

TPM Micro Focused Equipment & Process Improvement



June 2014

AstraZeneca Waste Reduction Micro FE & PI on Line 360/2



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Introduction to AstraZeneca Plant



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Overview



Topic	Sub-Topic	Presenter
Team Formation	Team Setup Team Mandate Current Team Status	Vasu Naiker
As-Is Situation	Process Map Analysis/ SIPOC Baseline Analysis Quick Wins Identified Operator Survey Ratings/ Comments	Steven Mills Vasu Naiker & Diana Cajumban Veqhar Mohammed
Improvement Plan	Brainstorming /RCA Proposed Actions Project Savings /Expected Outcomes	Colin Fozard James Jiang Elaine Graham
Challenges & Learning's	Parking Lot Items Learning's To Date	Vasu Naiker



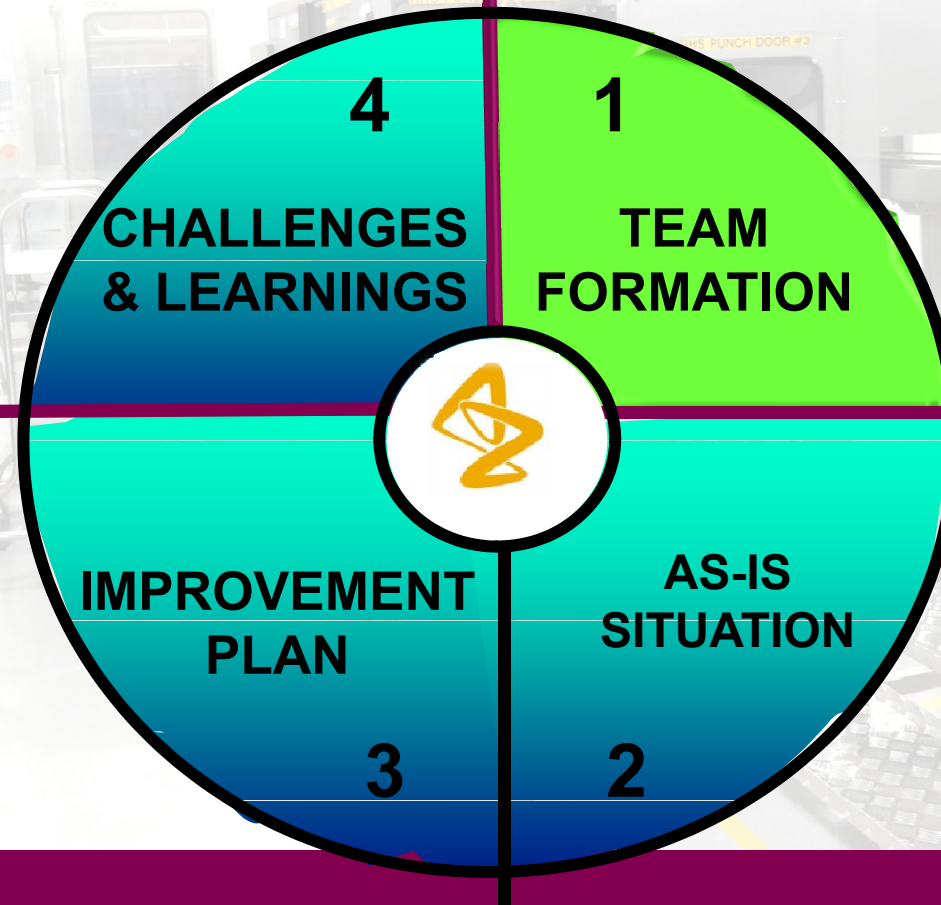
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Introduction to Team Reject Vampires

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Roles	Team Member Responsible	Back -up Team Member
Prepare Agenda and Update Task List (Team Leader)	Vasu Naiker	Steven Mills
Record Team Discussion (Assistant Team Leader)	Steven Mills	Veqhar Mohammed
Update Attendance & Schedule Sheet	Diana Cajumban	Veqhar Mohammed
Update History Sheet	Veqhar Mohammed	Glenn Peiris
Update Parking Lot Sheet	Glenn Peiris	Ross Gardner
Ensure Agreed Measures are up to date	Steven Mills	Colin Fozard
Ensure Team Noticeboard is up to date	James Jiang	Colin Fozard
Ensure Team Scoreboard is up to date	James Jiang	Colin Fozard
Ensure TPM ³ Improvement Sheets are up to date	Colin Fozard	Diana Cajumban
Facilitate the Team (TPM ³ Co-ordinate)	Ross Gardner	



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Team Mandate

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- Identify all equipment & process rejects (including samples) for 360/2 line.
- Improve equipment and process reject losses by at least 50% while also improving or maintaining the goal aligned performance measures.
- Recommend further improvements initiatives involving cross-functional teams and area based teams.



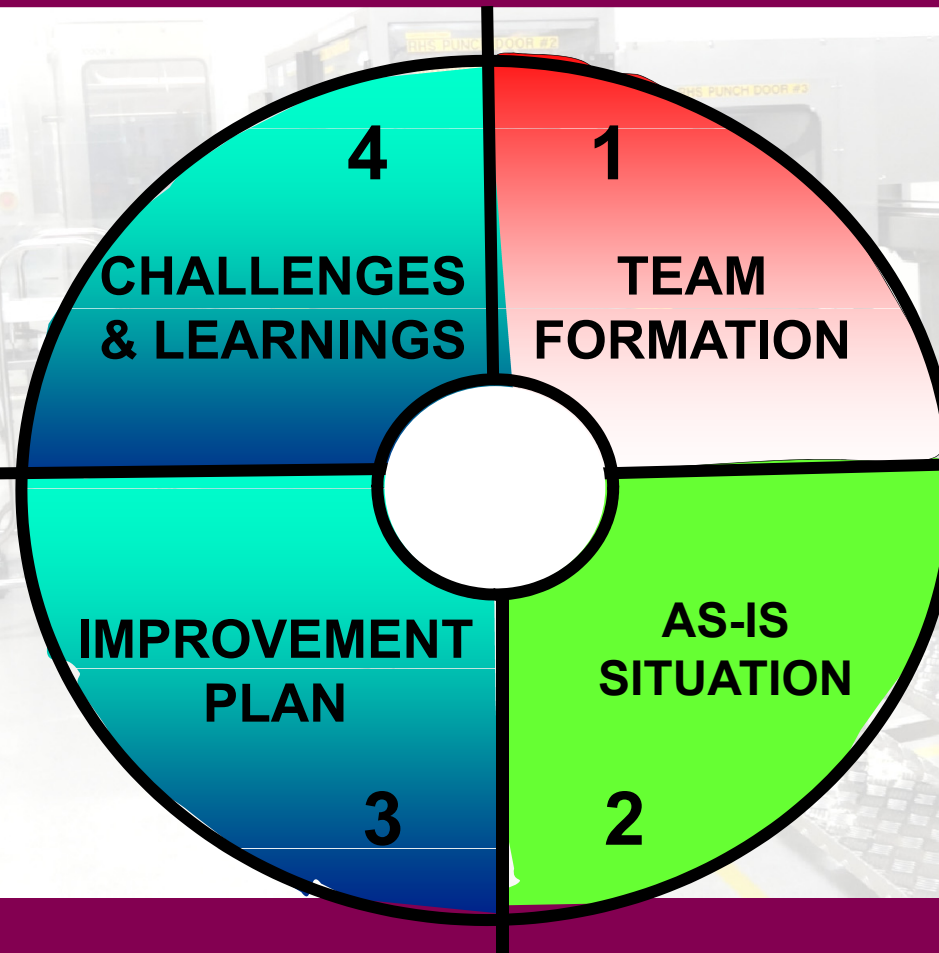
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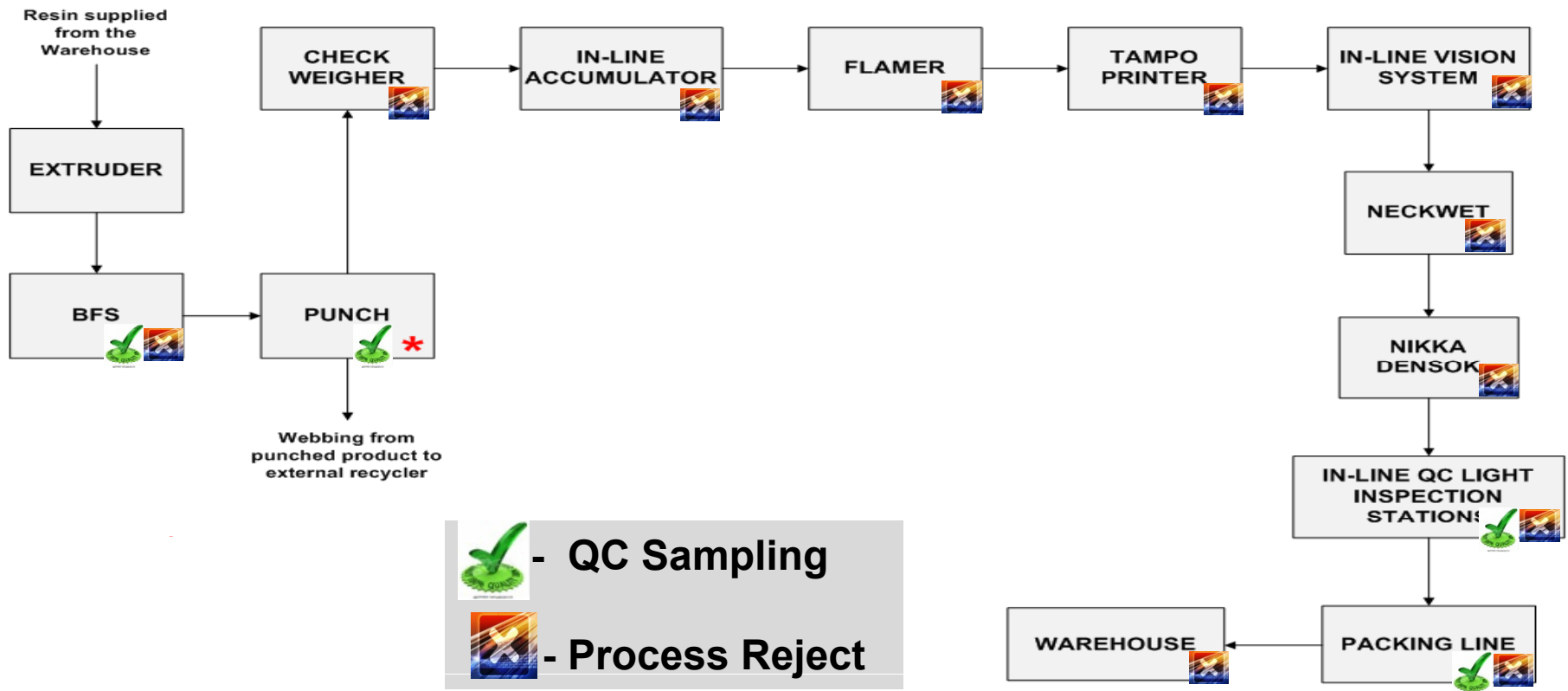


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360/2 Process Flow Chart

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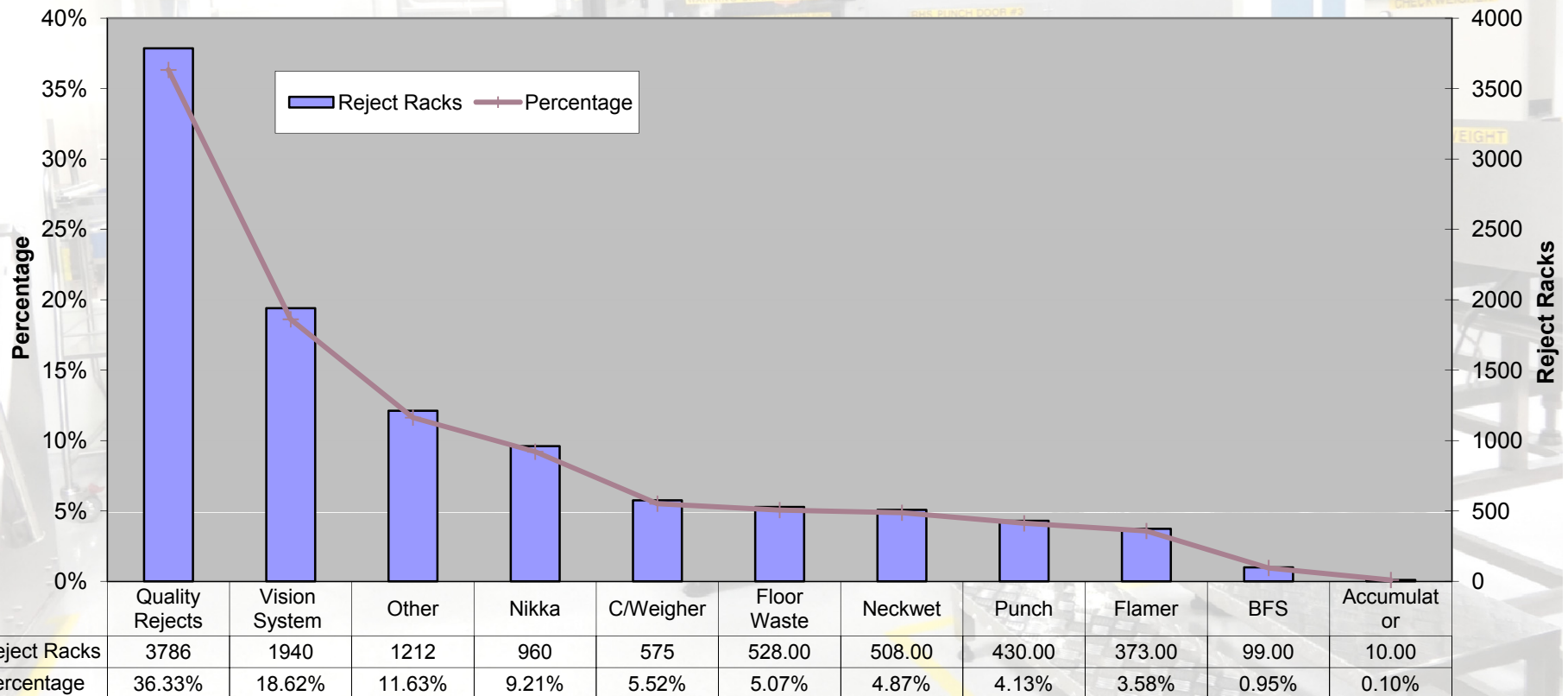
Total Line Rejects 1st Level Pareto Analysis

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360/2 Baseline Data Total Line Rejects



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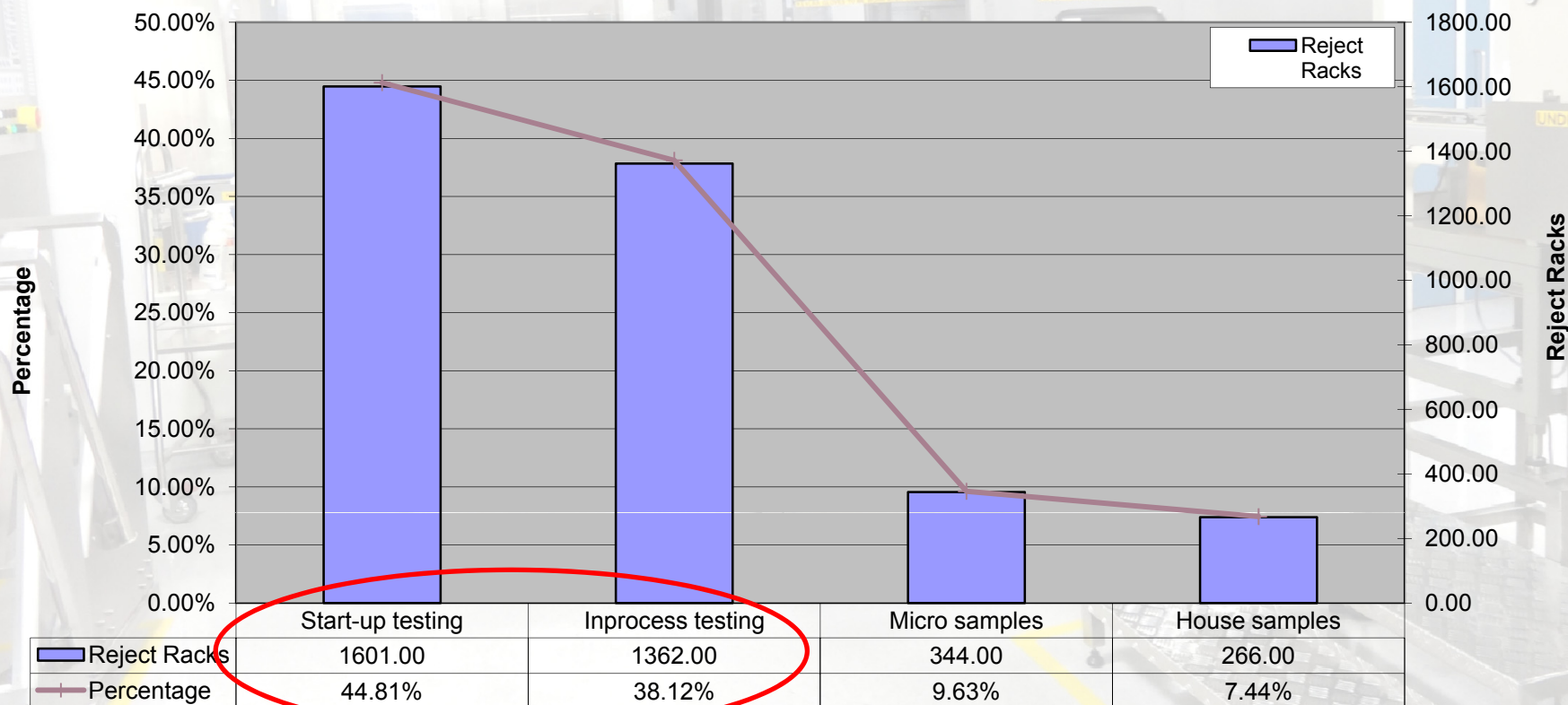
Total Line Rejects 2nd Level Pareto Analysis

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360/2 YTD Total Quality Reject



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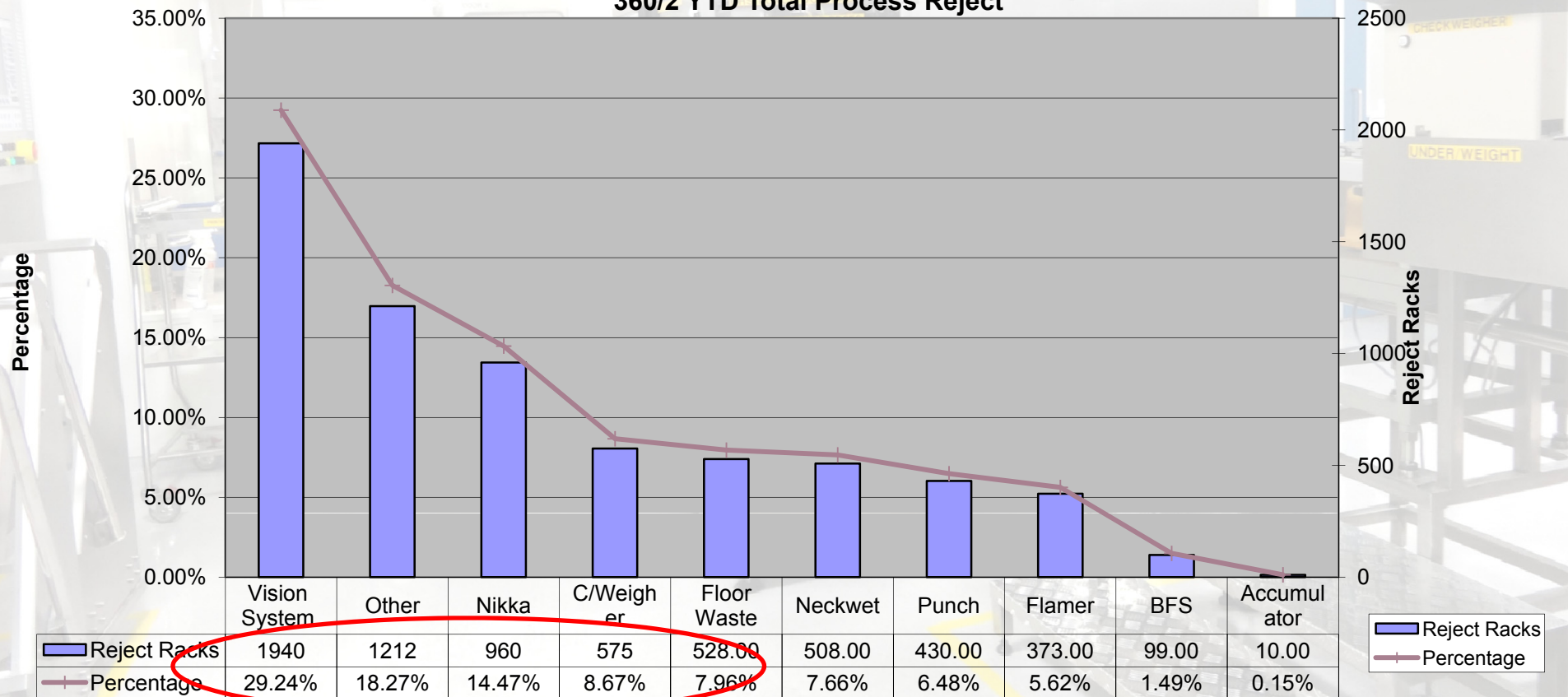
Total Line Rejects 2nd Level Pareto Analysis

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360/2 YTD Total Process Reject



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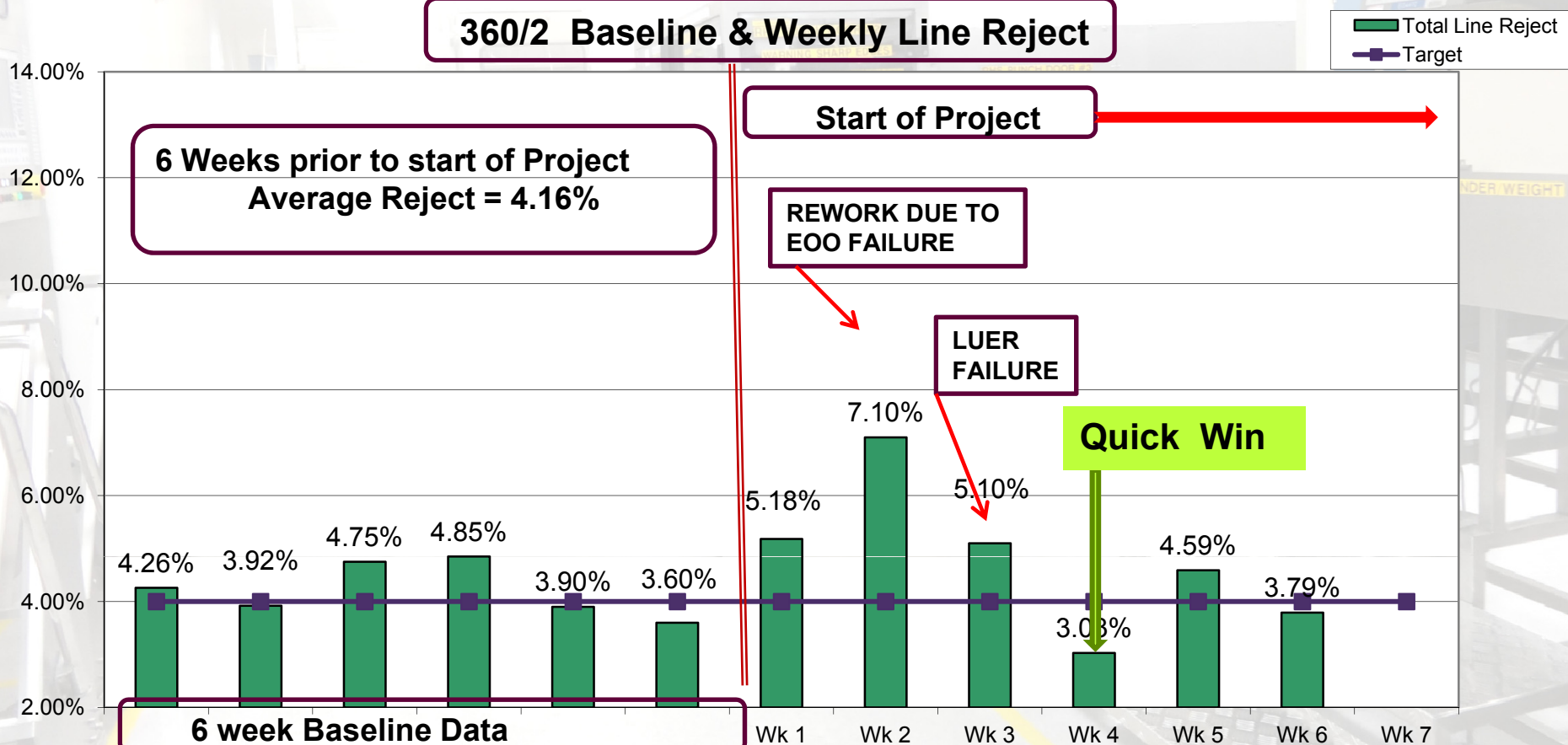
Baseline and Weekly Trends

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360/2 Baseline & Weekly Line Reject



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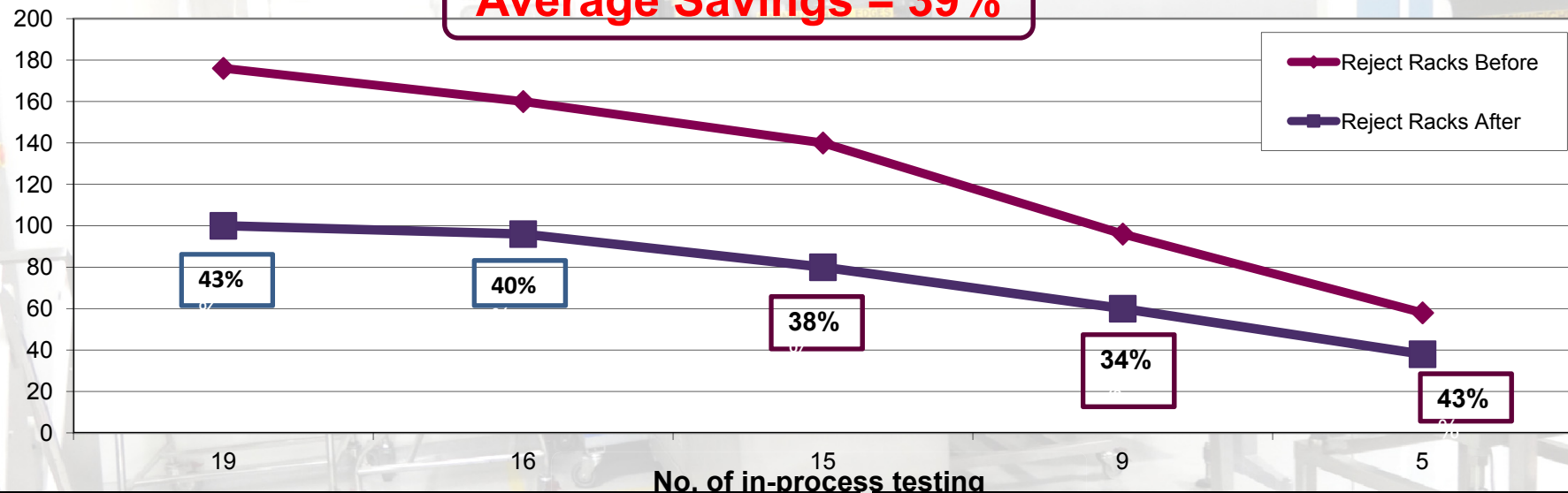
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Quality Reject Reduction Quick Win

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Average Savings = 39%



PON	LITRES	Size	HOURS RUN	No. of shift checks	Racks rejected	PON	Ltr	Size	Sch. Hours	No. of shift checks	Racks rejected	% savings
315516	3000	10mL	30	15	140	From 20/02/14					ACTUAL	
315517	3000	10mL	30	16	160	315615	2000	5mL	40	20	120	40%
315544	1500	10mL	15	9	96	315594	2000	5mL	40	16	88	41%
315543	500	10mL	5	5	58	315630	2000	5mL	40	19	112	40%
315569	3000	10mL	30	19	176	315637	1200	5mL	24	9	60	36%
						315650	1700	10mL	17	5	38	40%
TOTAL RACKS					630	TOTAL RACKS					418	39%



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Operator Survey Ratings/ Comments



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Rating	Reject Performance	Capturing Source of Reject	Capturing Cause of Reject on Run Sheet	Accuracy of OP27 Panel	Sample Rejects	Rejects at check Weigher	Process Capability	Reliability
Score	2.86	3.71	3.21	4.0	3.79	3	3	3.07
Excellence 5	Zero reject or rework	Very easily identified	Very easily identified	Totals 100% accurate	All samples removed is effectively used	Operating around 50% of lower and upper limits	Output always within tolerance	Never breaks down
4	Very little reject or rework	Easily identified	Easily identified	Less than 5% error on totals	Less than 75% of samples are used for testing	Operating on the lower half of the limits	Few problems keeping within tolerance	Reliable machine, breakdowns are rare
3	Average reject rate	Fairly accurate	Fairly accurate	Under 50 % accuracy rate	Less than half are used for testing	Operating between 40-60% of limits	Normally keeps within tolerance	Fairly reliable
2	High reject rate	Source is not accurate	Cause is not accurate	Accuracy very unreliable	Less than one third is used.	Operating of the upper half of the limits	Difficult to keep within tolerance	Often breaks down, not very reliable
Innocence 1	Very high reject rate	Very difficult to identify source of reject	Very difficult to identify cause of reject	No accuracy	Less than 25% is used.	Always fluctuating between limits	Cannot hold the required tolerance	Always breaking down

What do you like most about capturing the total reject on this line?

To classify where the reject is coming from and focus on getting it fixed.
If there is no print the reject are quite good.
To highlight the source of reject and work on reducing it.

What do you dislike most about capturing total reject on this line?

Not able to capture where the reject are coming from.
Capturing rejects while doing rework and using many racks for testing.
Vision system rejecting good racks.
Making the entries in Log book, OPS, Batch doc and to do manual graphs.
Rejecting the whole rack even if we problem with only 1 amp.

How can we improve the operation / process to reduce the level of rejects on the line?

Start up and set up is most important, more racks should be used for testing and make sure it's right at first time.
To Set individual weight approximate to middle or high before setting the check weigher.
Train vision system on a good print,
Upgrade vision system or implement VOR.
Always work with 5 operators even for ROW.
Pad printer should be regularly inspected by fitters.



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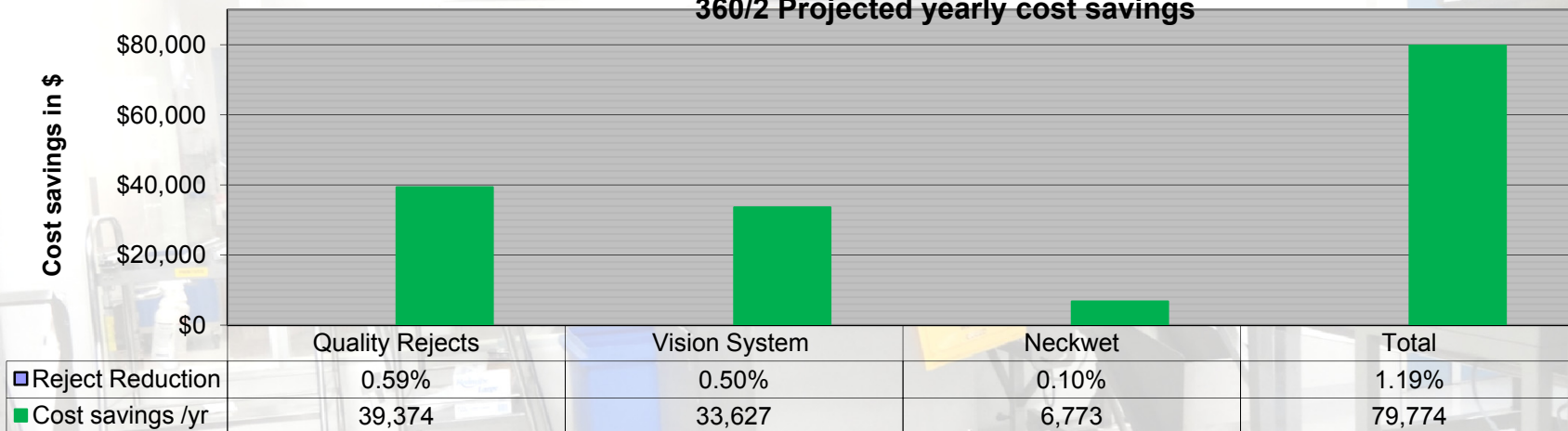
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Project Savings / Expected Outcomes

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360/2 Projected yearly cost savings



The Micro FE & PI cycle expects to yield a sustained 30% reduction to Total Line Reject which will be a reduction from 4.16% to 2.91%. This is equivalent to approximately **\$80k saving per annum (this does not include potential incremental Sales).**



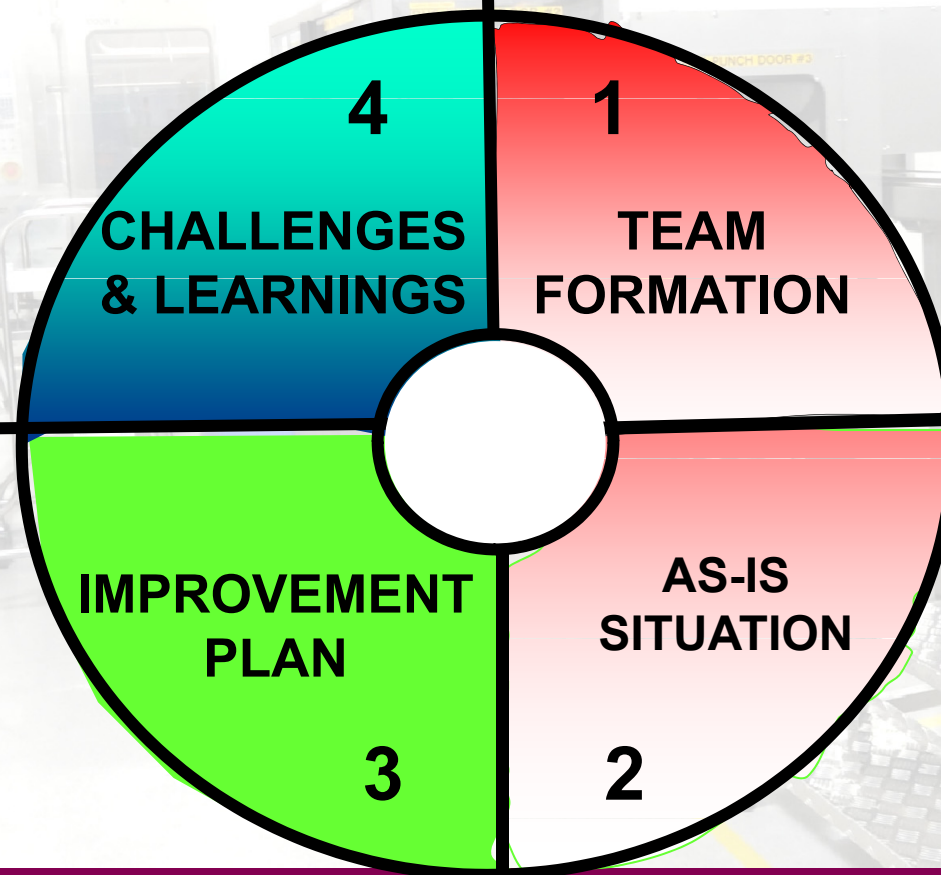
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Modifications to Run Sheets



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Time	Hourly	Actual Hourly	Cumulative		Formation & Fill		Finishing Line		Packing Line		OP 27		Testing				Pack		Nikka				Total Racks rejected (Hourly)
	Target Hourly		Target Cumulative	Actual Cumulative	Cause Code	Quantity	Cause Code	Quantity	Cause Code	Quantity	OP27	OP27	Setup Testing	Shift Checks	Micro Sample	House Sample + stability	Carton	Leaflet	Neck Nikka Led Bars	Base Nikka Led Bars	Leakers from Nikka (BASE)	Leakers from Nikka (NECK)	
22:00	15	140	15	140	BFS--Ease of Opening	10	IS--Leakers	20	PL--Floor Reject	30			40	5	5	5						115	
23:00	15	145	30	145	BFS--Flat Flags	30	AC--Suction Cups	10	PL--Shortage of Components	150											190		
					BFS--Pinch Marks	5	VS--Printer	15	PL--Floor Reject	10													
					BFS--Pinch Marks	25	VS--Printer	20	PL--Floor Reject	20													
					BFS--Pinch Marks	10	VS--Flamer	10	PL--Packing Line	15													



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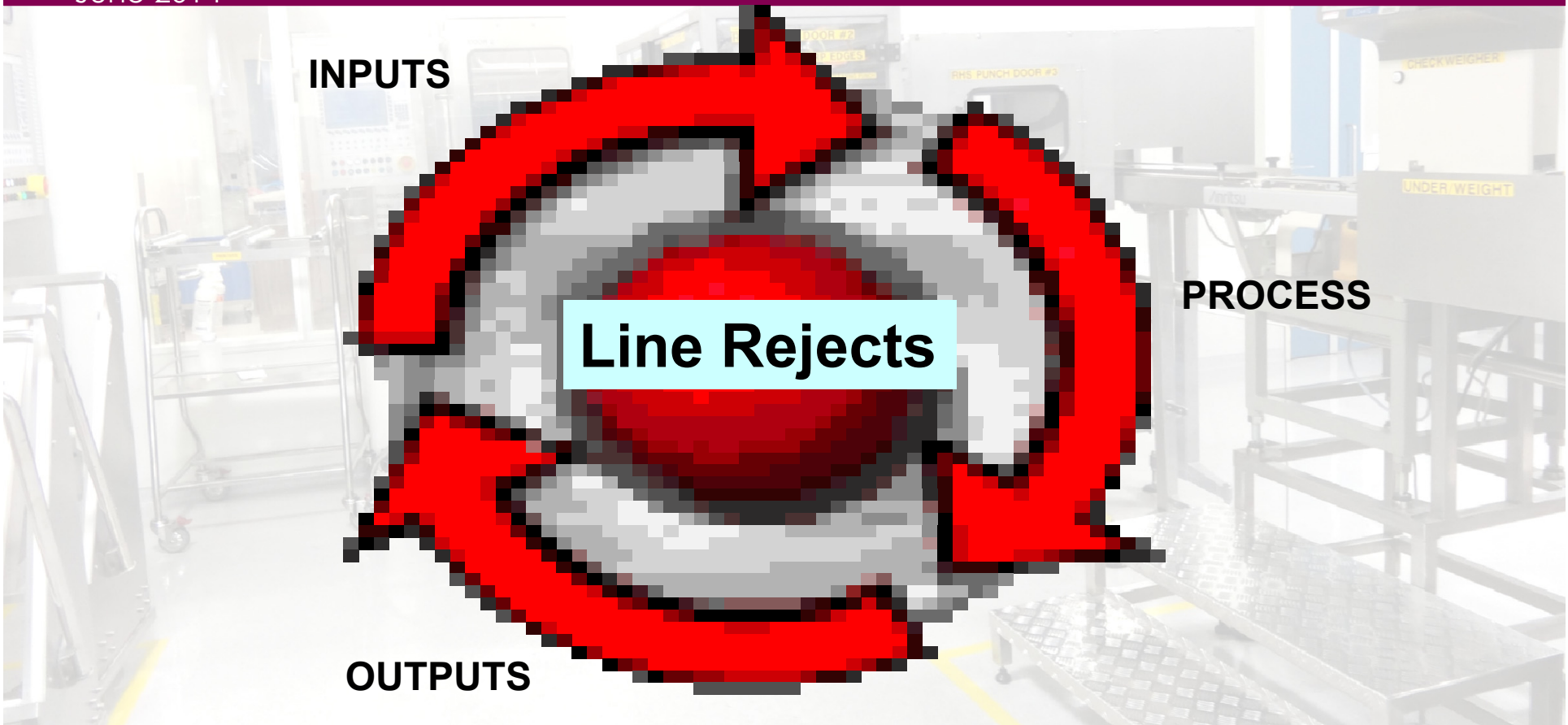
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Potential Root Causes

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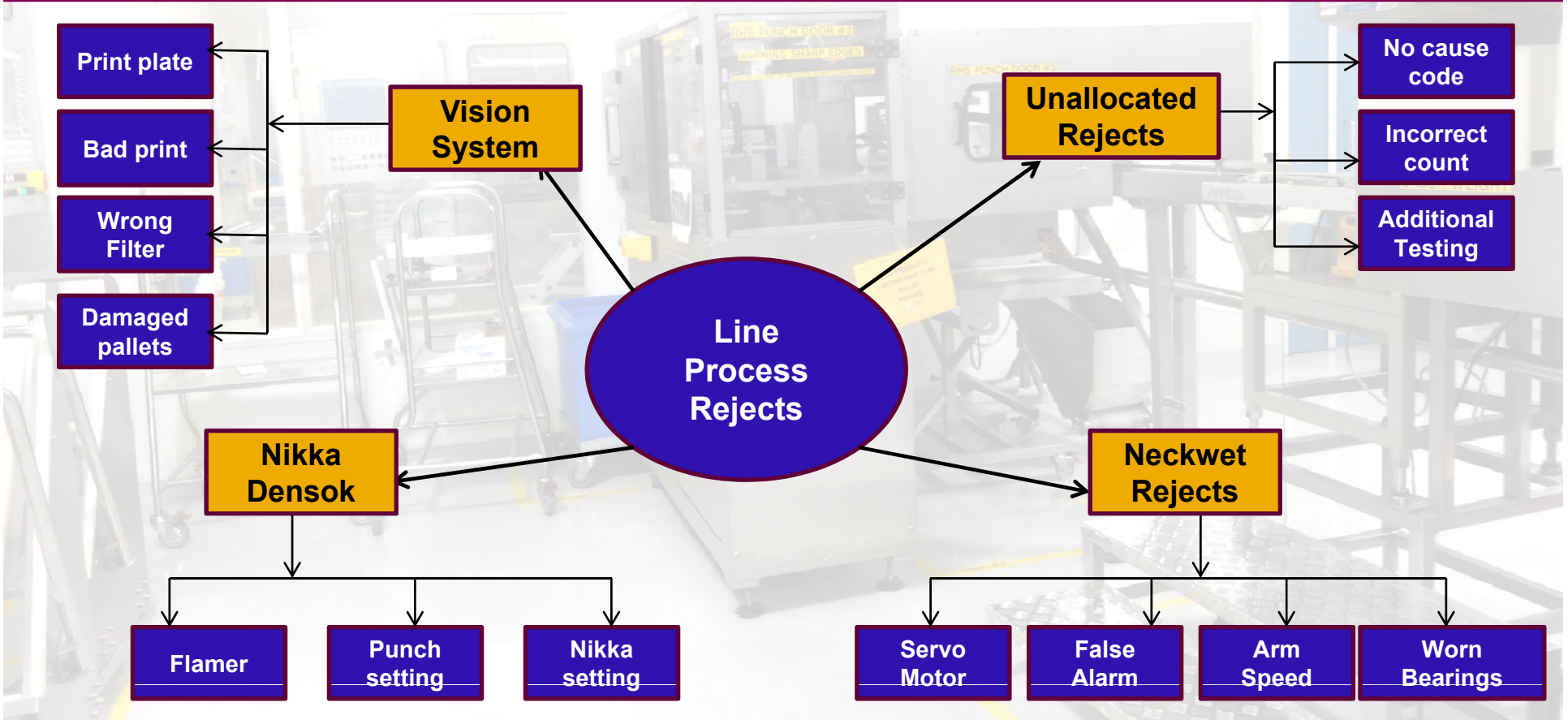


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Brainstorming Potential Process Root Cause

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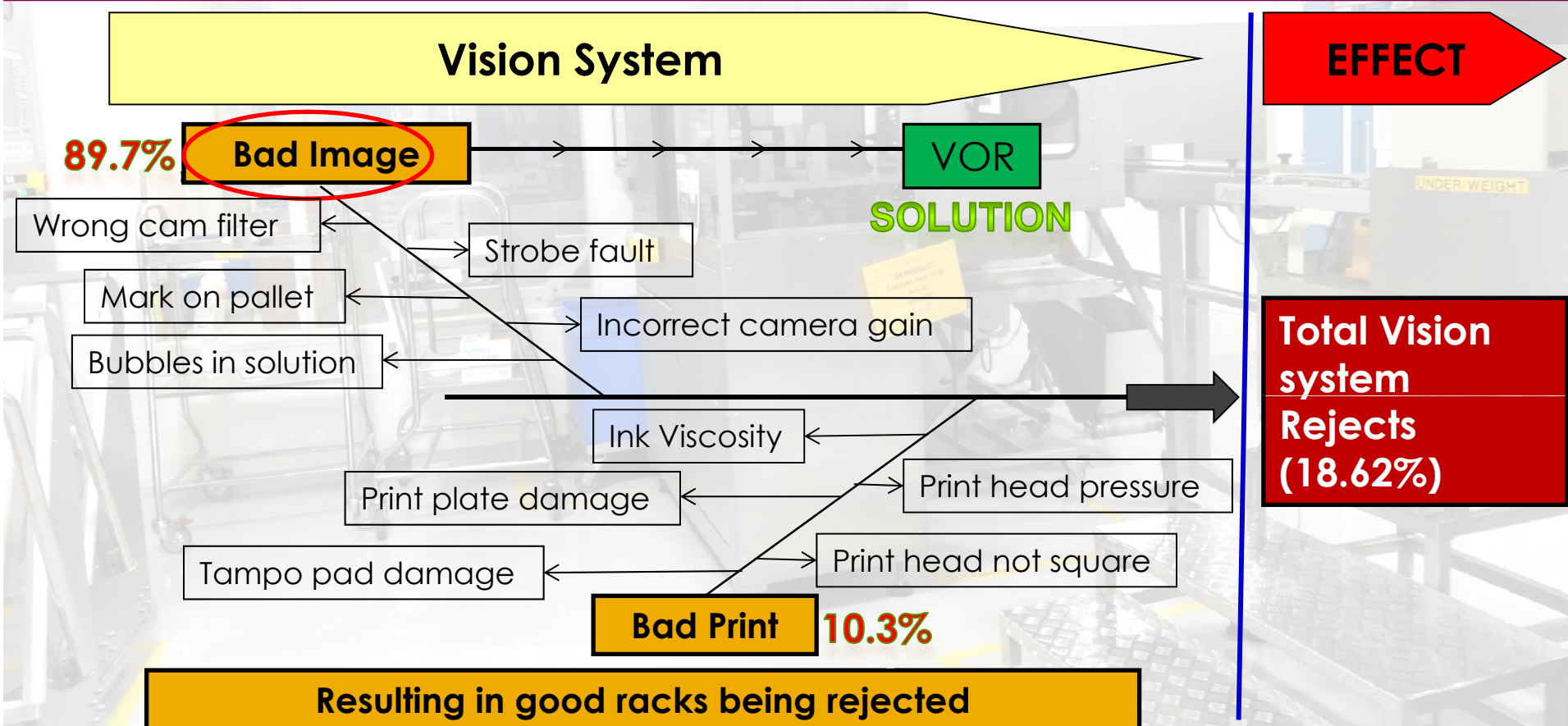


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Vision System Fishbone

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REJECT**VAMPIRES**

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Results of Recovery
Percentage



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BAD IMAGE

BAD PRINT

89.7%

10.3%

Recovery Percentage = 89.7%



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Vision Only Rework Improvement

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Neckwet Improvement

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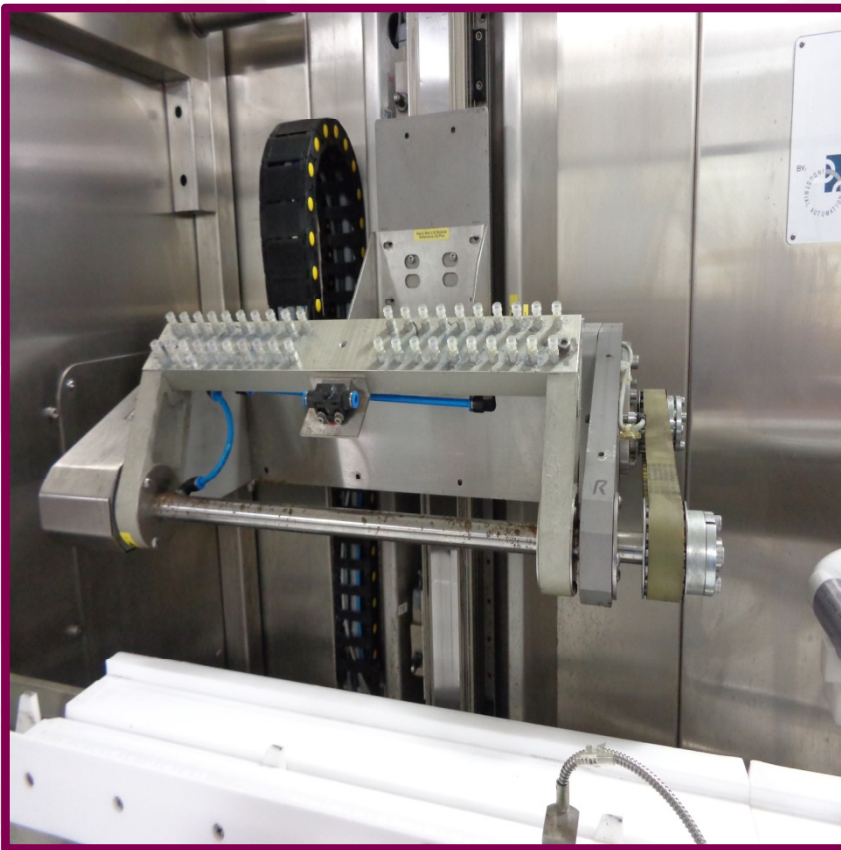


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Proposed Neckwet Improvement

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Problem:

- Alarm-487 neckwet Rotation second move 800 RPM on OP27 panel.
- Only triggered by an upward rotation, when the rotation speed is below 1000RPM.



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Neckwet Fishbone

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Neckwet

EFFECT

Mechanical

Screw Linear Drive

Drive Belts

Rotary position Timing Belt

Rotary Arm Bearings

Tapper lock Position

Servo Drive

Proximity Sensor

Tuning of PLC

Encoder

Damaged Cabling

Electrical

Total Neckwet Rejects (4.87%)

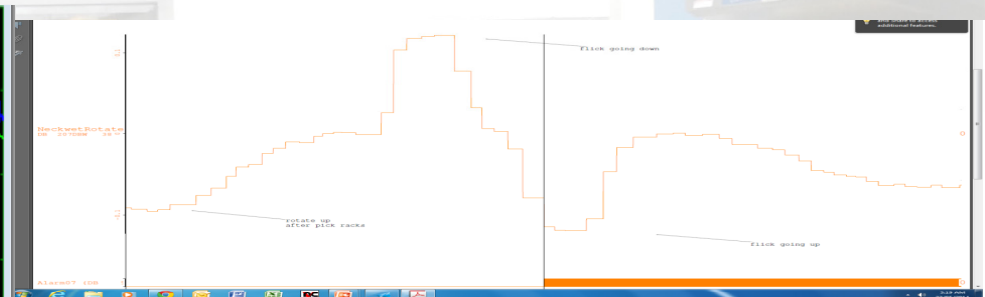


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Neckwet Implemented Solution

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RCA/ Solution:

- Set up PLC analyser.
- Electrical / Mechanical Defects, Servo drive, Tuning of drive, Servo motor, bearings etc.
- Adjustment on the band of the sampling window during optimum speed.



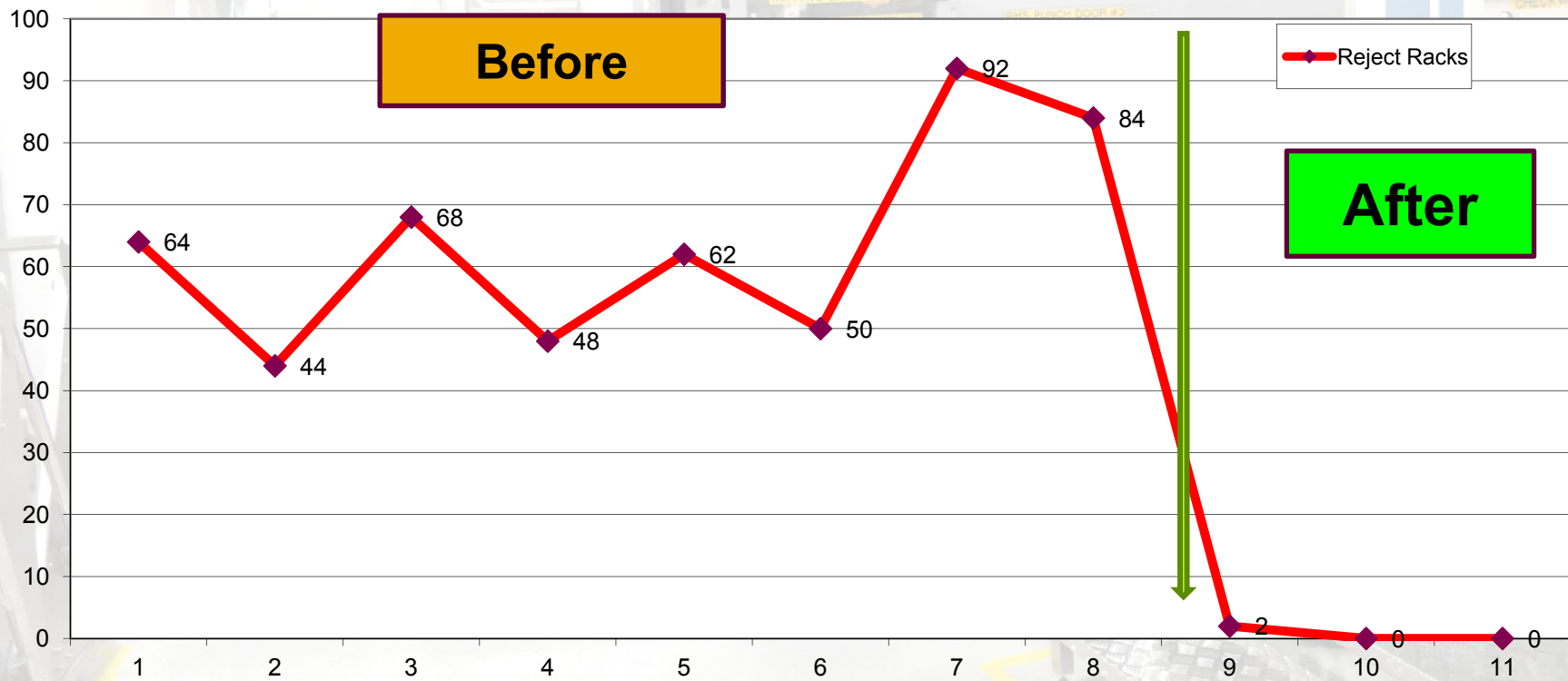
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Neckwet Reject Result



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Project Cost Savings

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Lets Talk Savings!!!



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Quality Savings

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REALISED

\$39,400



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Neckwet Savings

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VAMPIRES

PROJECTED

REALISED

\$6,800

\$38,400



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Total Savings

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**TOTAL REALISED
SAVINGS**

\$77,800

**NEW PROJECTED
SAVINGS**

\$111,400



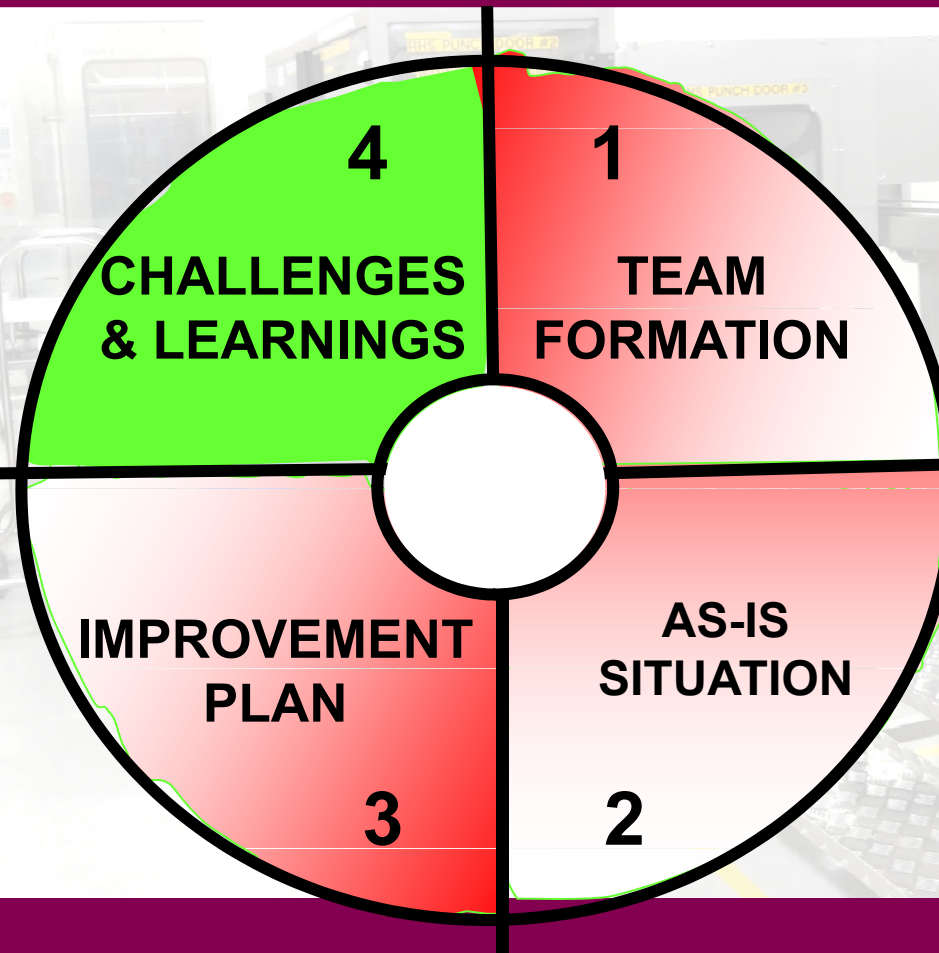
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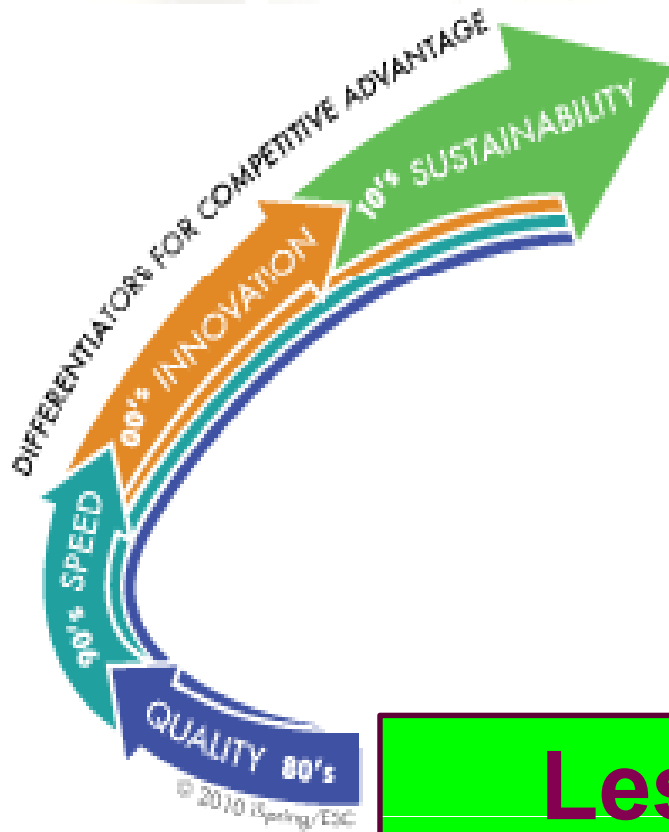


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Parking Lot Issues/ Key Learning's

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Systems

- Update of SOP's and VM 's.
- Training
- Continuous detail monitoring .

People

- Greater line awareness.
- Project Team Individual development

Key Learning's

- Opportunity in optimising quality related rejects, 39% savings
- Potential reduction in reject levels/ monetary savings with the implementation of the VOR improvement.

Parking Lot Issues

- Obsolete equipment
- Installation of Cameras on BFS
- Maintaining consistency on product quality decisions – SOPs/ VM's

Lessons learnt by Team



Thank You!
Question Time?

REJECT

VAMPIRES

