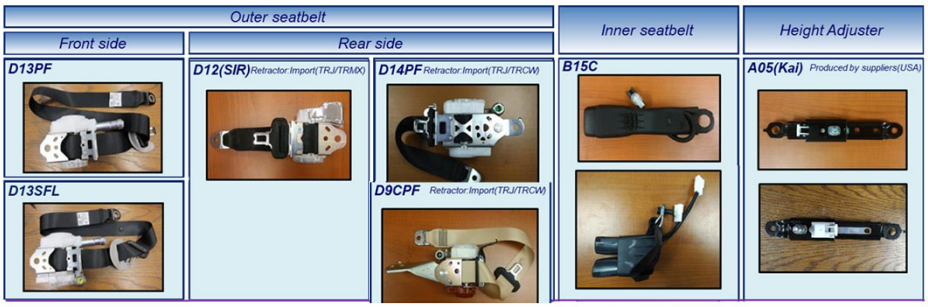
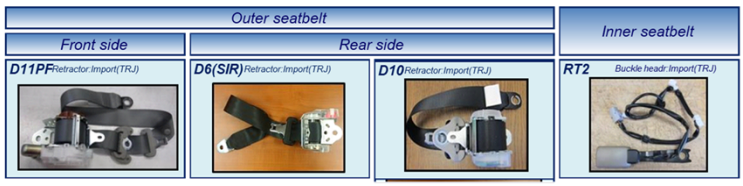


- Toyota
- Subaru
- Mazda
- GM

Past Model Service



- Toyota
- Nissan
- GM
- Subaru
- Mazda

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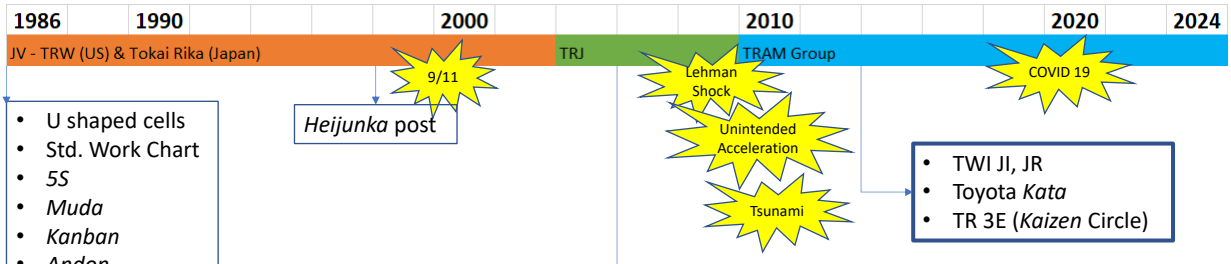
Timeline & "Lean Journey"



- U shaped cells
- Std. Work Chart
- *5S*
- *Muda*
- *Kanban*
- *Andon*

- TWI JI, JR
- Toyota *Kata*
- TR 3E (*Kaizen* Circle)

"The QSS Way"
- Page 1 in employee handbook
- Guideline for ethical behavior addressing:
  - Customers
  - Associates (employees)
  - Managers
  - Community
  - Partners (ownership)

"Necessary Knowledge for Leaders"
- TRJ TPS Group

Organization Framework for CI

May 10, 2023

Goal	Level	Responsibilities / Output [CI Related]	TWI JI	TWI JR	Toyota Kata IK	Toyota Kata CK
Top Directed	Senior Management	• Strategic Direction • Organization Design • Resource Allocation • Management Development	○	●	○	●
	Manager	• Create KPIs and Achieve Results • Develop Team	○	●	○	●
	Section Manager	• T/L Development • CI Plan for Area	●	●	○	●
	Team Leader Assistant T/L	• Create Standardized Work • Train Operators • Lead ***Kaizen Teian***	●	●	●	●
	Technician	• Abnormality Handling • Change Point Control • ***Kaizen Teian***	●	○	●	
Bottom Driven	Operator	• Standardized Work • ***Kaizen Teian***	●		●	

1. Liker (2004) The Toyota Way
2. Rother (2010) Toyota Kata
3. Robinson & Schroeder (2014) The Idea Driven Organization

What is the 3E Activity?

- Self directed small group continuous improvement activity
  - different from traditional QC Circle activity
  - creativity, non-traditional ideas and viewpoints

- **E**xcellent Colleagues
- **E**xcellent Workplace
- **E**xcellent Work

Source: Tokai Rika Co. Ltd., Human Resources Dept. (2005)

Why do we need the 3E Activity?

It's important to improve organizational power on a global basis.

- Organizational Power = **Problem Solving Ability**
- Problem = the **gap** between **current** status and **ideal** status based on vision or strategy

Unless we become the group that is full of creativity and self-directive, **otherwise we can't survive in the global competition.**

If we only do what was ordered, it's impossible considering from international wage level.

Source: Tokai Rika Co. Ltd., Human Resources Dept. (2005)

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3E Activity – Tokai Rika Global initiative

- Teams were given working time to meet, discuss, and solve problems
  - Presentations to Management – scheduled events
- Corporate wide activity tracking and publicity
- Driven by manager, facilitated by supervisor
- Participation rate was high; Teams were adept at TWI and Kata tools

❖Problem identification and selection was inconsistent and varied

❖Event based

❖Activity ceased with COVID pandemic

Corporate Publication of 3E Activity


What's Up Weekly — Patillo and Jutras — Week February 12, 2018 — Page 2 of 4

Latest in 3E News

THIS JUST IN, THE Plastisizers TO THE RESCUE

Our latest 3E team, The Plastisizers, had concerns with the safety straps on the molds. A safety strap is a small metal bar that keeps the two halves of the mold from separating when it is not clamped in the machine. The "Current Condition" was that there was no standard for safety straps. They did not have a standardized colour coding or location and some had to be completely removed when changing a mold. The Plastisizers wanted to make the safety straps more visible for the Senior Molding Operators (SMOs) in an effort to prevent the risk of molds being lifted without the safety strap on.

Some grey | Some yellow | Some red

Some on side | Some on top | Mixed with lines

From left to right: Nikolas Wevers, Marcela Lagos, Joanne Vucenovic, Stephanie Messina

Safety Strap OFF | Safety Strap ON

Not safe to move | Safe to move

BEFORE | AFTER

The Plastisizers target was to standardize all of the safety straps to create a good visual aid for the SMOs. Originally, they wanted to have the safety straps painted green (safe to move) and red (not safe to move) however upon review, it was determined that the global standard is yellow (safe to move) and red (not safe to move). Further, the Plastisizers wanted to add a third hole for any tools that did not have this to eliminate the need to remove the safety strap completely from the mold. They put in a work order for the Toom Room to complete any tools that came in for Preventative Maintenance. The number of tools was 387. To date, 376 tools have been completed thanks to the efforts of the Tool Room associates and the Plastisizers idea. The target date for completion is February 23, 2018.

This improvement idea has made a great improvement on the visibly of the safety straps and demonstrates the Plastisizers true commitment to the safety of themselves and others in the workplace. Great job Plastisizers! Thank you for promoting the internal responsibility system in our workplace, taking action and making a difference!


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Latest in 3E News

THIS JUST IN, THE MIDNIGHT MISFITS TO THE RESCUE

CREATING A VISUAL

Our latest 3E team, the Midnight Misfits, decided to focus on the 2018 kaizen targets brought forward by our parent company TRJ. Under item 3 of the kaizen targets, it was identified that "changeover error" in Injection Molding was an alarming concern, with 62% of the issues stemming from water issues such as: improper water hook up (which cause water flow as well as and heating and cooling problems), the water not being turned on and incorrect temperature settings. The Midnight Misfits looked into these concerns and decided to start with the water hook up process.

During their observation process, they found that, at times, the Senior Molding Operators (SMO's) would become confused with the water diagram when comparing it to the tool, which in turn caused incorrect placement of the water lines. They noticed that in the current process, the "in" and "Out" water hoses were coloured however there was nothing on the tool itself that they could match up with these coloured hoses. Due to this observation, the team decided that if they created a visual for the SMO's on the actual tool, it would eliminate the confusion.

From left to right: Alison Aylesworth, Crystal Stockford, Stephanie Bleau, Taylor Hrynie, Chantel Robichaud

The Midnight Misfits began their process by matching the "in" and "Out" hoses. All "Out" hoses were black and all "in" hoses were green. As such, they added a black zip tie to the bottom of the water fitting for all "Out" hose connections on the tool. On top of the black "out" zip tie, they added a colored zip tie that corresponded with the actual water hoses. They did the same process for the "in" water lines however they used green zip ties on the water fittings and then added a colored zip tie that corresponded with the actual water hoses. They decided to use zip ties as they are easy to work with, inexpensive and easy to replace if one is broken or missing. After this change was made to a few molds, it was noted that the SMO's found water hook-up's less confusing when comparing the diagram and easy to visually understand as it took out the "guess work". The Midnight Misfits received positive feedback from the SMO stating that they found themselves moving quicker when connecting the water lines.

To date, 30 tools have been completed. Through trials, the Midnight Misfits found that because of the coloured zip ties, the SMO's no longer had issues following the current diagram.

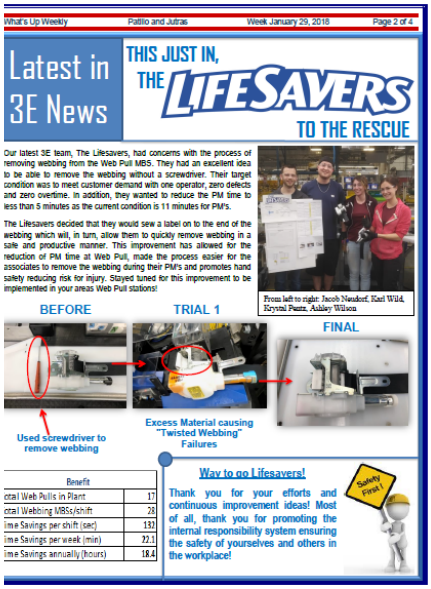
The Midnight Misfits found that creating a visual took out the confusion ensuring proper water hook up with each and every mold change.

BEFORE | AFTER

No visual for proper water hook up

Colour coded zip tie visual for proper water hook up

We would like to congratulate the Midnight Misfits on the success of their idea to improve changeover errors. Thank you for your dedication and efforts in the water hook up process!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Latest in 3E News

THIS JUST IN, THE LIFESAVERS TO THE RESCUE

Our latest 3E team, The Lifesavers, had concerns with the process of removing webbing from the Web Pull MBS. They had an excellent idea to be able to remove the webbing without a screwdriver. Their target condition was to meet customer demand with one operator, zero defects and zero overtime. In addition, they wanted to reduce the PM time to less than 5 minutes as the current condition is 11 minutes for PM's.

The Lifesavers decided that they would sew a label on to the end of the webbing which will, in turn, allow them to quickly remove webbing in a safe and productive manner. This improvement has allowed for the reduction of PM time at Web Pull, made the process easier for the associates to remove the webbing during their PM's and promotes hand safety reducing risk for injury. Stayed tuned for this improvement to be implemented in your areas Web Pull stations!

From left to right: Jacob Neudorf, Karl Wild, Krystal Pasta, Ashley Wilson

BEFORE | TRIAL 1 | FINAL

Used screwdriver to remove webbing

Excess Material causing "Twisted Webbing" Failures

Benefit	
otal Web Pulls in Plant	17
otal Webbing MBSs/shift	28
ime Savings per shift (sec)	132
ime Savings per week (min)	22.1
ime Savings annually (hours)	18.4

Way to go Lifesavers!

Thank you for your efforts and continuous improvement ideas! Most of all, thank you for promoting the internal responsibility system ensuring the safety of yourselves and others in the workplace!

Safety First!

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What's Up Weekly

Week of June 4th, 2018

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TRQSS is committed to quality in every facet of our business and organization. Page 1 of 4

Latest in 3E News – The Fantastic 4

The Fantastic 4 presented their 4th 3E Activity in the D13 area. *The target condition of F41 is to meet the customer demand of 1254 pcs/shift with 4 associates, a cycle time of 17.2 sec, 0 defects and no overtime.*

Through months of kaizen from both teams, F41 was able to meet their target but not consistently. The team observed that Operator #1 and #2 were performing at 19.5 seconds. One of the obstacles identified was interruptions to the cell.

They focused on a few items to start:

1. First off/ last off clips – multiple handling and causing false resets. The team introduced a new style of clip that was easier to handle and prevent resets.
2. Button refilling and handling. The team implemented an "in/out" system to move the work to the outside of the cell.
3. ID label handling during changeover – The team trialed treating the labels as any other component with the stocker setting up labels.
4. No standard stock route, over stocking and non-value added walking times. They experimented a standard route and found that the stock associate has 25% wasted time and would be able to handle the extra duties like applying caution label, introducing webbing by roll, removing empty totes etc.

All of these activities reduced Operator #1 to 17sec cycle time.
Great job Fantastic 4!

Before

After

BEFORE AFTER

INSIDE CELL

BEFORE AFTER

OUTSIDE CELL

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Latest in 3E News – THIS JUST IN, THE AUTOBOTS TO THE RESCUE

From left to right: Taymur Daraiseh, Connor Goodwin, Gavle Waymouth, Jay Patel

Our latest 3E team, the Autobots, had some improvement opportunities for the D13 automation area. They wanted to improve the standardized work of the line stocker to allow the stocker to complete their route when the line is running at a pace of 5000 pieces per shift.

The Autobots noticed the time taken to find components on roller racks was increasing the component route time. Due to this, the MEC module would go down consistently running out of components. Their goal was to shorten the pickup times for the components. As such, they decided to label the stock racks separately for each location (ex. A1, B2, C3, etc) with the corresponding identification on the kitting Kanban's. The labeling was beneficial because there was a high concentration of components on that bay allowing the associates to quickly find the component needed. Before the Autobots incorporated this labeling system, the box pick time averaged 24.2 seconds. Once the labeling system was in place, the box time decreased to 21.5 seconds.

New Label on kitting Kanban

Another area for improvement noticed by the Autobots was on Stock 4 where they currently have three springs with a fourth spring that is soon to be introduced. While associates were working on offload, there were times where the associates would not notice what spring was being used. In order to help correct this, the Autobots decided to add a letter to signify what spring was to be used on the changeover card and also decided to label the machine. Not only would this help prevent spring errors but it would also allow the associates to better prepare themselves for up and coming builds. After implementing the new labeling system, reset recovery decreased. This allowed the ATL's to stay at their line opposed to attending stock duties that fell behind due to associates not being aware of up and coming builds/ spring changes.

New Label on stock rack

We would like to congratulate the Autobots on reaching their target of 5000 pieces per shift! Thank you for your dedication and efforts in improving productivity in the D13 Automation area!

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Latest in 3E News – THIS JUST IN, TEAM RESTRAINTS TO THE RESCUE

From left to right: Stacey Richard, Steve Sylvester, Michelle Diamond

Our latest 3E team, Team Restraints, had some improvement opportunities for the B15 Buckles area as there were three Defect Containment Sheets (DCS) submitted since the beginning of the year due to Finished Goods being placed in the wrong location. As such, they decided to set a target of zero DCS' for Finished Goods in the wrong location in order to meet customer demands of zero defects.

They began by establishing the root causes for the Finished Goods in the wrong location. They were able to identify that the location tags were not visual and that the associates were relying on the location number rather than Kanban number.

There were various obstacles Team Restraints had to overcome to reach their target condition. The associates could not see the tags to verify that the location was correct due to the tags being covered up by the bottom box of Finished Goods or because the tags were damaged. This was cause for concern as there are 78 different Finished Good locations for AF1 and MF2. As the AF1 stocker puts away finished goods every 3-4 minutes it's crucial that they are able to quickly identify the correct location.

Team Restraints started out their plan by challenging the team with a way to reduce the number of DCS' for boxes found in the wrong locations. They put together a plan to make the locations easier to verify and created a new tag to go on the side of the Finished Goods rack rather than the bottom. They also relabeled all racks with the location and Kanban number.

BEFORE

Tags in poor condition

Tags sitting under location and not visible

Finished Goods box blocking tags

AFTER

We would like to congratulate Team Restraints on reaching their target of zero DCS' for Finished Goods in the wrong location. Thank you for your dedication and efforts in improving productivity in the B15 buckles area. Way to go!

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Background

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Creating a CI Culture

- **NOT** Specialist led Kaizen Events
  - "Improvement is [*insert name here*]'s job."
  - "We only do improvement on special occasions."
- **IS** Everyone Everyday
  - How to make it part of the daily routine?

- TWI Service – the most effective way to impact factory performance is through the supervisor (JI, JR, JM)
  - Focus in 1940s was output, throughput, efficiency
  - New Focus: ***Continuous Improvement in the context of TPS***

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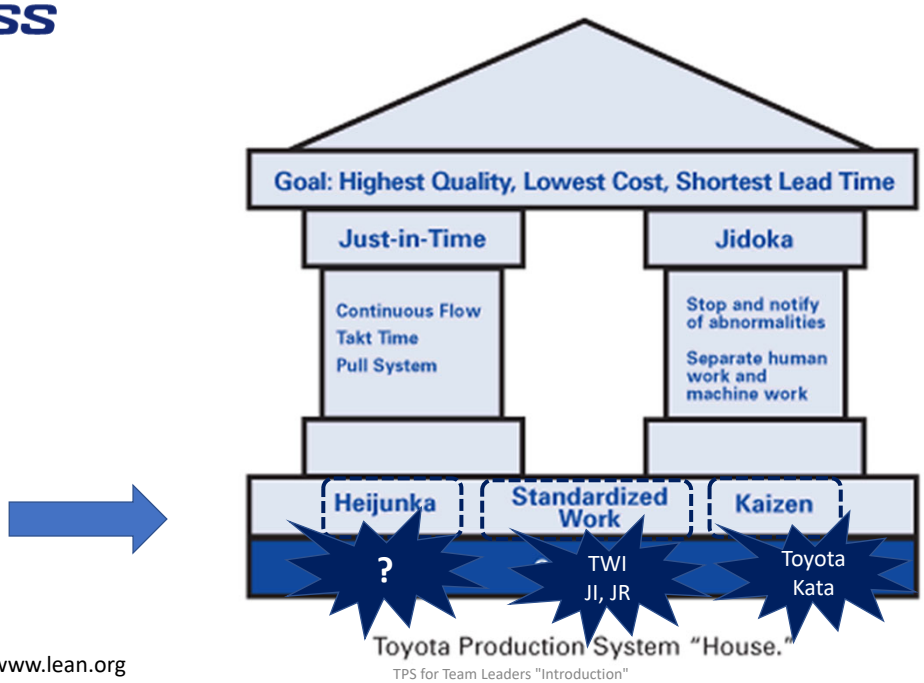

Toyota Production System "House."

Source: www.lean.org

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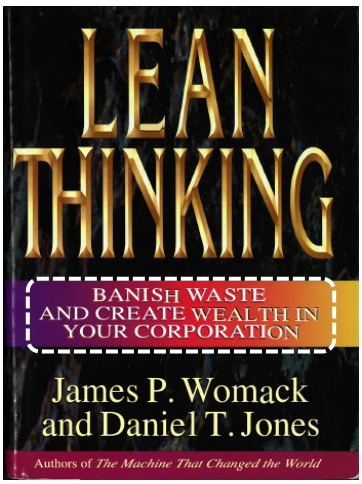
Additional Resources



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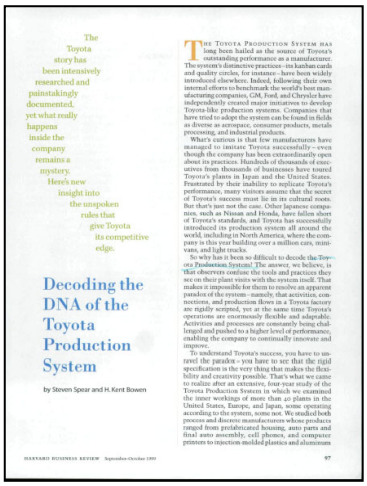

1999 HBR

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CI Culture & Innovation Capability for T/Ls

Lean Thinking [5 Steps]	*DNA of TPS* [4 Rules]	Foundational Element	Topics and Tools
1. Specify Value		*Goals: Highest Quality, Lowest Cost, Shortest Lead Time*	
2. Identify the Value Stream	The Pathway for every product and service must be simple and direct *(Rule 3)*	*Heijunka*	• **Flow Charts**
3. Make the Value Stream Flow	All work shall be highly specified as to its Content, Sequence, Timing, & Outcome *(Rule 1)*	*Standardized Work*	• **TWI-JI**
4. Let customers pull Value through the system	Every customer-supplier connection must be direct, and there must be an unambiguous yes-or-no way to send requests and receive responses *(Rule 2)*		
5. Relentlessly pursue Perfection	Any improvement must be made in accordance with the Scientific Method, under the guidance of a teacher, at the lowest possible level in the organization *(Rule 4)*	*Kaizen*	• **Toyota Kata**

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TPS for Team Leaders

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Heijunka

"leveling"

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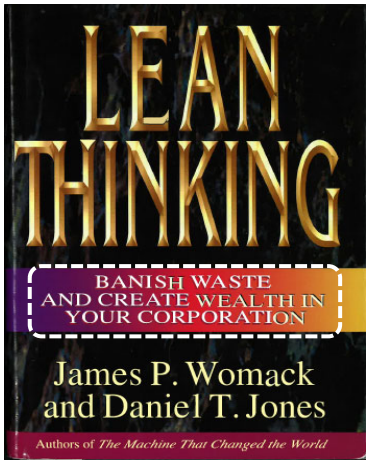
Lean Production & Lean Thinking



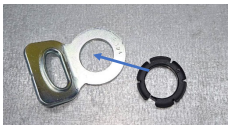
1996

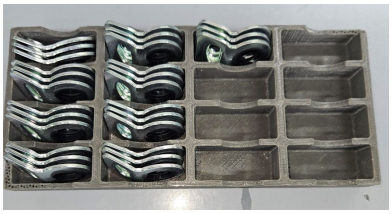
1. Specify ***Value*** (vs waste)
2. Identify the ***Value Stream***
3. Make the Value Stream ***Flow***
4. Let Customers ***Pull*** Value through the system
5. Relentlessly pursue ***Perfection***

What is the Value provided by your process?

- Who is the Customer?
- What do they want?
- How is this being provided currently?

1. Specify Value
Example – D13 Anchor Subassembly





Value to the finishing line customers is:
One returnable container with a Kanban for 96 pieces containing 2 trays;
each tray containing 48 pieces of anchor subassembly in orientation
Delivered to the rack in the components storage location

2. Identify th Value Stream
Example – D13 Anchor Subassembly

Finishing Lines

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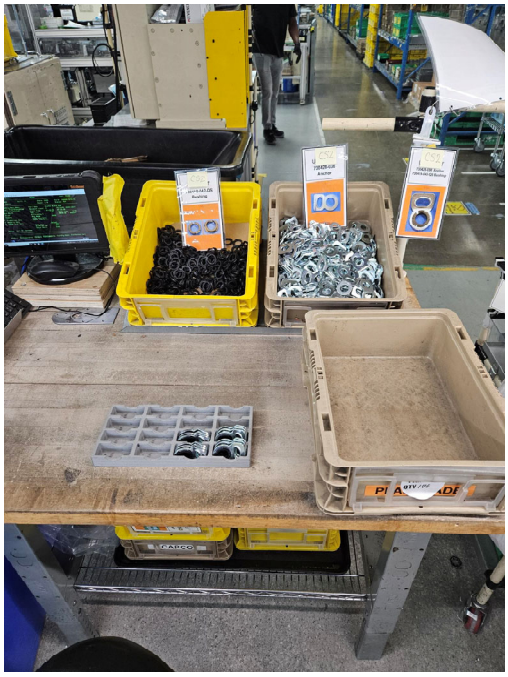
CS2



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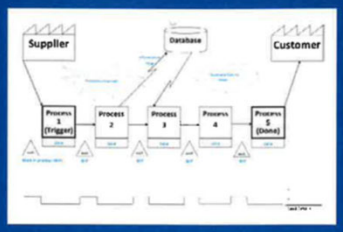
3. Make the Value Stream Flow

Source: *Insights on Why, When, and How Value-Stream Mapping is a Vital Part of Continuous Improvement*. Lean Enterprise Institute, 2022.

2/27/2025

Comparing Value-Stream and Process Mapping



	Value-Stream Mapping (VSM)	Process Mapping
What	• Shows the 'big picture' • Visualizes system flow from the customer's perspective • Depicts how all processes are linked • Includes both the material and information flow	• Focuses on a single step or operation • Visualizes the operation from the worker's perspective • Depicts the series of tasks needed to complete an operation • Includes every action, in detail, of every task
Why	• To optimize processes to improve the entire value stream, which avoids the risk of improving a process to the detriment of the value stream. • To identify where to start and prioritize improvements	• To tactically improve a specific operation
When	• Early in problem investigation	• When you need to analyze a specific point of concern within the value stream • When creating standardized work

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Flowcharts!

A flowchart is a picture of the separate steps of a process in sequential order, used to:

- Develop an understanding of how a process is done
- Study a process for improvement
- Communicate to others how a process is done or where improvement opportunity exists

Source: The Quality Toolbox, Second edition. ASQ

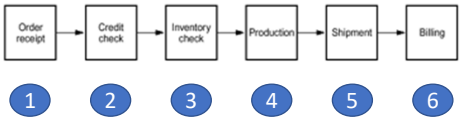
Flowchart Basic Procedure

1. Define the process to be diagrammed
2. Decide on the boundaries
   - Where does it start?
   - Where does it end?
3. Decide on the level of detail to be included
   - This may change and evolve with the exercise

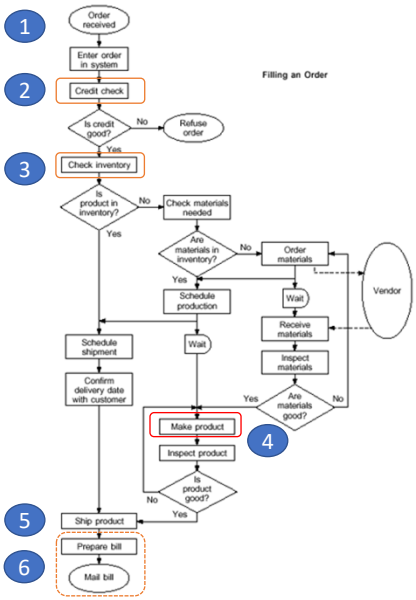
Source: The Quality Toolbox, Second edition. ASQ

Examples

1. High-Level Flowchart for an Order-Filling Process



2. Detailed Flowchart

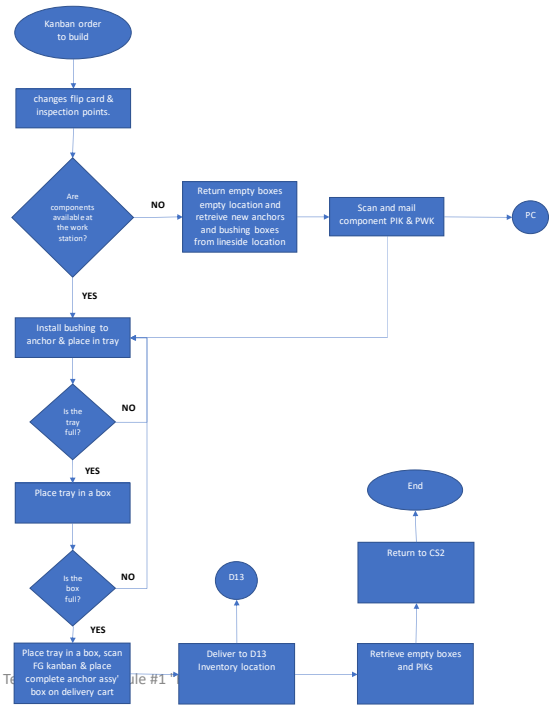


Source: The Quality Toolbox, Second edition. ASQ

Example – CS2

D13 Anchor Subassembly

Flowchart of the cycle to produce
one unit of value



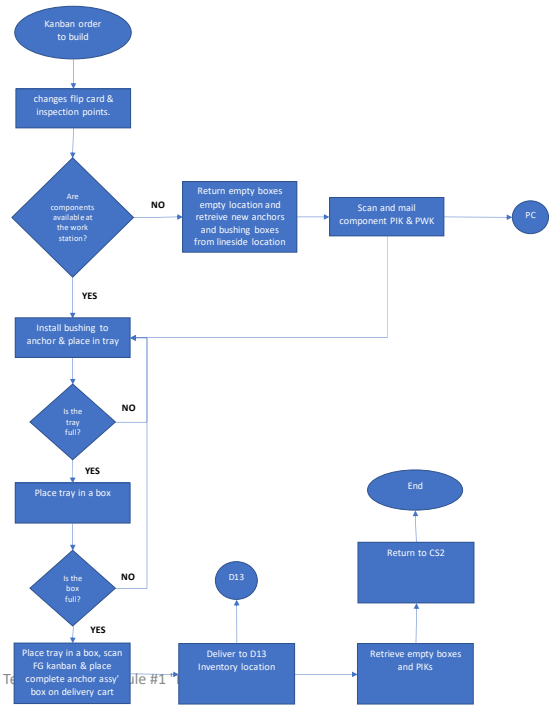
Measuring Flow

1. **Cycle Time**
   - The amount of **time** elapsed between entry and exit of a process
   - Unit of measure: *seconds, minutes*
   - ***Lead Time*** and ***Bottlenecks*** are specific cases of Cycle Times
2. **Throughput**
   - **Output** of a production process per unit of time
   - TH = number of good parts produced / time to produce
   - Unit of measure: *pieces per hour, pieces per minute*
3. **Yield**
   - **Ratio** of good product produced
   - Y = # of good parts produced / (# of good parts produced + scrap)
   - Unit of measure : *percentage*

Example – CS2

D13 Anchor Subassembly

Flowchart of the cycle to produce ***one unit of value***



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Example – CS2

D13 Anchor Subassembly

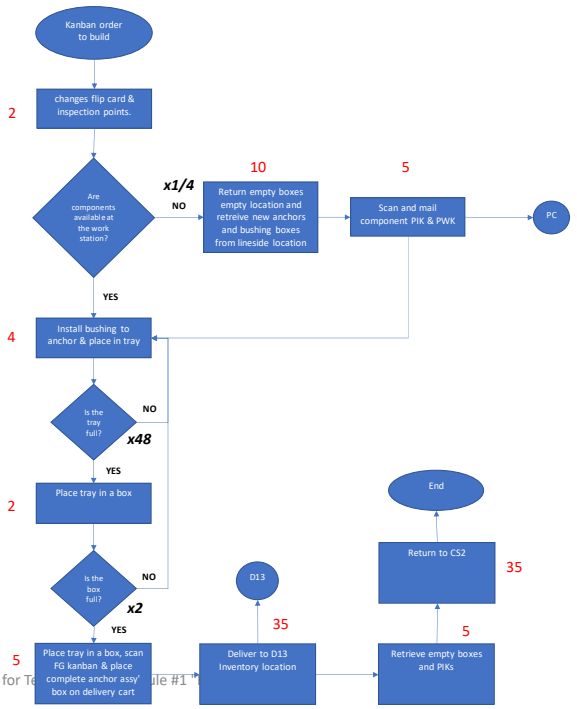
C.T.$_1$ =
2+10+5+4(48)+2+4(48)+2+5+35+5+35
= 485 seconds

C.T.$_2$ =
2+4(48)+2+4(48)+2+5+35+5+35
= 470 seconds

Wgt. Avg. C.T. = [C.T.$_1$ + 3(C.T.$_2$)] / 4
= 474 seconds or **7.9 minutes** (per box)

Throughput = **7.6 boxes per hour**

Yield = **100%**



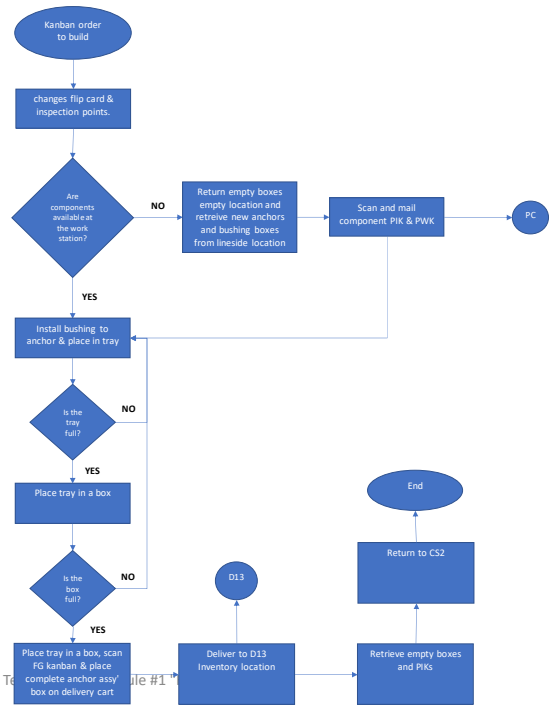
4. Let customers pull value through the system
Heijunka – "levelized production"

1. **TAKT**
   - Beat, pulse, rhythm, cadence
   - The maximum allowable **time** to produce each product to meet customer demand in a scheduled working period
   - TAKT = Available working time in period / demand within the period
   - Unit of measure: *seconds per piece, minutes per piece*

- *Takt time* depends on **Customer Demand** and planned working time within the same period.
- *Takt time* is **independent** of process specifics

Example – CS2

D13 Anchor Subassembly



Example – CS2

D13 Anchor Subassembly

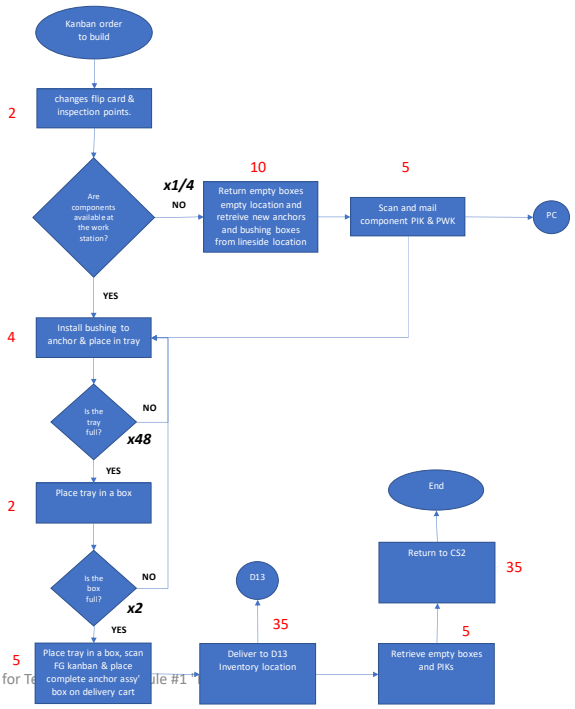
C.T.$_{WA}$ =474 s or **7.9 minutes** (per box)

Calculate Takt Time

Customer Demand = 14,000 pcs per day (2 shifts/day)

Demand = 7,000/shift or 73 boxes /shift
Working Time = 437 minutes per shift

Takt Time = 437 min / 73 boxes
= **6 minutes** (per box)

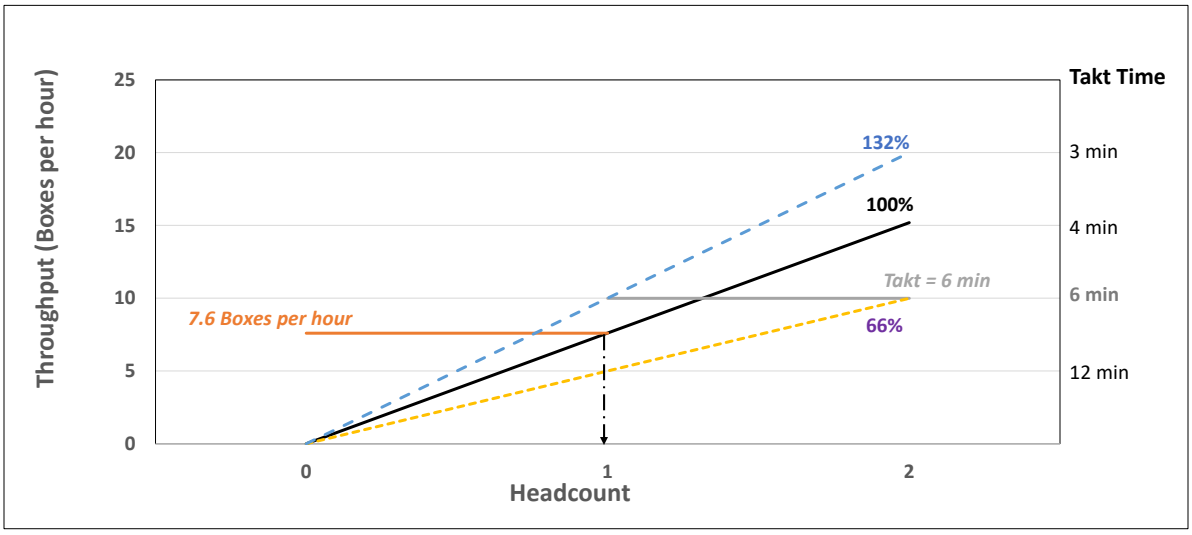


TRQSS

Group Exercise
What is the problem?
How to address?

TRQSS

Heijunka – Takt and Flow relationships



TRQSS

On line

TRQSS

Standardized Work

Defining Normal – a mental model of what is supposed to be happening

Smooth flow to takt time

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Decoding the DNA of TPS

Rule 1: All work shall be highly specified as to content, sequence, timing, and outcome.

Rule 2: Every customer-supplier connection must be direct, and there must be an unambiguous yes-or-no way to send requests and receive responses.

Rule 3: The pathway for every product and service must be simple and direct.

Rule 4: Any improvement must be made in accordance with the scientific method, under the guidance of a teacher, at the lowest possible level in the organization.

1999 HBR

TRQSS

Creating Standardized Work = Defining "Normal"

Cell # or Area: Rev.

TRQSS **Job Instruction Breakdown Sheet**

Operation:
Customers
Tools and Materials:
Purpose:

Important Steps	Key Points	Reasons
A logical segment of the operation when something happens to advance the work.	Anything in a step that might - 1) Make or break the job 2) Injure the worker 3) Make the work easier to do (ex. Trick, knack, special timing, any additional information to make the job easier)	Reasons for the key points

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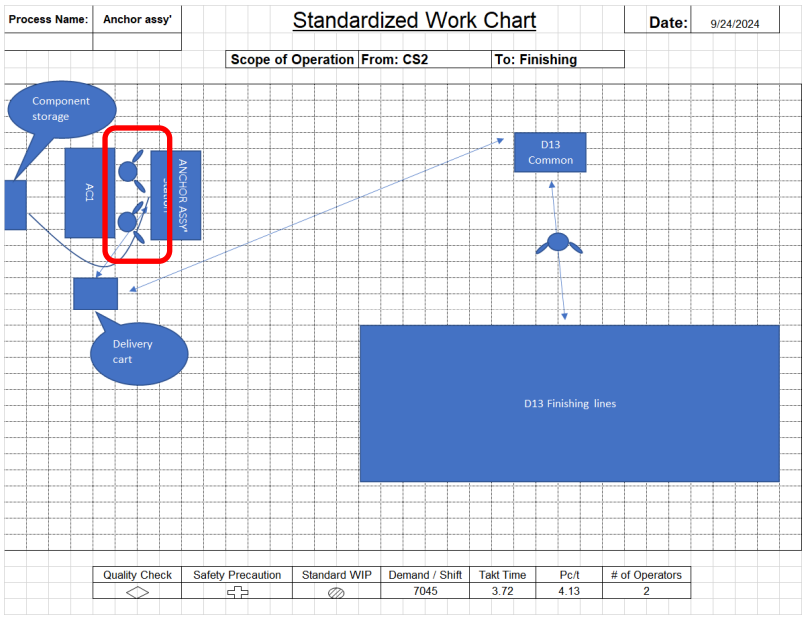
TRQSS



TRQSS

Example – CS2

D13 Anchor Subassembly

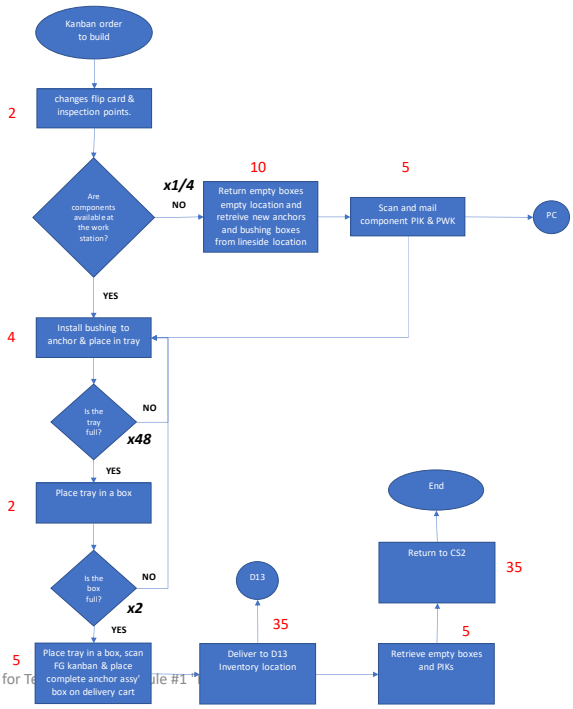
C.T.$_1$ =
2+10+5+4(48)+2+4(48)+2+5+35+5+35
= 485 seconds

C.T.$_2$ =
2+4(48)+2+4(48)+2+5+35+5+35
= 470 seconds

Wgt. Avg. C.T. = [C.T.$_1$ + 3(C.T.$_2$)] / 4
= 474 seconds or **7.9 minutes** (per box)

Throughput = **7.6 boxes per hour**

Yield = **100%**



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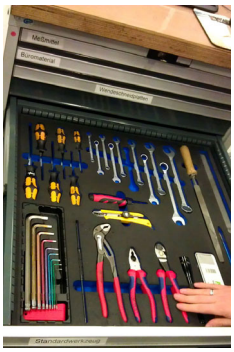
5S – What Comes to Mind?



Lost in Translation

In Japanese…	**In English…**
1. Seiri	1. Sort
2. Seiton	2. Straighten
3. Seiso	3. Shine
4. Seiketsu	4. Standardize
5. Shitsuke	5. Sustain

"Organize"

"2S Needs to Improve!"

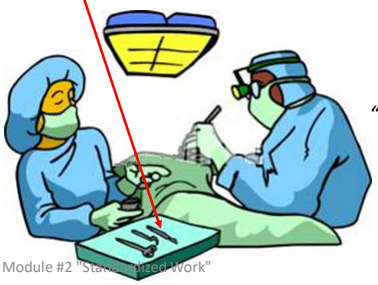
2S – A Specific Kind of Organizing *Before Cleaning*

1. SORT

"Required" → Often ↔ Seldom

"NOT Required"

2. STRAIGHTEN

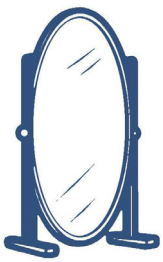


"Operator as Surgeon"

2S Condition & Standardized Work

Standardized Work

1. NORMAL vs ABNORMAL
   - Important Steps
   - Key Points
   - Reasons
2. SMOOTH FLOW to TAKT TIME
   - Safety
   - Quality
   - Productivity



2S Condition

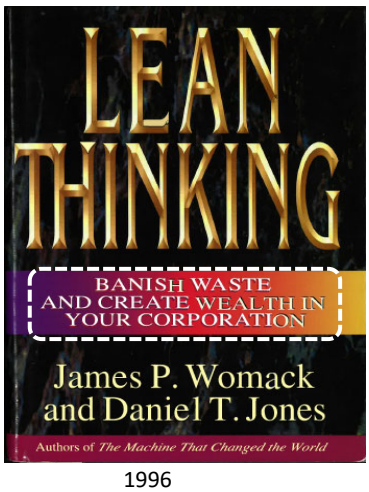
1. SORT – Identify what is needed and the frequency of use
2. STRAIGHTEN – Arrange needed tools and materials to optimize smooth flow

1. 2S Condition is a reflection of Standardized Work
2. To maintain good 2S, Focus on Standardized Work!

Kaizen

Continuous Improvement

Lean Production & Lean Thinking



1996

1. Specify ***Value*** (vs waste)
2. Identify the ***Value Stream***
3. Make the Value Stream ***Flow***
4. Let Customers ***Pull*** Value through the system
5. Relentlessly pursue ***Perfection***

Decoding the DNA of TPS

Rule 1: All work shall be highly specified as to content, sequence, timing, and outcome.

Rule 2: Every customer-supplier connection must be direct, and there must be an unambiguous yes-or-no way to send requests and receive responses.

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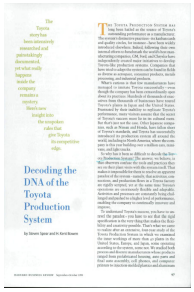
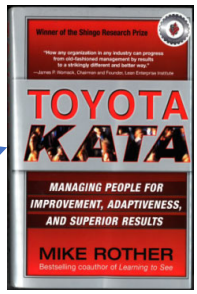
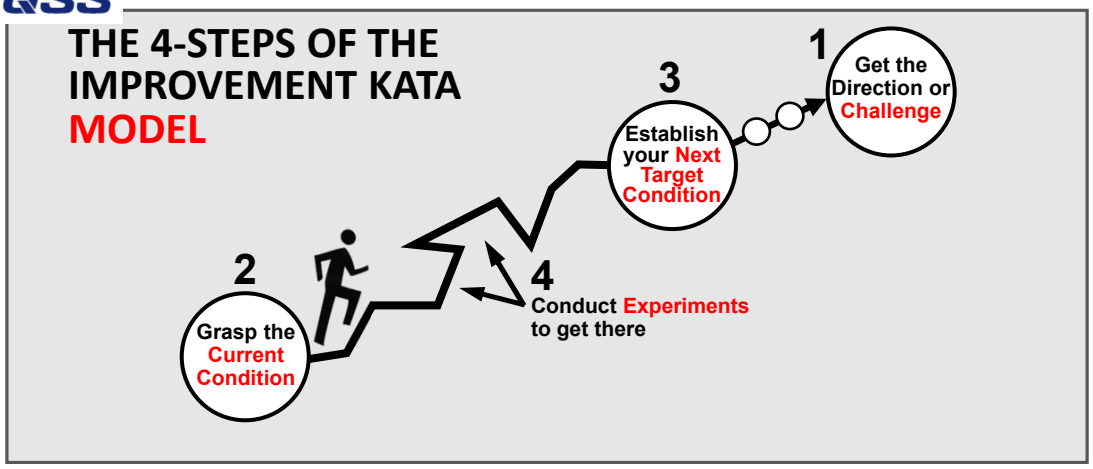


1999 HBR



2010

THE 4-STEPS OF THE IMPROVEMENT KATA MODEL



The model we used to explain our findings resembles other creative and scientific models, such as:

Systems thinking, critical thinking, learning organization, design thinking, creative thinking, solution-focused practice, preferred futuring, skills of inquiry, evidence-based learning

Source: Mike Rother (2015) *The Challenge of Developing Lean Management*

Kata = Practice Routine

COACHING KATA

The Five Questions

1) What is the **Target Condition**?
2) What is the **Actual Condition** now?
---------- *(Turn Card Over)* ---------->
3) What **Obstacles** do you think are preventing you from reaching the target condition? Which *one* are you addressing now?
4) What is your **Next Step**? (Next experiment) What do you expect?
5) How quickly can we find out what we **Have Learned** from taking that step?

*You'll often work on the same obstacle with several experiments

Reflect on the Last Step Taken

Because you don't actually know what the result of a step will be!

1) What did you plan as your **Last Step?**
2) What did you **Expect?**
3) What **Actually Happened?**
4) What did you **Learn?**

----------> *Return to question 3*

Source: Rother (2010) Toyota Kata

Activity

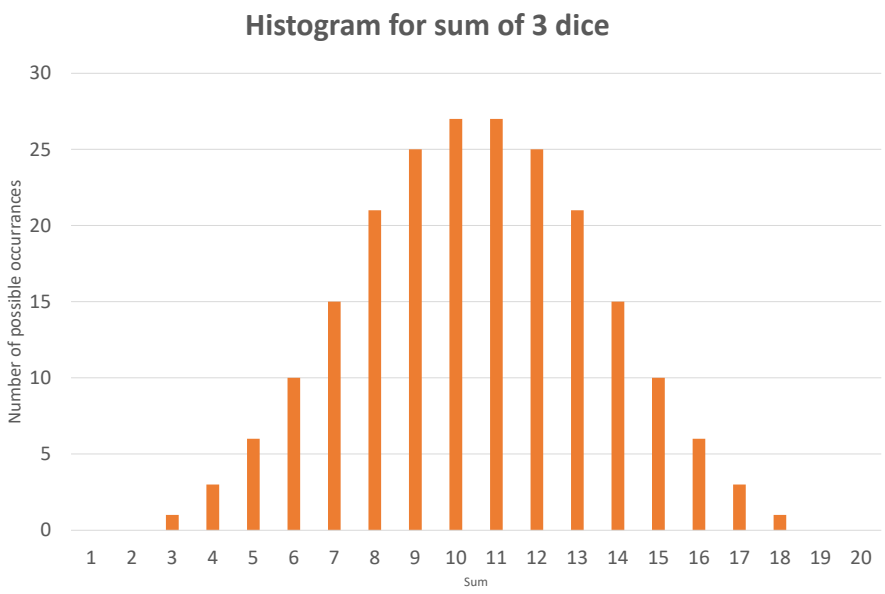
THE DICE EXPERIMENT

- **I'll roll a die three (3) times and sum the numbers.**
- **The sum will be a number between 3 and 18.**

Before I roll, please write down:

What will be the sum of the 3 rolls?

Source: Mike Rother (2015) *The Challenge of Developing Lean Management*



QUESTION #2

2, 4, 6, 8, 10, 12, ?

What will be the next number in this series?

Please write down your answer

Source: Mike Rother (2015) *The Challenge of Developing Lean Management*

TRQSS

ANSWER

2, 4, 6, 8, 10, 12, 2

Those of you who wrote down the incorrect number...

How do you feel this time?

Source: Mike Rother (2015) *The Challenge of Developing Lean Management*

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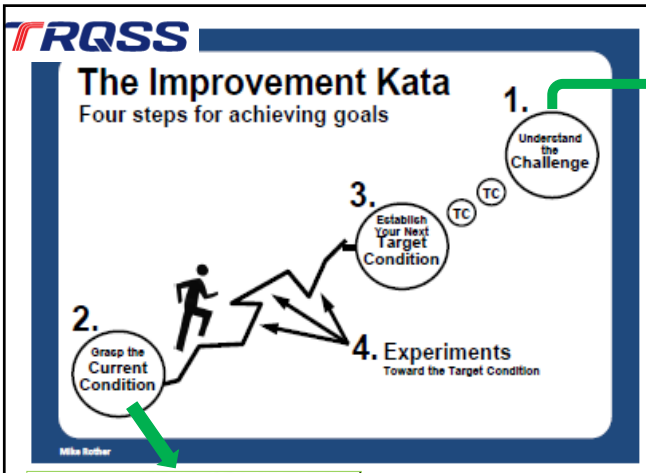
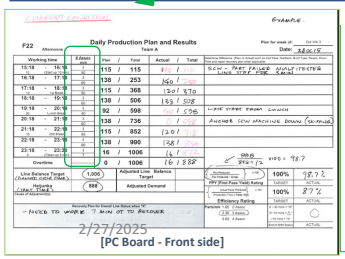
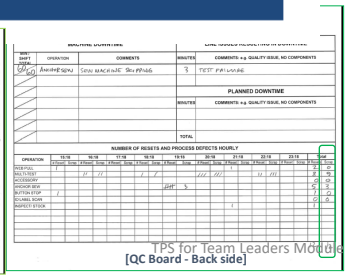


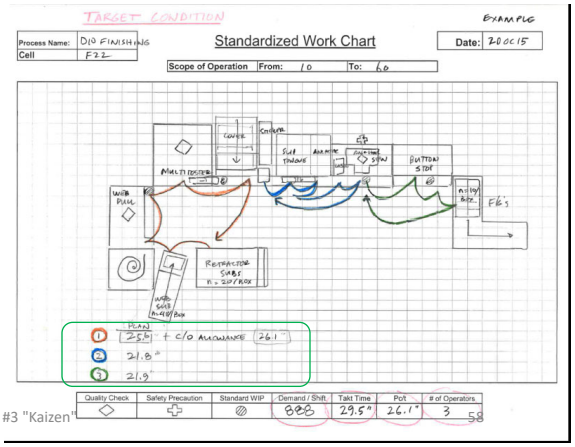
- Highest Quality
- Lowest Cost
- Shortest Lead Time



[PC Board - Front side]



[QC Board - Back side]



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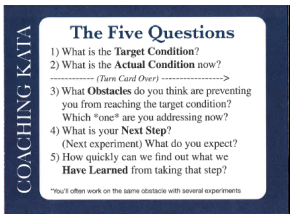
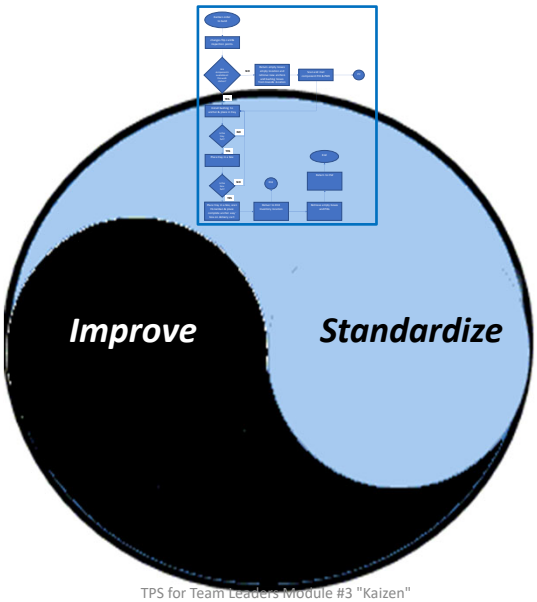
Purpose ➔ Supervisor led Non event based CI!





TRQSS Job Instruction Breakdown Sheet

Operation: AF1 - 10 Wire Routing to Lower Buckle Cover - M.R. Switch Only
Parts: Wire Harness Assembly, Lower Buckle Cover
Tools and Materials: Lower Buckle Cover Fixture
Function: Switch detects latch position in the event of a vehicle accident

Important Steps	Key Points	Reasons
A logical segment of the operation when something happens to advance the work.	Anything in a step that might - 1) Make or break the job 2) Injure the worker 3) Make the work easier to do [ex. Trick, knack, special timing, any additional information to make the job easier]	Reasons for the key points
Load cover into fixture	1. Channel to the right	1. Correct orientation
Insert switch to cover	1. Insert switch tab into cutout 2. Snap switch to cover	1 & 2. Switch held securely in place
Route wire	1. Gray wire on top 2. Pull down tight	1. Gray wire thicker and holds wires in channel 2. Secures wire from coming out
Check Switch	1. Flick	1. Switch springs back and working properly
Load to magazine	1. Cover back to the right	1. Proper part presentation for next operation

First Trial…

APRIL 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4

Week #1 — Classroom Session 1- SW; Classroom Session 2 - Heijunka; Classroom Session 3 - Kaizen

Week #2 — *Document process, identify opportunity, next target, experiment*

Week #3 — *← Presentations and Peer Review →*; Feedback Friday!

Second Trial…

Sun	Mon	Tue	Wed	Thu	Fri	Sat
22	23 **Group 1-1** ***Heijunka***	24	25	26	27	28
29	30 **Group 1-2** **Standardized Work**	1	2	3	4	5
6	7 **Group 1-3** **Kaizen**	8 **Group 2-1** ***Heijunka***	9	10	12	12
13	14	15	16 **Group 2-2** **SW**	17	18	19
20	21	22	23	24 **Group 2-3** **Kaizen**	25	26
27	28	29	31	1	2	3

Practical assignment #1

Practical assignment #2

Practical assignment #3

October 2024

Conclusions / Takeaways

1. Strategic Purpose is to develop:
   - An organizational capability of problem solving and adaptability
   - A culture of Continuous Improvement and Learning
   - An environment for future innovation

→ ***We need to constantly identify and be working on the right problems!***

2. Develop TPS Foundational elements at T/L level – ***in order***
   1. *Heijunka*
   2. Standardized Work
   3. Kaizen
3. To understand *Heijunka*, Focus on FLOW
   1. ALL work is a process; all processes must flow
   2. Process flow can be depicted by a Flow Chart
      - Flow can be measured and quantified
      - *Heijunka* – compare required flow with actual flow

TRQSS

Lessons learned – scalable Problem Solving

- Flow charts provide Team Leaders with a mental model for what is supposed to be happening
  - Easy to see problems
  - Identify Standardized Work requirements
  - Facilitate Root Cause Analysis – *what isn't happening, and why?*
  - Understand current condition – *what could be better? How?*
- Flow charts depict logic systems
  - TPS – Yes/No unambiguity
  - Machine Controls

TRQSS

Questions and Discussion