PathStone Group

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Standard Work

Agenda

1. Standard Work: What is it ?
2. Standard Work purpose and benefits
3. Implementation (Key elements):
   a) Takt Time
   b) Work Sequence
   c) Standard WIP
4. Takeaways

Introduction

What is it ?

Standard work is the **safest**, **easiest** and most **waste-free way** of doing a job that we currently know.

It is developed and owned by operators, team leaders and supervisors working together.

It provides a **baseline for future improvements**.

Introduction

Purpose and Benefits

- Establishes a **baseline** and **mindset** for improvement
- Provides **direction** and **measurement** materials for management and supervisors
- Establishes **guidance** and **standards** for worker performance and supervision — person to person, team to team, facility to facility
- **Teaches** observation skills and their impact on improvement solutions

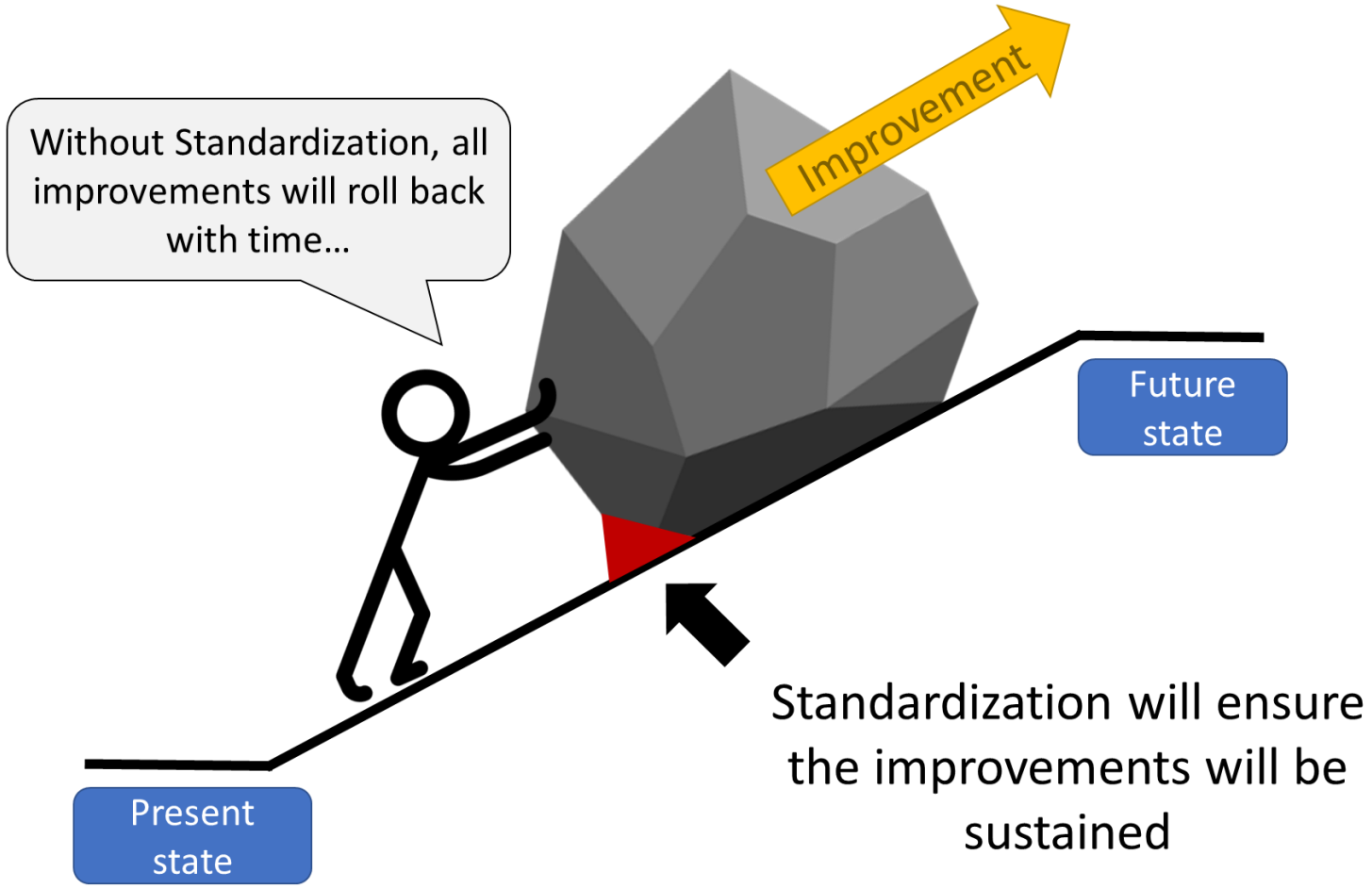
Introduction

Purpose and Benefits

- Synchronizes work **procedures** and **improvement activities**
- Clarifies criteria for building **quality** and **safety** into each process
- Explains the **optimal way** to proceed under current working conditions
- Provides **tools for supervisors** to apply standards and manage work comprehensively
- Builds tenets for **judging** normality or abnormality in the way of work

Standard Work

A representation of Standard Work



Standardization will ensure the improvements will be sustained

Standard Work

Where there is no standard, there is no Kaizen.

This is true because variation, which invites defects and errors, continues to thrive in an environment where no standard is followed.

Standard Work

Standard Work is about the following:

1. Standard Work defines **WHAT** steps and the sequence they should be carried-out

2. Standard Work defines **HOW** those steps should be carried-out

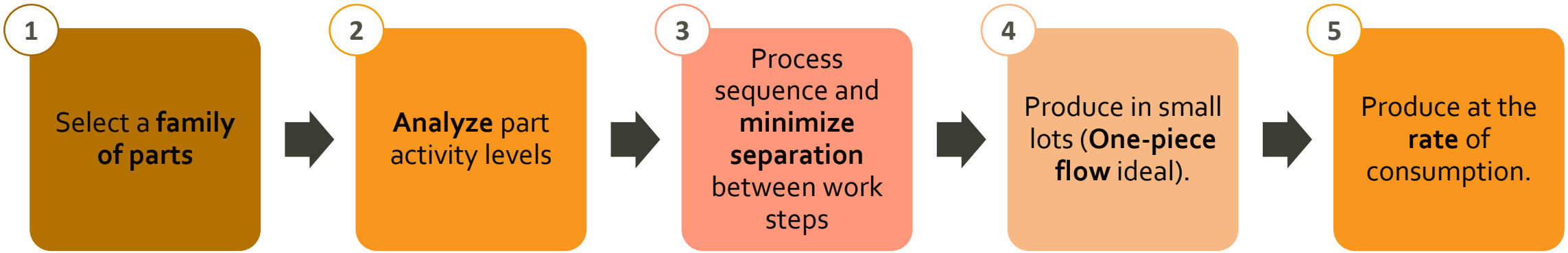
Standard Work

Standard Work is NOT about the following:

1. Most people assume it means simply **documenting** the work.
2. A documented process seems **too rigid**.
3. Standard work only **applies to workers**, not managers.
4. Implementation is a **one-time effort**. Once standard work is setup.

Standard Work

Implementation:



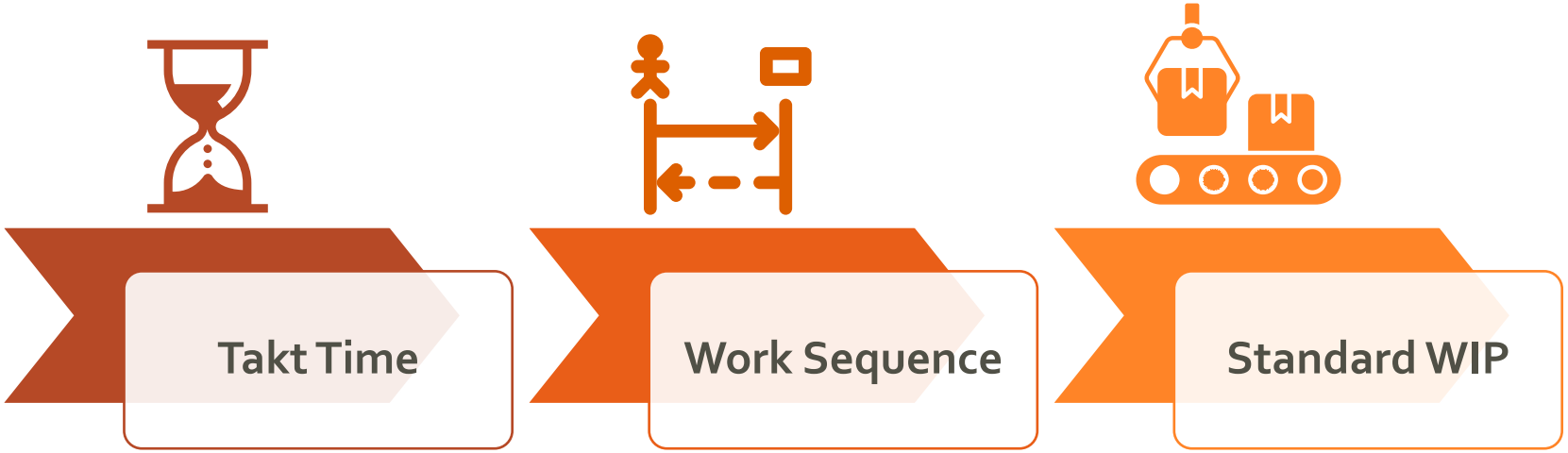
Standard Work

Implementation:

a. Define process characteristics and **improvement target** – takt time / run rate to be achieved.
b. Observe process to **identify** basic process flow, work responsibilities, process wastes, etc.
c. Create standard work **diagram.**
d. Define operator **cycle times**, summarize current work content and balance
e. Analyze and improve **work balance**
f. Document standard work
g. Review with operators and pilot new approach

Standard Work

Key Elements:



Is the **cycle time** for the production of a product to respond to market **demand**?

Tasks that are sequenced and **represent the best** and safest way to perform the job.

Minimum amount of stock that should be maintained to ensure production **without downtimes** and with a **continuous flow**.

Standard Work

First Element: Standard Takt Time

Takt time is the **rate at which we need to complete a product** to meet customer demand (aka production schedule).

$$\textbf{Takt Time} = \frac{Available\ Production\ Time}{Units\ in\ Demand}$$

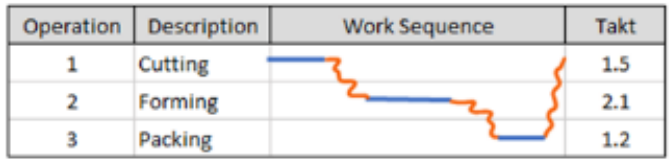
Standard Work

Second Element: Standard Work Sequence

The **specific order in which an operator (or operators) perform the steps of the process** for one part.

The goal is to be able to separate the worker from the machine and provide flexibility to share steps or change workload to meet changing demand.

Work Sequence



Operation	Description	Work Sequence	Takt
1	Cutting		1.5
2	Forming		2.1
3	Packing		1.2

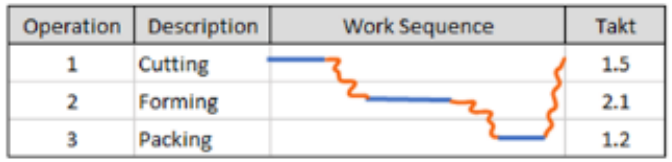
Standard Work

Second Element: Standard Work Sequence

1. **Observe** job and define work steps.
2. **Record** work tasks on the Work Sequence and Time Sheet.
3. **Time several cycles** of the job to get a fair representation of times. and task difficulties
4. While defining work sequence, record work done and other relevant information, such as:

    - Walk time and distance, operator delays, ergonomic issues
    - Machine cycle times (no operator time required)
    - Periodic operator activities, such as tool change, getting material

Work Sequence



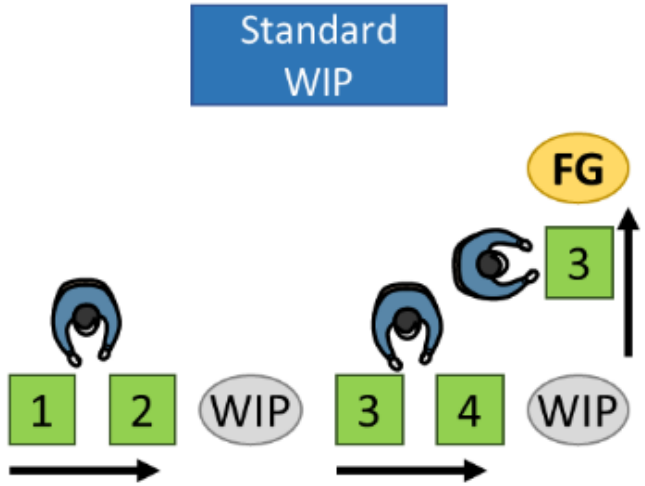
Operation	Description	Work Sequence	Takt
1	Cutting		1.5
2	Forming		2.1
3	Packing		1.2

Standard Work

Third Element: Standard Work Sequence

The **specific order in which an operator (or operators) performs the steps of the process** for one part.

The goal is to be able to separate the worker from the machine and provide flexibility to share steps or change workload to meet changing demand.



Standard Work

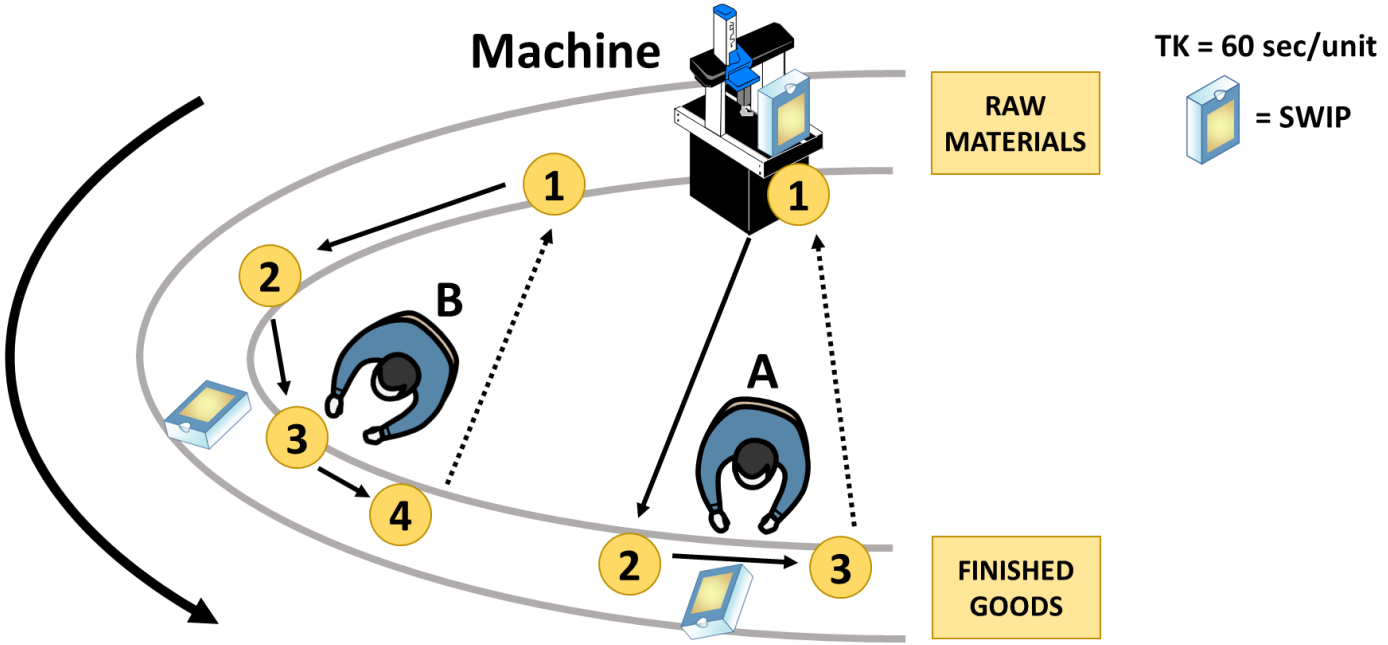
Third Element: Standard Work Sequence

1) Determine Crew Size (Manual operation)
2) Automatic machine operations
3) Non-machine automatic operations

$$\boldsymbol{SWIP_{manual\ op}} = Crew\ size\ x\ 1\frac{piece}{operator}$$

Standard Work

SWIP and Product flow in an automatic machine operation.

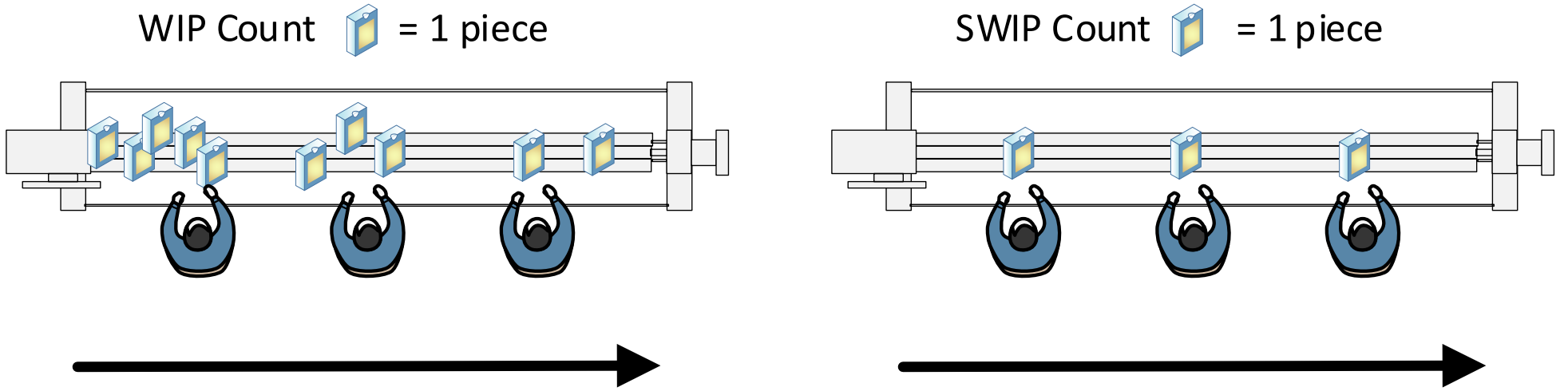


CYCLE TIMES

OPERATOR A	OPERATOR B	MACHINE	TOTAL
56 SEC/UNIT	55 SEC/UNIT	49 SEC/UNIT	160 SEC/UNIT

Standard Work

WIP-to-SWIP Ratio



$$\boldsymbol{WIP - to - SWIP\ Ratio} = \frac{WIP}{SWIP}$$

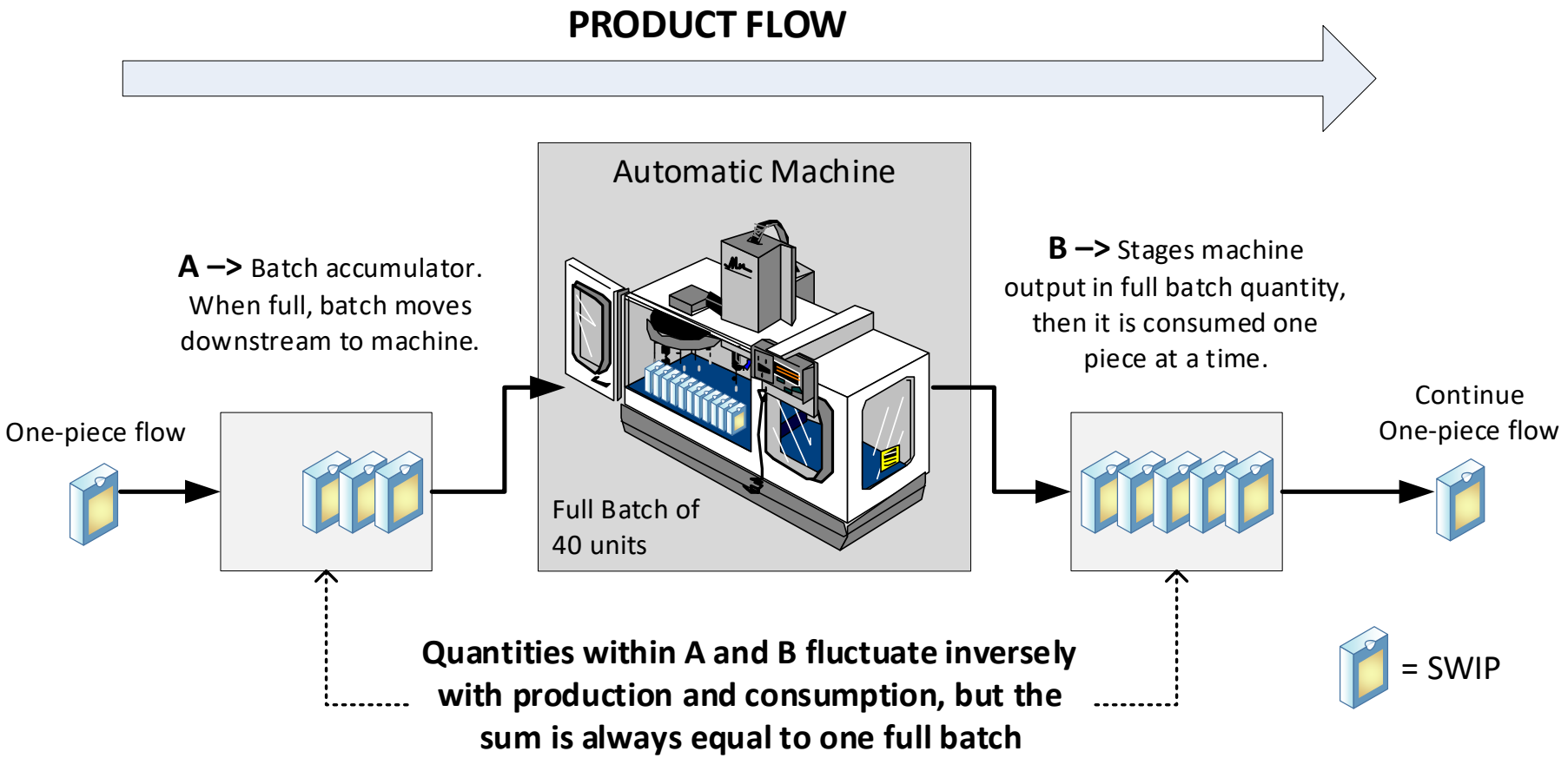
Where:

WIP = Work-in-progress inventory count (units)

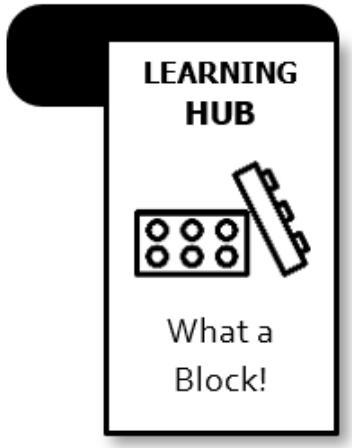
SWIP = Standard Work-in-progress as per the Standard Work (units)

Standard Work

SWIP and Product flow in an automatic machine operation.



What a Block !



Block Construction Line

Standard Work Instructions & Layout

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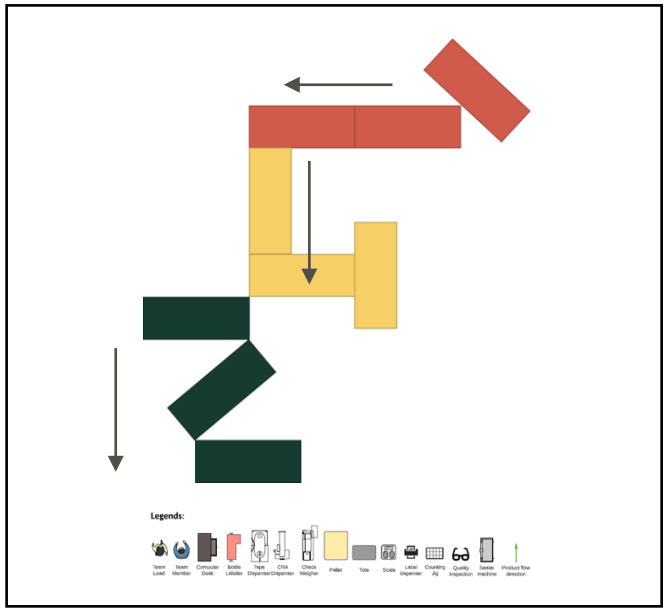
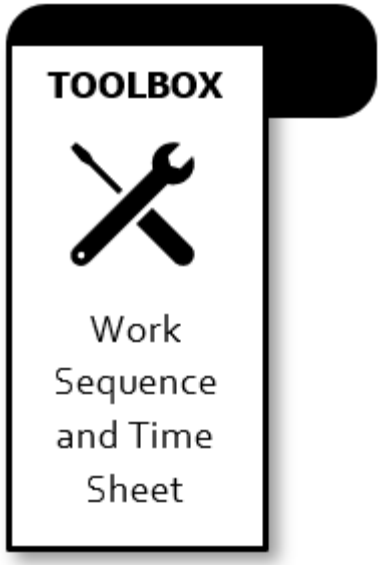


INSTRUCITION	PERSON	UNITS/MIN
1. Two block side by side 2. One Block 45 3. Lay on right side		3
1. Vertical Block 2. Place under Red block 3. Horizontal block 4. Vertical block at end centered		3
1. Horizontal block at corner 2. 45 block touching edge 3. Horizontal block at edge		3
SOP ## / SAFETY / QUALITY		3



Work Sequence and Time Sheet

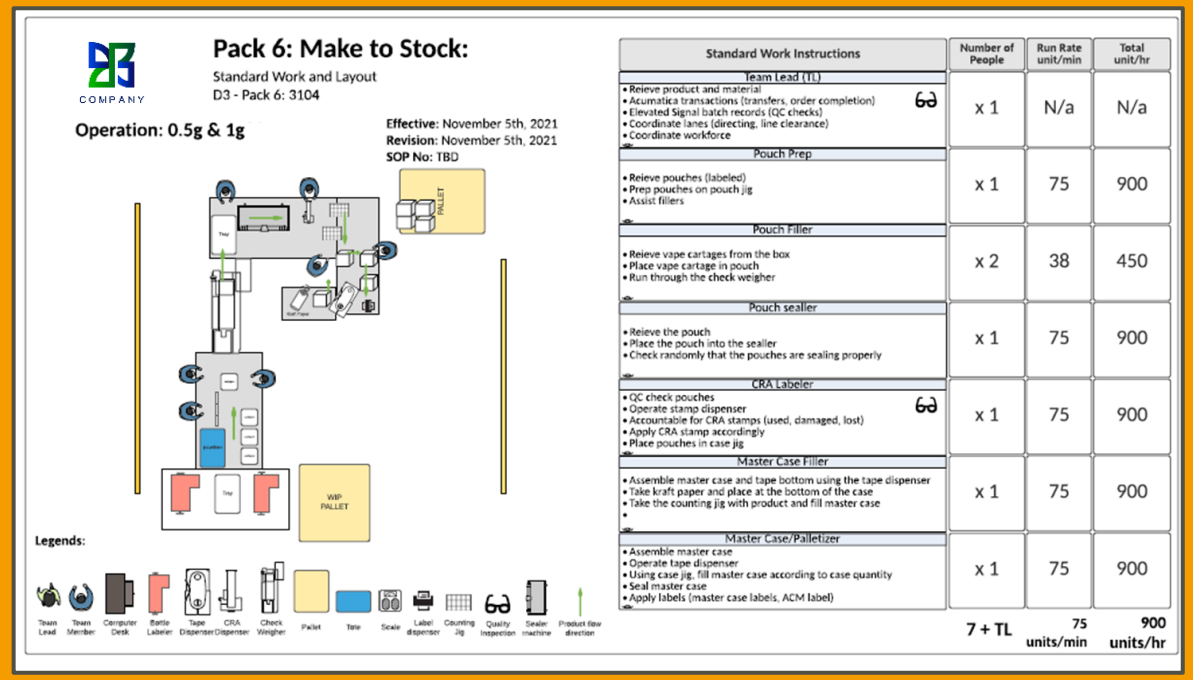
Work Sequence and Time Sheet

Plant:	D34 Drill assembly									Part Name:	n/a
Dept.:	Area 342	Operation:	Motor Insertion							Part #:	n/a
Step	Task Component	Observation Number								Assigned component time	Remarks
		1	2	3	4	5	6	7	8		
1	PU Bolt spring	2.0	3.0	2.0	4.0					2.75	
		2.0	3.0	2.0	4.0						
2	Fixure N3466 incorporation	3.9	5.0	5.0	6.0					2.23	From opening box to line fixures input
		1.9	2.0	3.0	2.0						
3	Baple plate positioning	6.1	7.0	8.0	9.0					2.55	
		2.2	2.0	3.0	3.0						
4	Machine drilling assembly	7.0	8.0	9.0	10.0					0.98	
		0.9	1.0	1.0	1.0						
5	Unload cable connection	7.5	9.0	9.5	11.0					0.75	From display container
		0.5	1.0	0.5	1.0						
6	Closing and boxing assemmbly	8.0	10.0	12.0	11.5					1.13	
		0.5	1.0	2.5	0.5						
7										-	
8										-	
9										-	
10										-	
	Cycle Time	8.0	10.0	12.0	11.5	-	-	-	-	10.38	

TOOLBOX

SWI Template

Standard Work Instructions Template



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Pack 6: Make to Stock:

Standard Work and Layout
D3 - Pack 6: 3104

Operation: 0.5g & 1g

Effective: November 5th, 2021
Revision: November 5th, 2021
SOP No: TBD

Legends:

Team Lead, Team Member, Computer Desk, Bottle Labeler, Tape Dispenser, CRA Dispenser, Check Weigher, Pallet, Tote, Scale, Label dispenser, Counting Jig, Quality Inspection, Sealer machine, Product flow direction

Standard Work Instructions	Number of People	Run Rate unit/min	Total unit/hr
Team Lead (TL) • Relieve product and material • Acumatica transactions (transfers, order completion) • Elevated Signal batch records (QC checks) • Coordinate lanes (directing, line clearance) • Coordinate workforce	x 1	N/a	N/a
Pouch Prep • Relieve pouches (labeled) • Prep pouches on pouch jig • Assist fillers	x 1	75	900
Pouch Filler • Relieve vape cartages from the box • Place vape cartage in pouch • Run through the check weigher	x 2	38	450
Pouch sealer • Relieve the pouch • Place the pouch into the sealler • Check randomly that the pouches are sealing properly	x 1	75	900
CRA Labeler • QC check pouches • Operate stamp dispenser • Accountable for CRA stamps (used, damaged, lost) • Apply CRA stamp accordingly • Place pouches in case jig	x 1	75	900
Master Case Filler • Assemble master case and tape bottom using the tape dispenser • Take kraft paper and place at the bottom of the case • Take the counting jig with product and fill master case •	x 1	75	900
Master Case/Palletizer • Assemble master case • Operate tape dispenser • Using case jig, fill master case according to case quantity • Seal master case • Apply labels (master case labels, ACM label)	x 1	75	900
	7 + TL	**75 units/min**	**900 units/hr**

Takeaways

- Taiichi Ohno said:

  "Work can never be standardized based only upon your ideas and demands without validating facts on the shop floor. Focus on one problem at a time and try to accomplish continuous improvement no matter how small it may be. This is how you can collect useful clues as to what standard work should be".

- Complement Standard Work with Process Observation and Line Balancing.
- Do not look for the perfect Standard Work, improve it as the opportunities come, they will come.

Thank You

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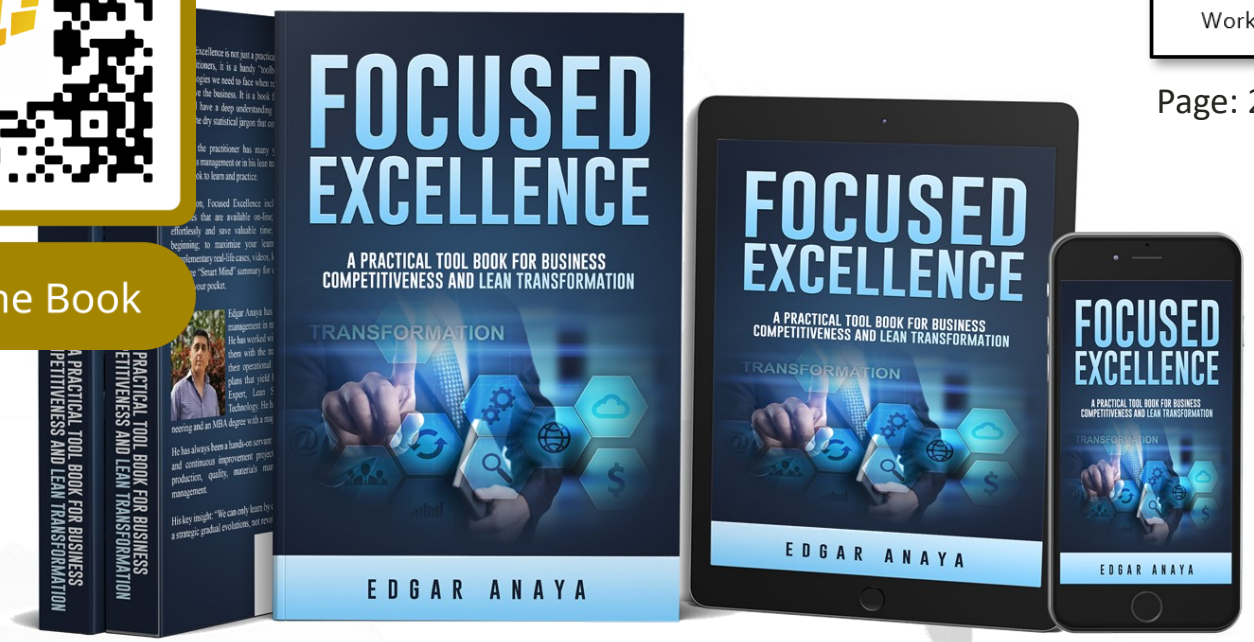
Get the Book



TOPIC

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Reference: Focused Excellence by Edgar Anaya

A Practical Tool Book for **Business Competitiveness** and **Lean Transformation**