



# Product and Process Controls

## ? What is It

**Production flow** metrics are specific metrics that measure and evaluate process flows. **Standard Work** is the Safest, easiest and most waste-free way of doing a job. It provides a baseline for future improvements. **Statistical Process Control** is a data-driven method for monitoring and improving quality in manufacturing.

## Goals

## When

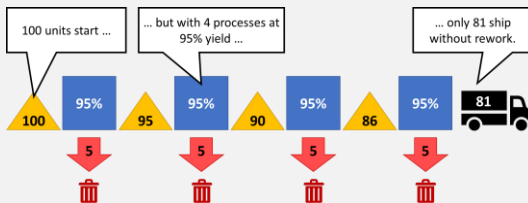
- To predict process performance.
- To detect the major sources of losses in operations.

- Enhance operational effectiveness.
- Predict outcomes if the process is in control.
- Provide a leading indicator for measuring daily operations.

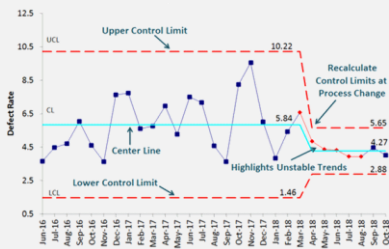
## How

### Overall Equipment Effectiveness

### Throughput Yield



### Statistical Process Controls



TEEP	All Available time (24 hrs – 365 days a year)	
OOE	Total operations time (Regular "Shift time" available)	
Availability	Potential production time (Actual planned "Shift time")	Unscheduled time Equipment taken out of operation during operation time No shift planned for production
	Actual production time (Machine running)	Time losses: Breakdowns Changeovers Line restraint
Performance	Theoretical output (Running time x theoretical speed)	Effectiveness losses
	Actual output	Speed losses: Minor Stoppages Reduced speed
Quality	Actual output	Quality losses: Scrap Out of spec Rework
	Good product	

OVERALL EQUIPMENT EFFECTIVENESS

## Hints

- Throughput Yield gives a complete picture of how poor quality affects the day-to-day operation.
- Implement **Standard Work** with a **Process Observation** and **Line Balancing**.
- Focus first on having the process "in control". Reduce special cause variation.

## Standard Work and Process Monitoring

Pack 5: Flower (One Piece Flow)			
Standard Work Instructions	Number of People	Run time (min)	Total (min)
1. Prepare work area and materials.	1	N/A	N/A
2. Prepare work area and materials.	1	N/A	N/A
3. Prepare work area and materials.	1	N/A	N/A
4. Prepare work area and materials.	1	N/A	N/A
5. Prepare work area and materials.	1	N/A	N/A
6. Prepare work area and materials.	1	N/A	N/A
7. Prepare work area and materials.	1	N/A	N/A
8. Prepare work area and materials.	1	N/A	N/A
9. Prepare work area and materials.	1	N/A	N/A
10. Prepare work area and materials.	1	N/A	N/A
11. Prepare work area and materials.	1	N/A	N/A
12. Prepare work area and materials.	1	N/A	N/A
13. Prepare work area and materials.	1	N/A	N/A
14. Prepare work area and materials.	1	N/A	N/A
15. Prepare work area and materials.	1	N/A	N/A
16. Prepare work area and materials.	1	N/A	N/A
17. Prepare work area and materials.	1	N/A	N/A
18. Prepare work area and materials.	1	N/A	N/A
19. Prepare work area and materials.	1	N/A	N/A
20. Prepare work area and materials.	1	N/A	N/A
21. Prepare work area and materials.	1	N/A	N/A
22. Prepare work area and materials.	1	N/A	N/A
23. Prepare work area and materials.	1	N/A	N/A
24. Prepare work area and materials.	1	N/A	N/A
25. Prepare work area and materials.	1	N/A	N/A
26. Prepare work area and materials.	1	N/A	N/A
27. Prepare work area and materials.	1	N/A	N/A
28. Prepare work area and materials.	1	N/A	N/A
29. Prepare work area and materials.	1	N/A	N/A
30. Prepare work area and materials.	1	N/A	N/A
31. Prepare work area and materials.	1	N/A	N/A
32. Prepare work area and materials.	1	N/A	N/A
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91. Prepare work area and materials.	1	N/A	N/A
92. Prepare work area and materials.	1	N/A	N/A
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95. Prepare work area and materials.	1	N/A	N/A
96. Prepare work area and materials.	1	N/A	N/A
97. Prepare work area and materials.	1	N/A	N/A
98. Prepare work area and materials.	1	N/A	N/A
99. Prepare work area and materials.	1	N/A	N/A
100. Prepare work area and materials.	1	N/A	N/A

