

Is the Effectiveness of your Equipment your Weakest Link? And can TPM Strengthen your Supply Chain?

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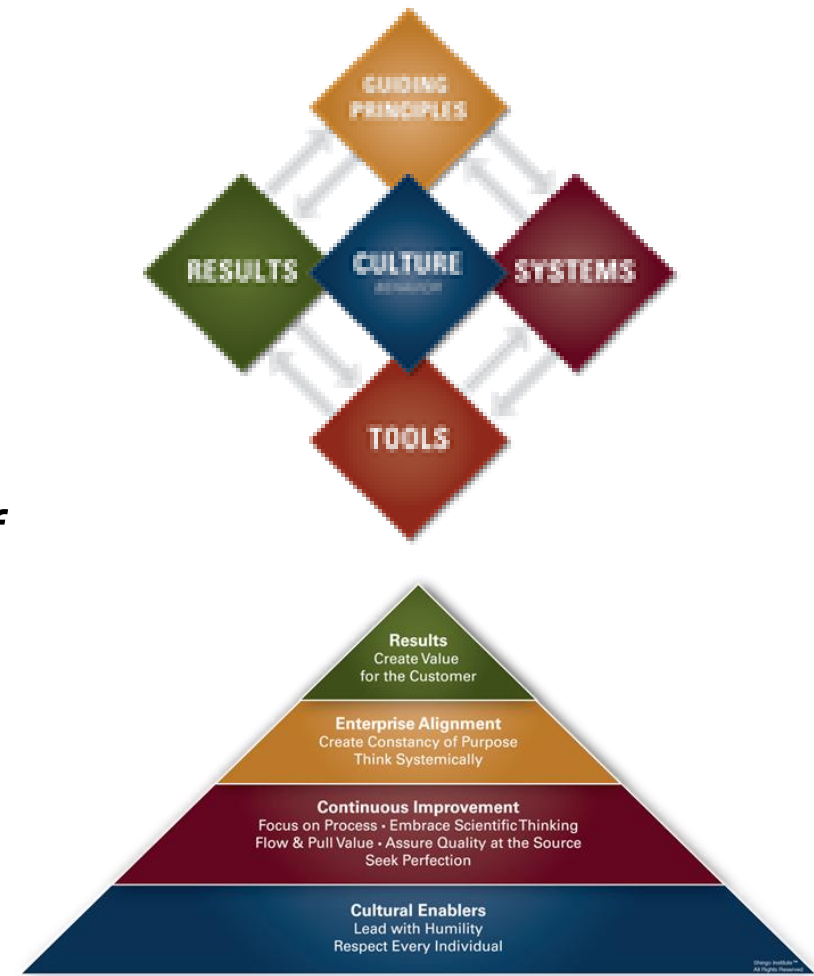


Together, the power to improve

- What do we mean by Lean Enterprise / Operational Excellence and TPM Best Practice?
- How should TPM align with our Operations Strategy & Philosophy?
- How do we go about dispelling some of the Common Myths of OEE and Autonomous Maintenance to our Workforce ?
- How do we create the right Environment to generate the right Behaviours In order to Sustain the Gains?
- What are the common Pitfalls to Avoid?

Ideal behaviours delivery ideal and sustainable business results

- The Shingo model of Enterprise Excellence is focused on delivering sustainable ideal business results.
- *Through a combination of research and application, the Shingo Model has proven that Ideal Sustainable Business Results can only be achieved when Ideal Behaviours are embedded in all aspects of an organisation's activities.*
- These Ideal behaviours must be actively managed across all key business systems.
- These key business systems must operate in a way to enable and support ideal behaviours of those working within that system.



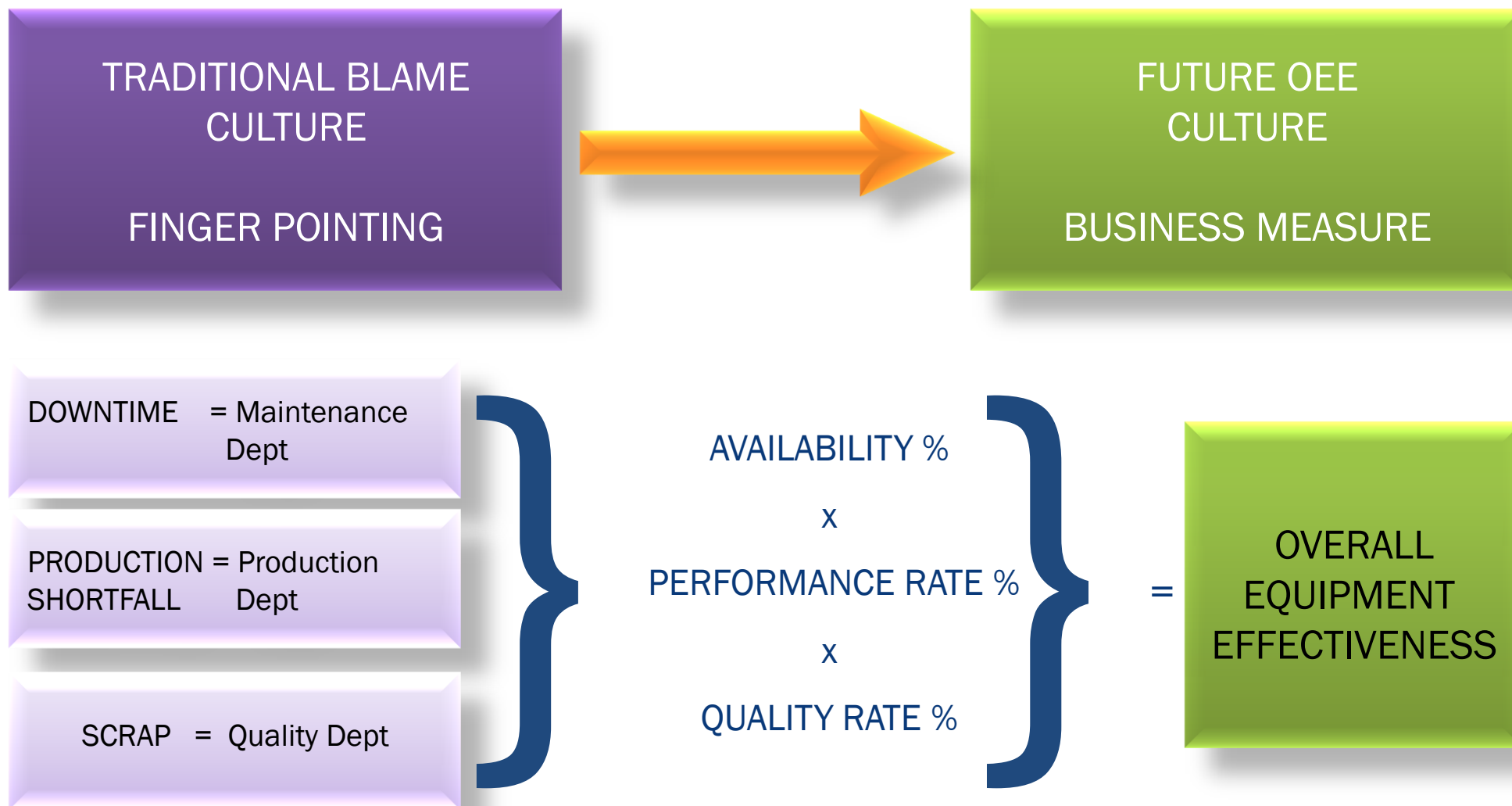


Asset management and its optimisation as a system

- In any physical asset based enterprise the effective and efficient operation of your assets is a critical factor in the consistent delivery of customer value.
- Therefore we can consider our ability to maintain and optimise the performance of those assets as **ONE of the critical systems** within your business.
- As a system therefore it must be designed to support and encourage Ideal Behaviours of those working within and around the companies asset management and supporting activities.

- The bottom line is that you will almost certainly need to do more with less.
- In the Maintenance sense, this all has to be achieved in parallel with yet more pressure and demands on increasing environmental conformity, increasing energy costs and of course, zero accidents.

So, Why Change?



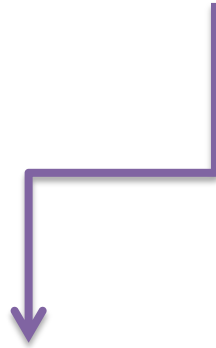
Measuring Equipment Effectiveness Floor to Floor Losses

Overall
Administration
Effectiveness =

Availability

x Performance Rate

x Quality Rate



- Breakdowns
- C/O & Set up and Adjustment Losses

- Idling & Minor Stoppages
- Reduced Speed Losses

- Scrap, Quality Defect & Rework Losses
- Start up Losses

The 6 x Classic Equipment Based Losses-(Floor to Floor)

Where would you prefer to work?
With an OEE of 33%?



Where would you prefer to work?
With an OEE of 33%?



Where would you prefer to work?or with an OEE of 74%



Where would you prefer to work?
.....or with an OEE of 74%

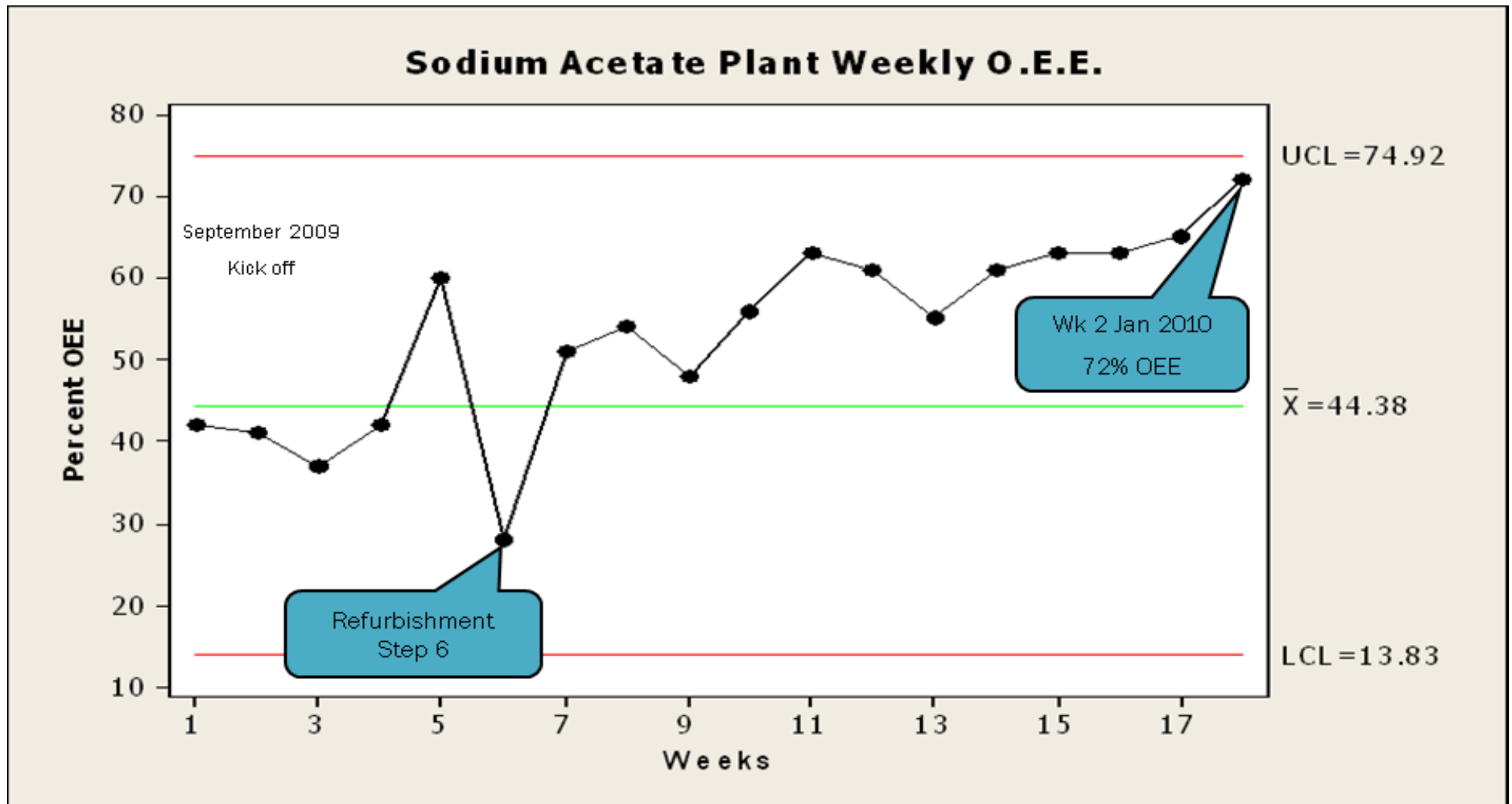


In a plant with well designed, fit for purpose, safe, reliable and with well maintained equipment?

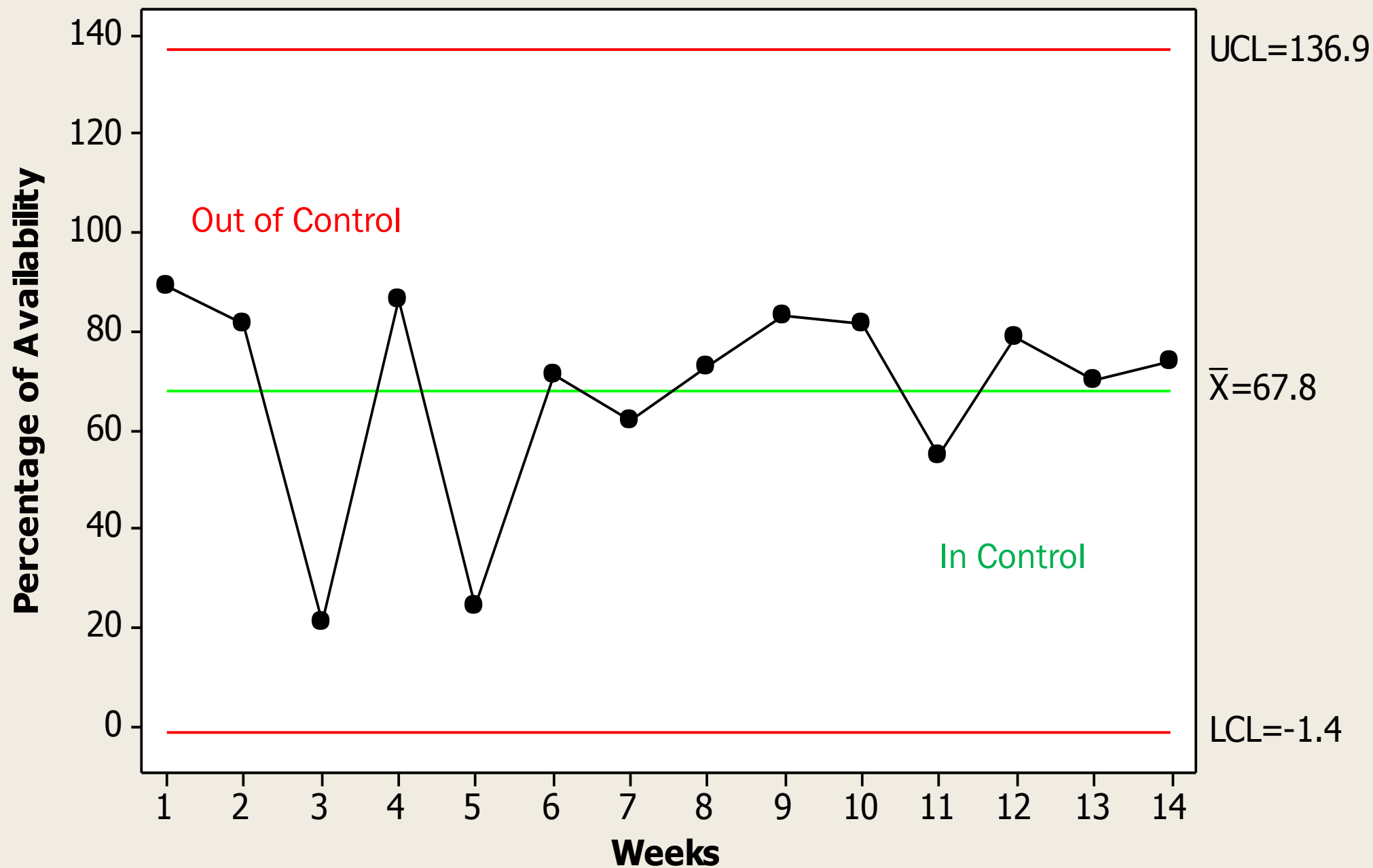
The Classic 4 x Phases of Improvement



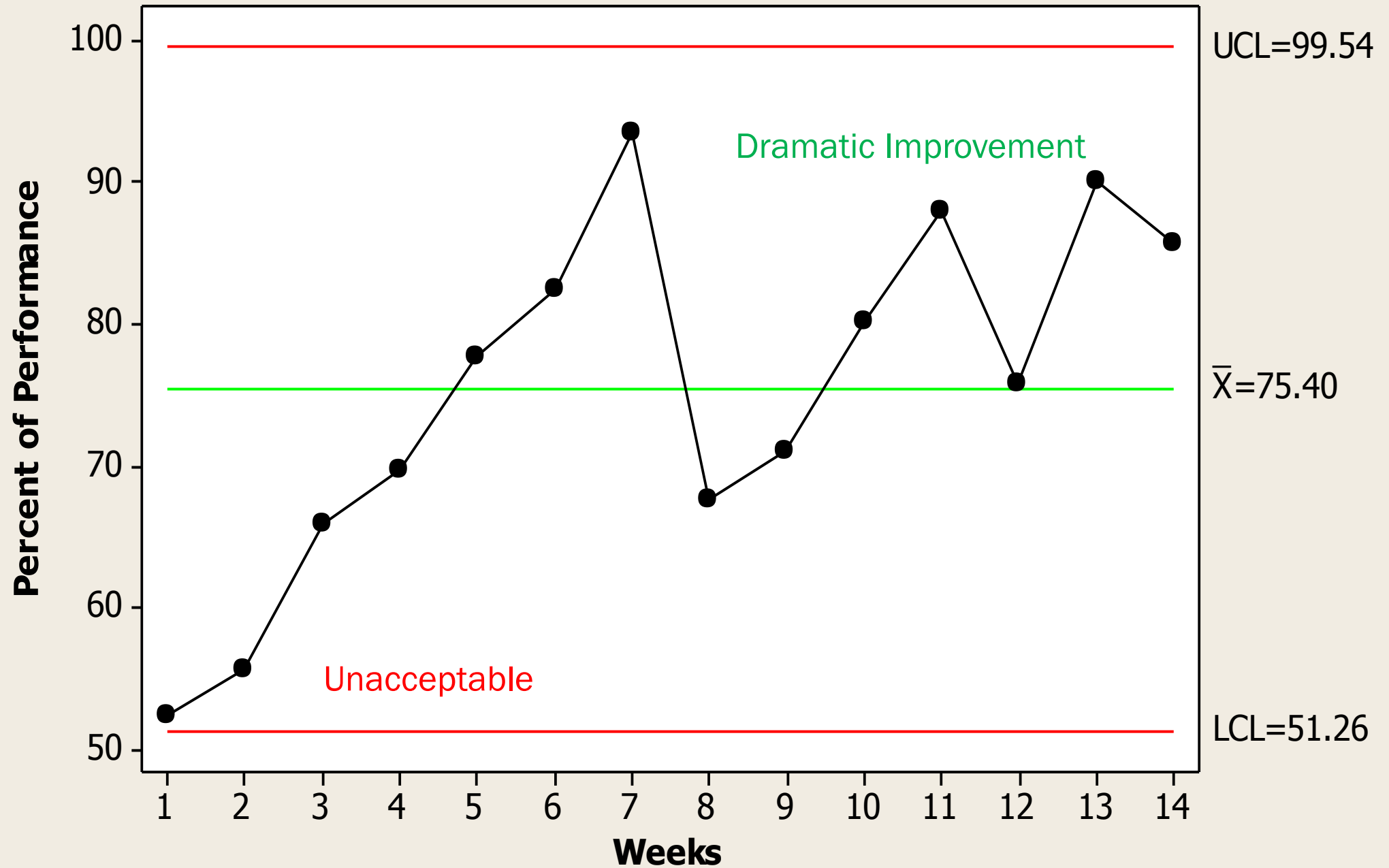
First 4 Months OEE Figures



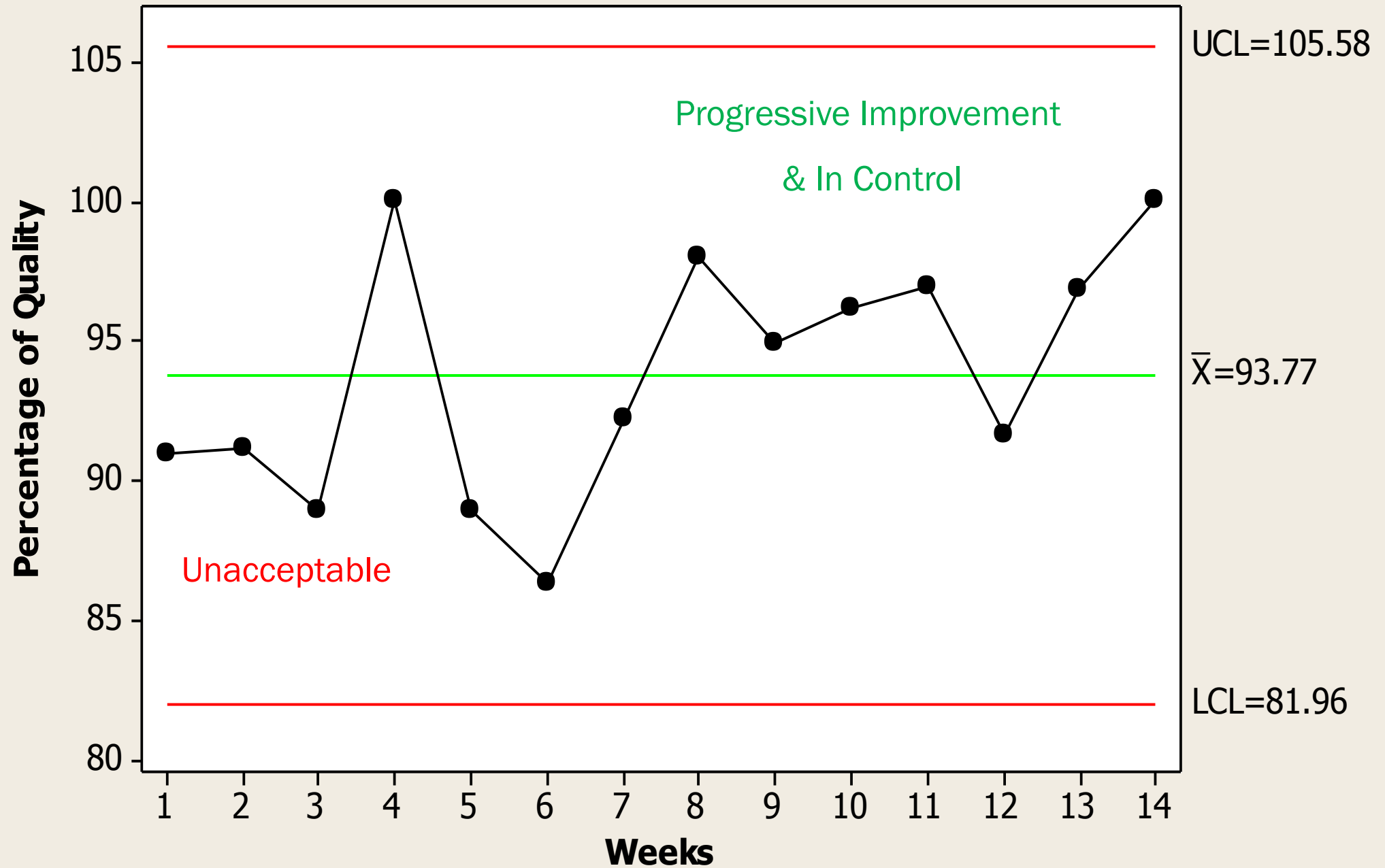
Availability



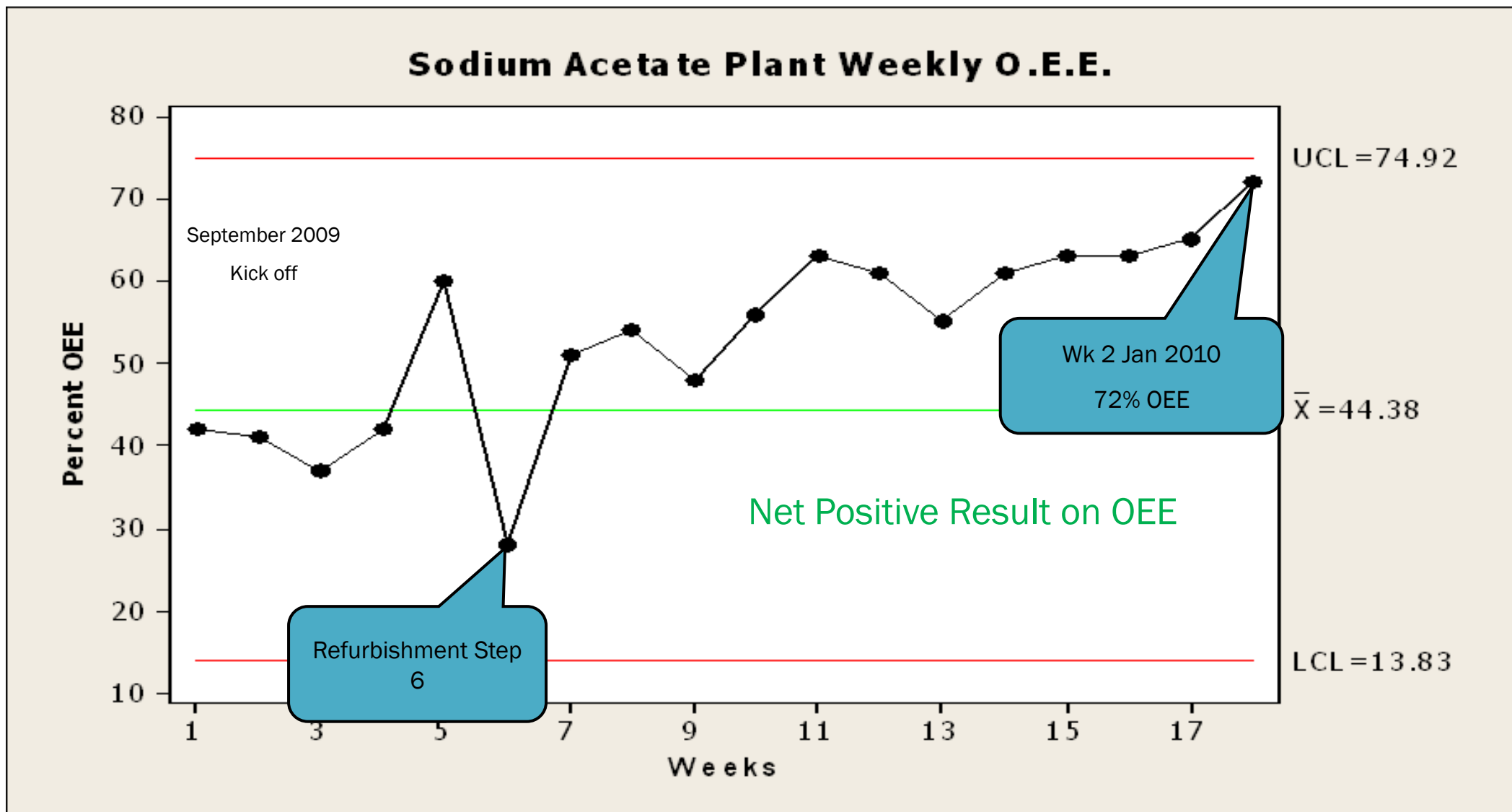
Performance



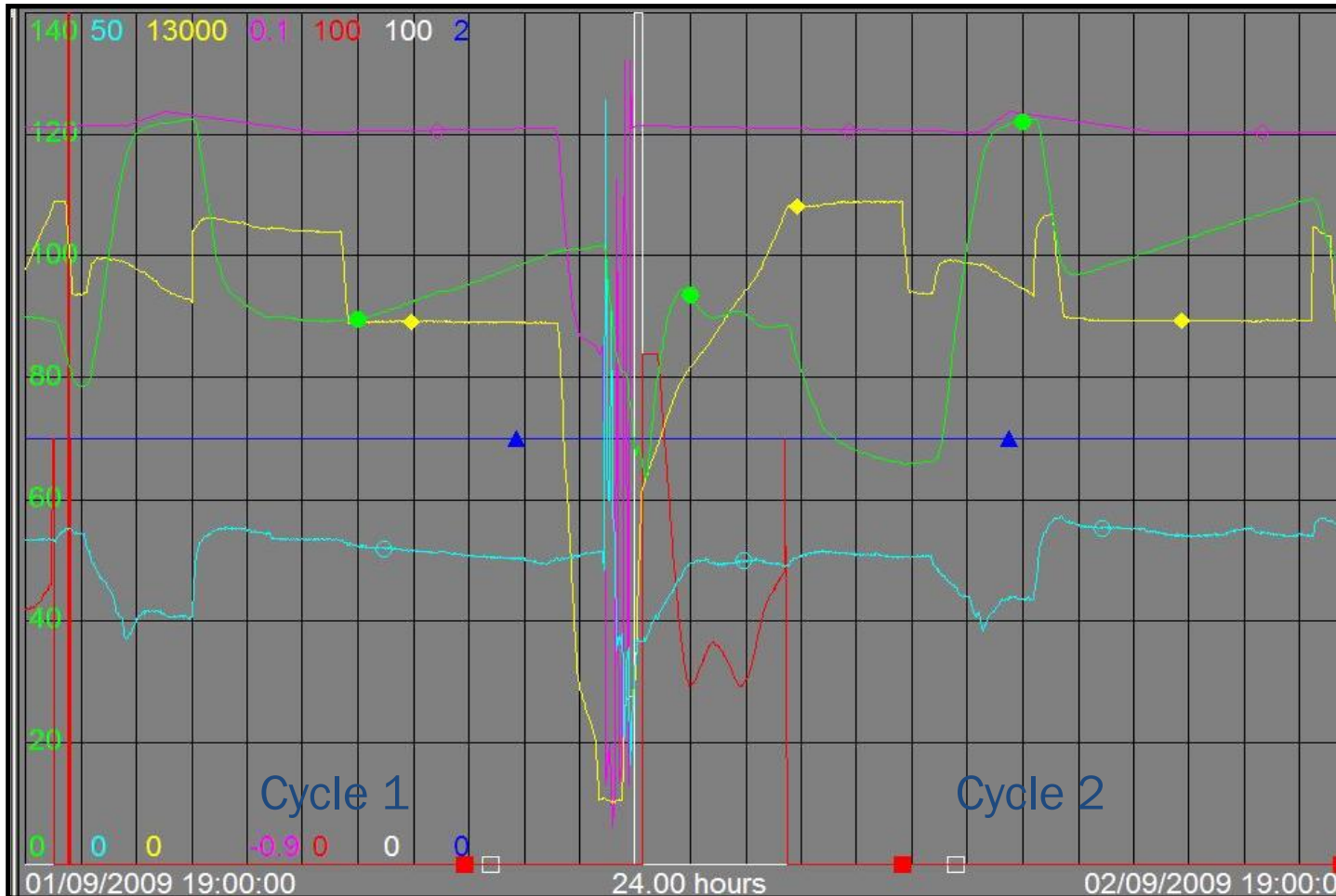
Quality



First 4 Months OEE Figures



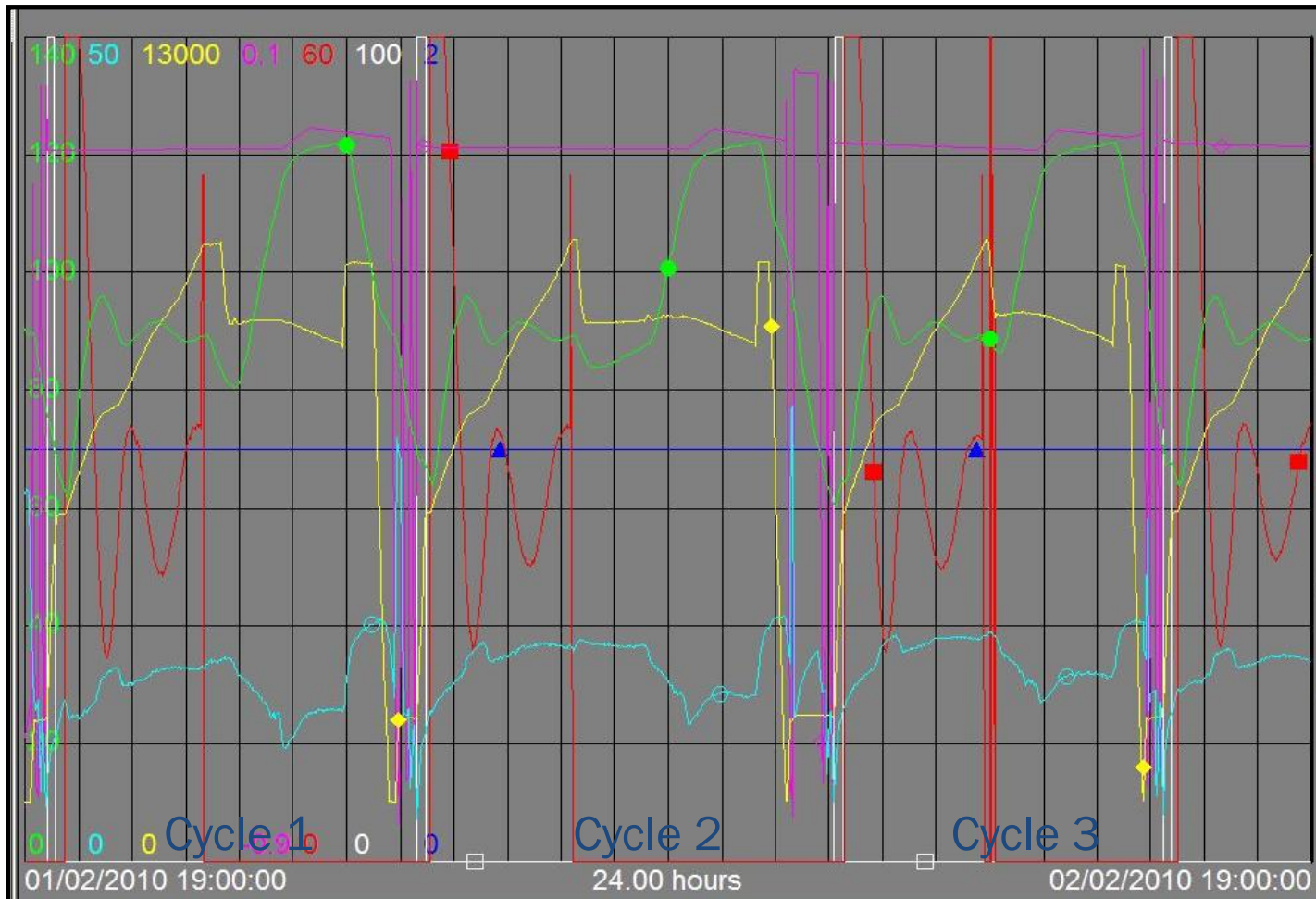
Reactor Performance before TPM



Batch Reactor

- 2 cycles in a 24hr period
- Suffering from the six losses and non-standardised operations
- We are not in control of our process
- We cannot predict our batch times

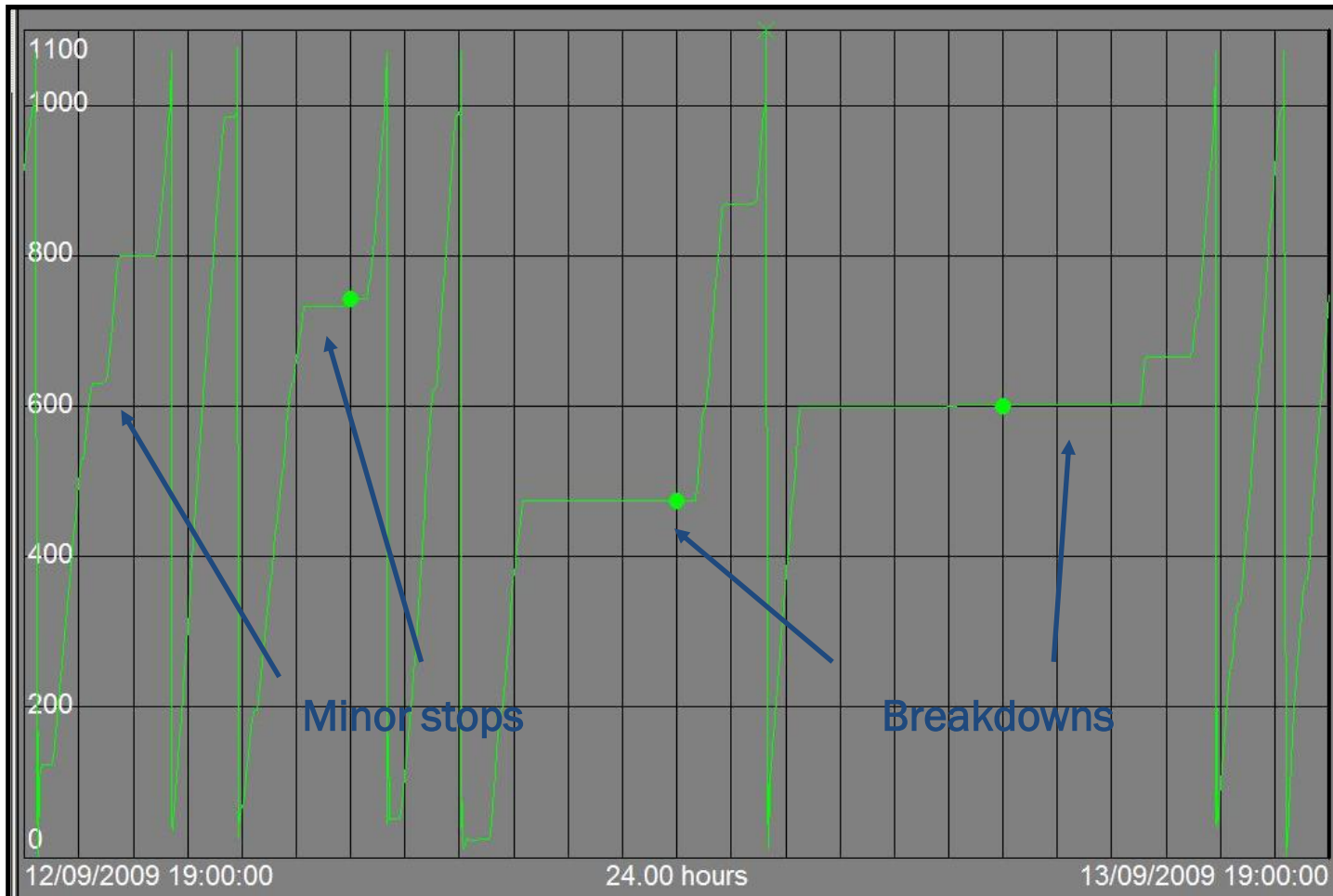
Reactor Performance after TPM



Batch Reactor

- 3.5 cycles in a 24 hr period
- Identical trends hence process is in control

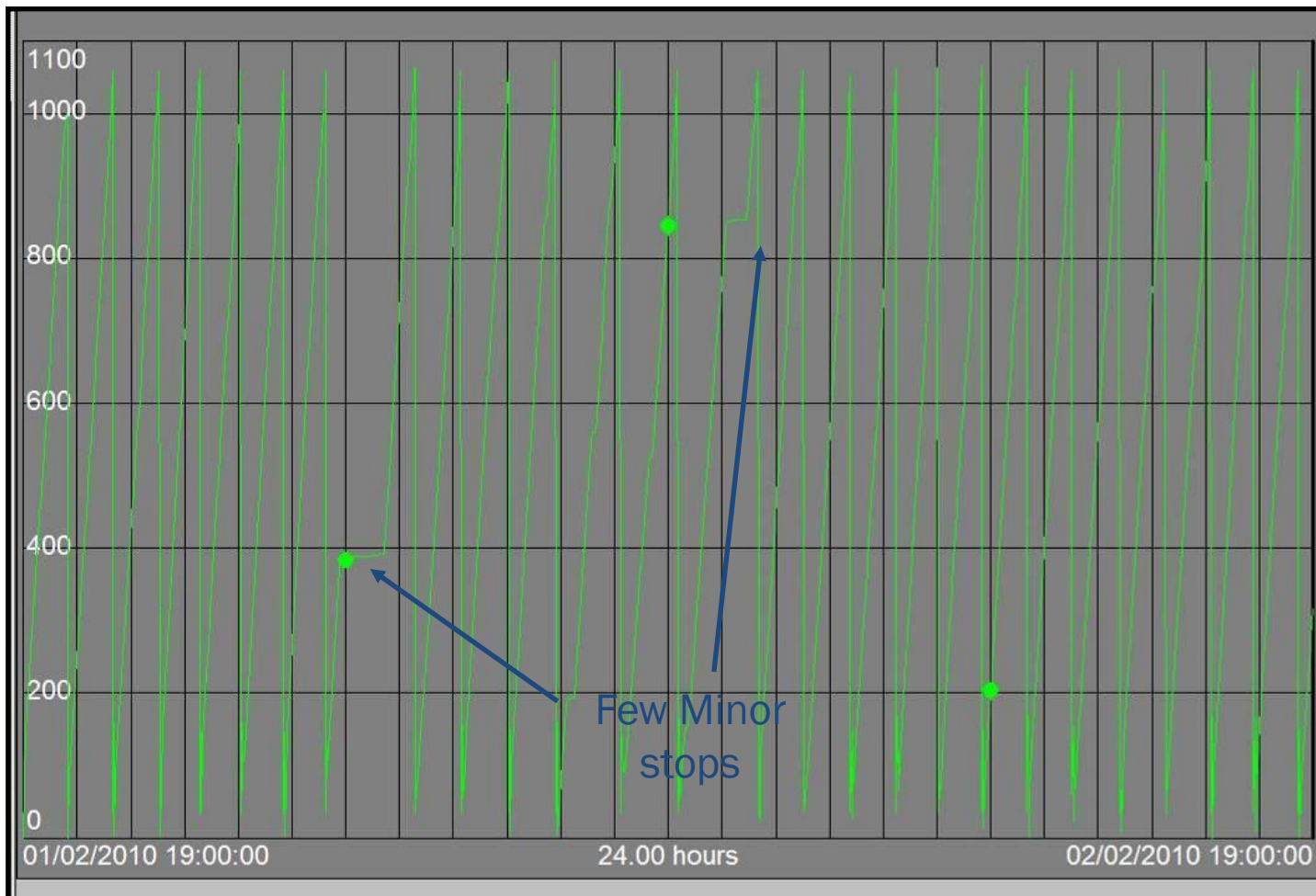
Bag Filler Performance before TPM



Bag Filler

- Each Peak represents a bag of finished product
- 8 bags produced in 24hrs
- Heavily affected by the six losses
- We are not in control of our process

Bag Filler performance after TPM



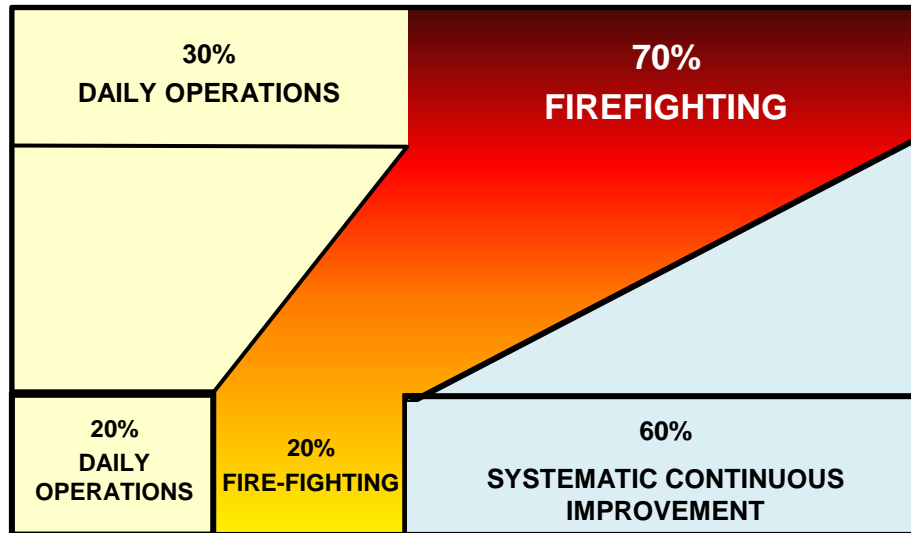
Bag Filler

- Each Peak represents a bag of finished product
- 26 bags produced in 24hrs out of a possible 30
- Still some minor losses but we are Improving!

- Additional c. € 1.2 m t/o with net margin 10%
- Total training and refurbishment costs of € 60k
- 6 months Pay-back
- Result ? WIN /WIN !

Also Winner of UK National Training Awards for
internal training and development of front line staff
using 11 x step TPM model

Developing Best Practice

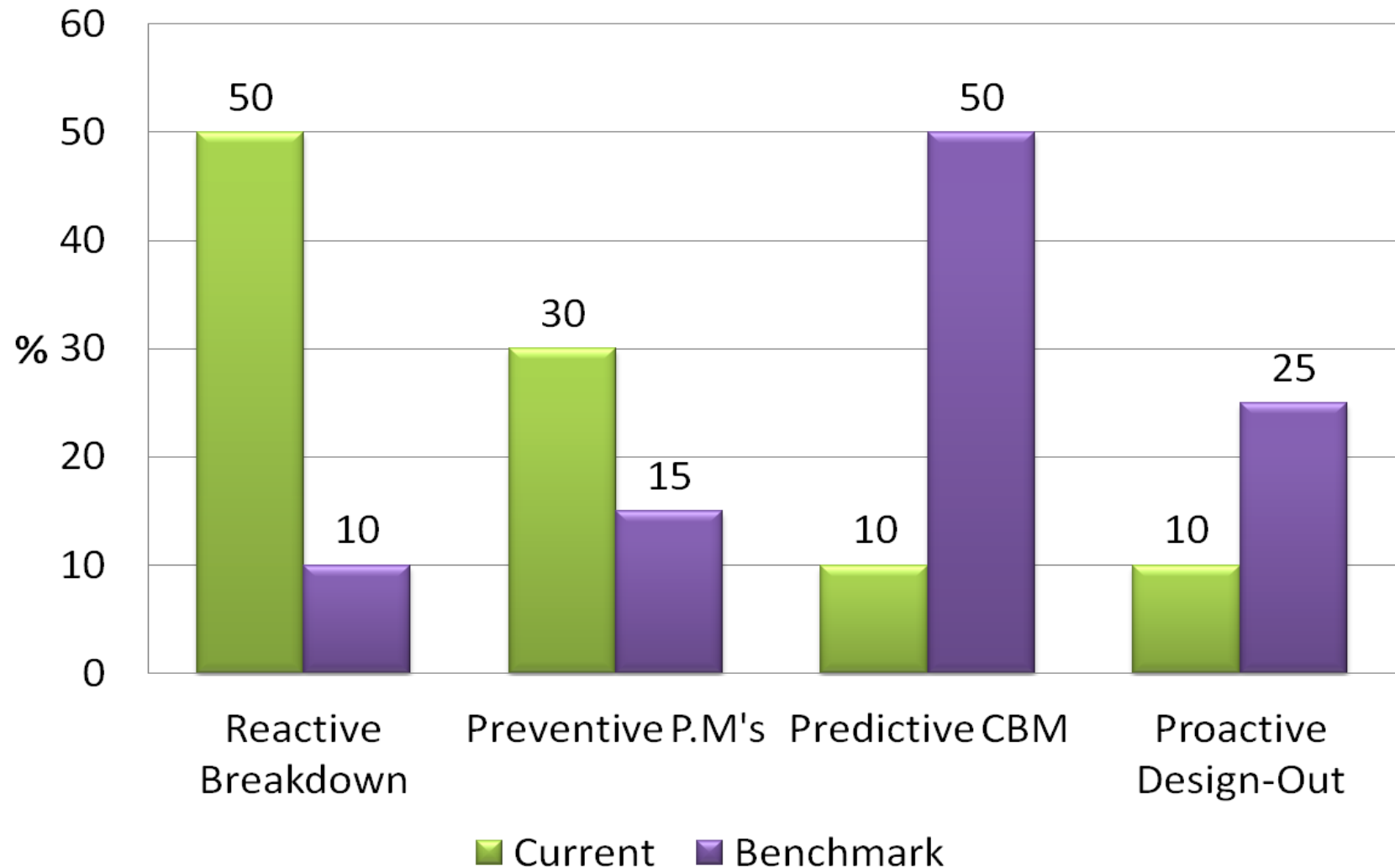


In any Company, 70% fire-fighting is caused by two main phenomena:

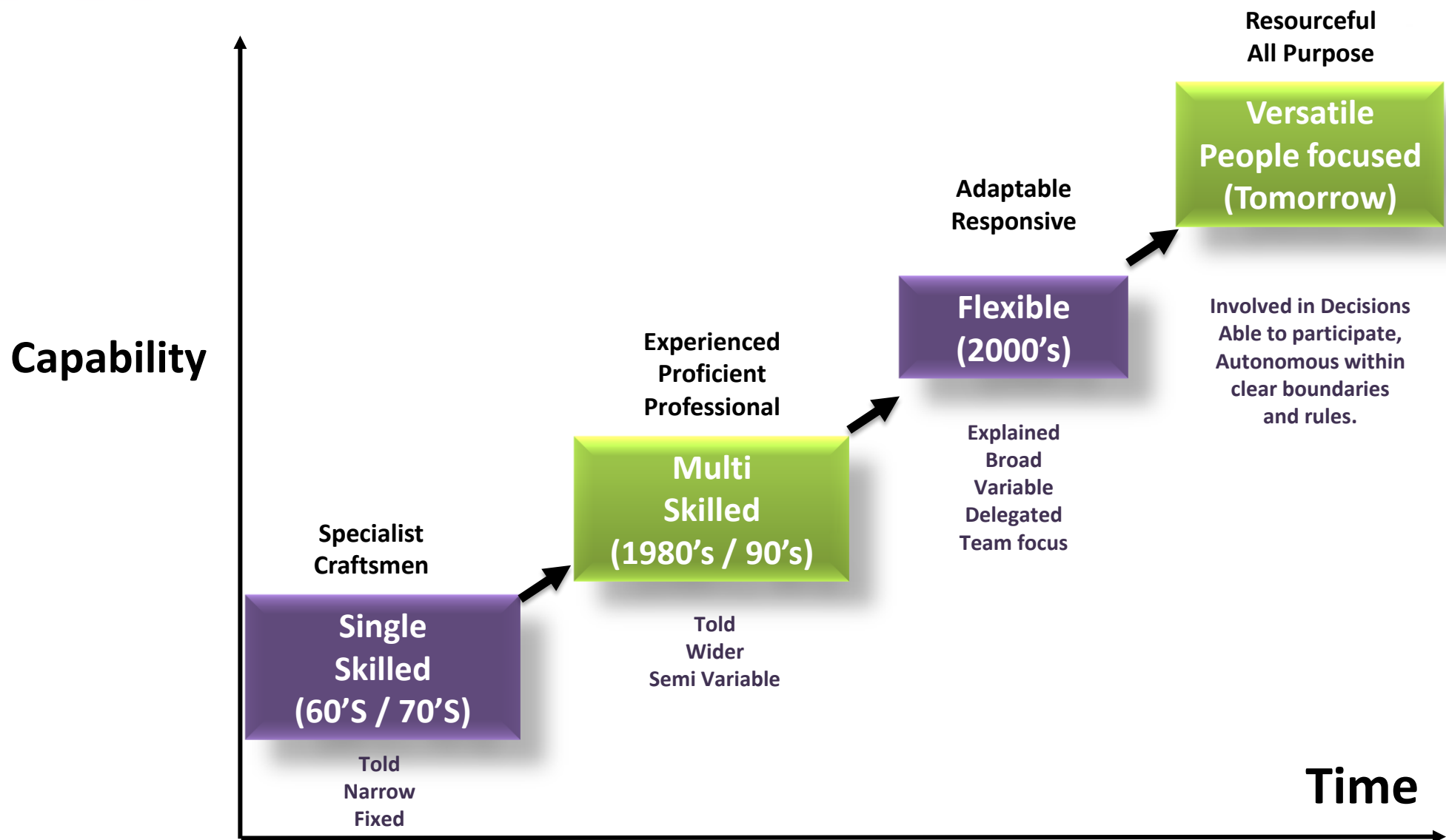
Lack of Communication-(Cause) Lack of Adherence to Standards-(Cause) No Standards Exist (Solution) No Time to Deliver 100yr fix(Solution)	} > 95%
Leaving only Unknown, Novel Issues of..... This is the first time this has ever happened !!	} < 5%



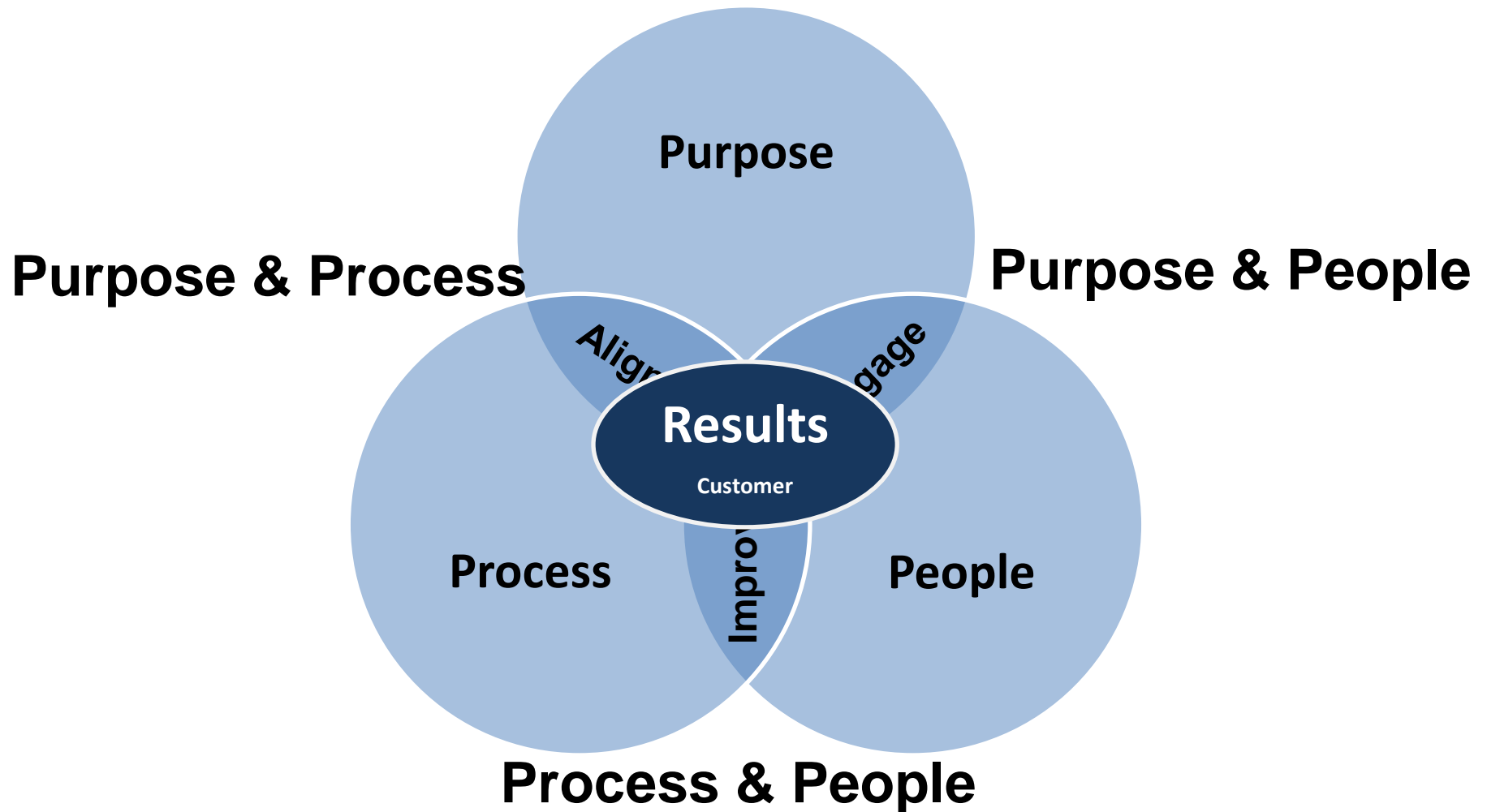
Current vs. (say,3yr) Benchmark Maintenance Time Allocation



Development of maintenance 'Culture'

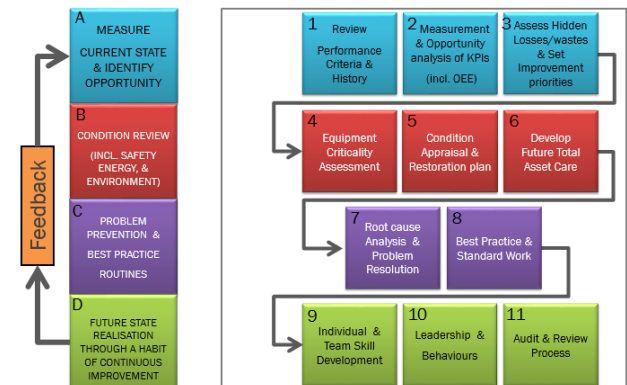


S A Partners Enterprise Excellence Model



The TPM System Model

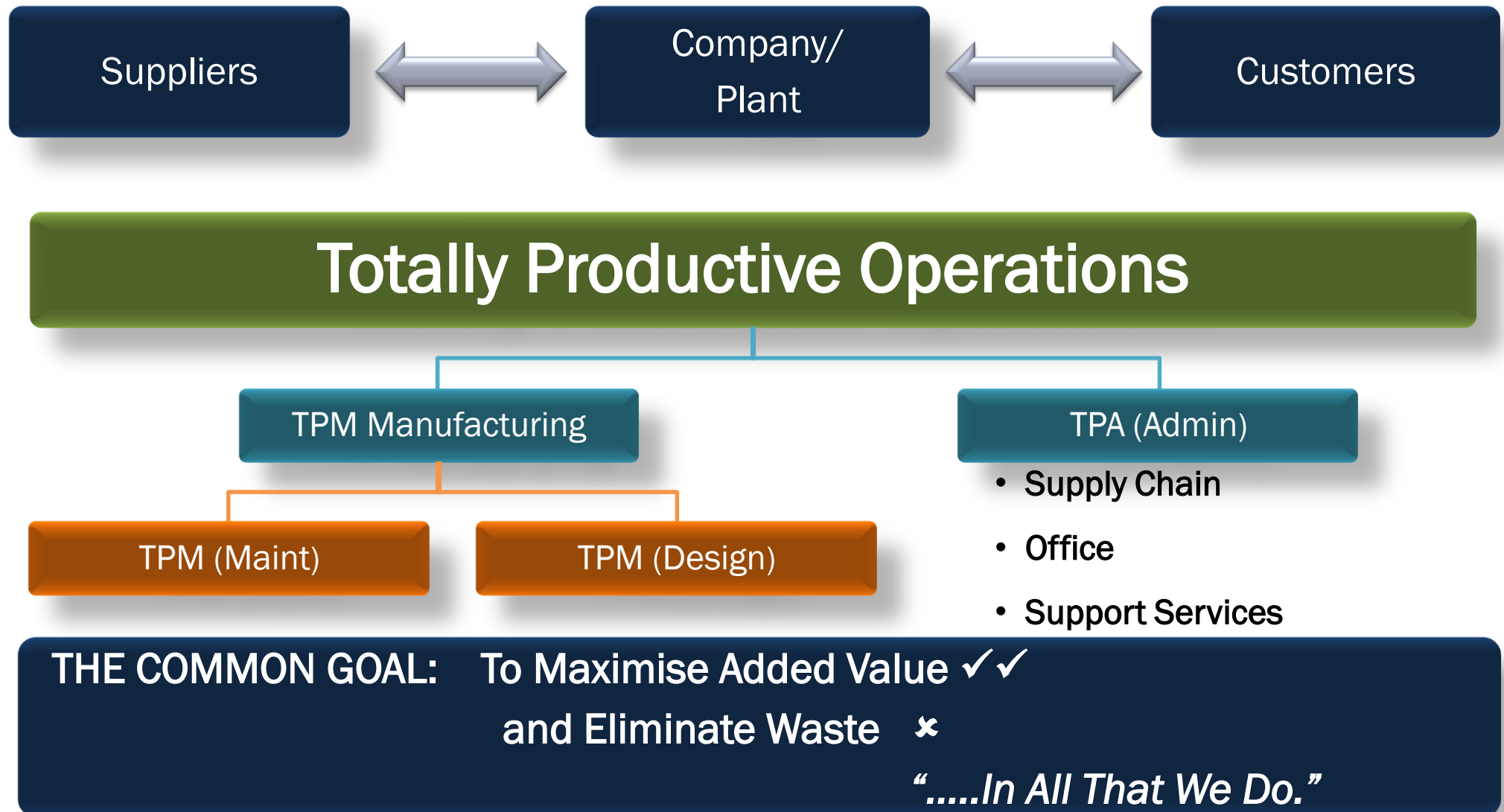
- Our TPM programme is applied via a defined introductory and deployment process within the business unit-**Purpose**
- The application of our TPM model is applied through a defined sequence of team based '*learning by doing*' activity-**Process**
- The outputs of this application are aligned to an evidence based assessment process linked to the teams progress through the model-**People**



Ensuring TPM Success

-a note of Caution

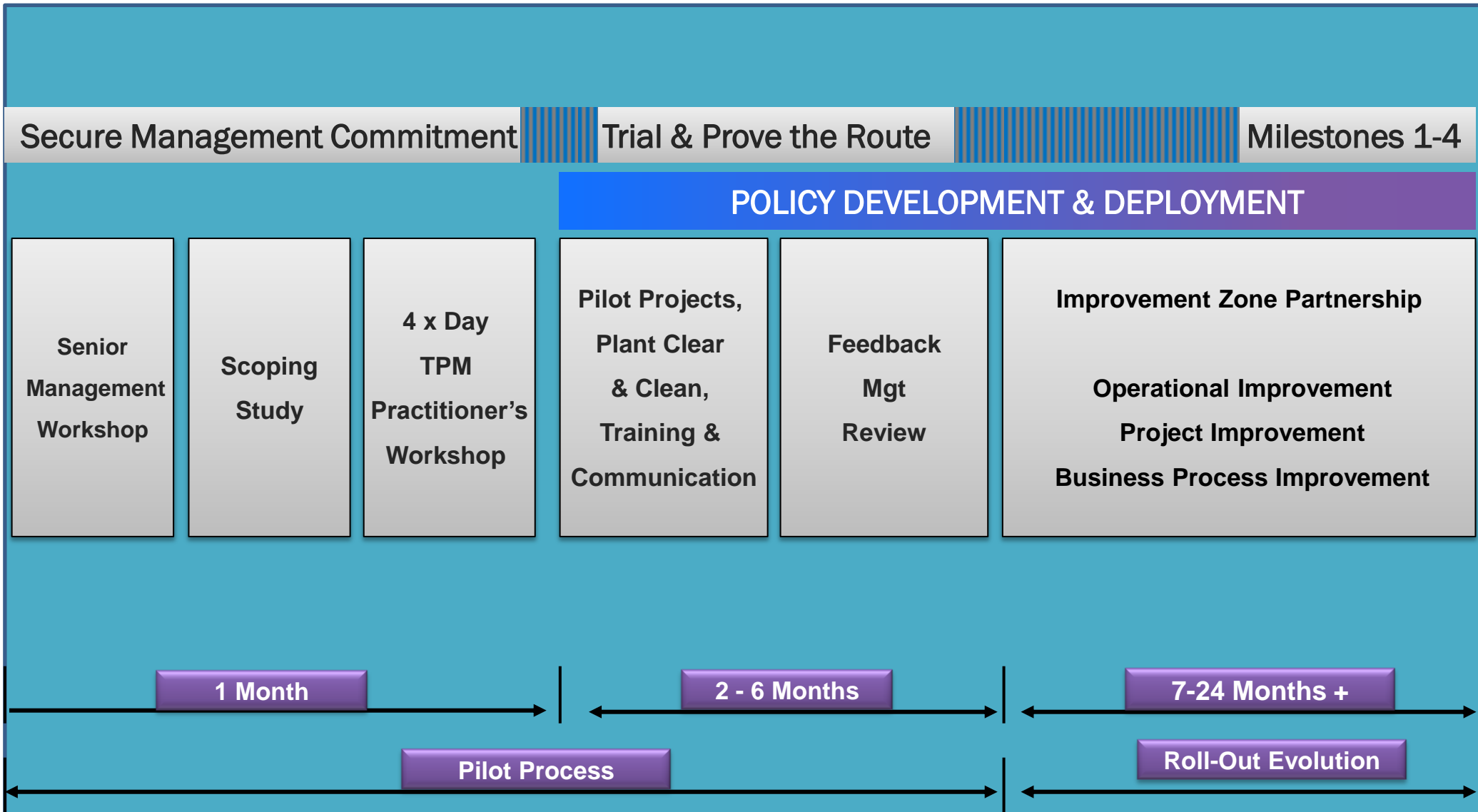
- Your TPM Programme will be at Risk of Failure if it is seen to be Implemented as an Equipment Engineering or Maintenance Department Driven Initiative
- There is much less risk of Failure if it is Implemented and Managed under the umbrella of 'Operations' and hence the Manufacturing Function which embraces both the Maintenance Engineer and the Operator as Equal Partners
- TPM therefore becomes **Total Productive Manufacturing**



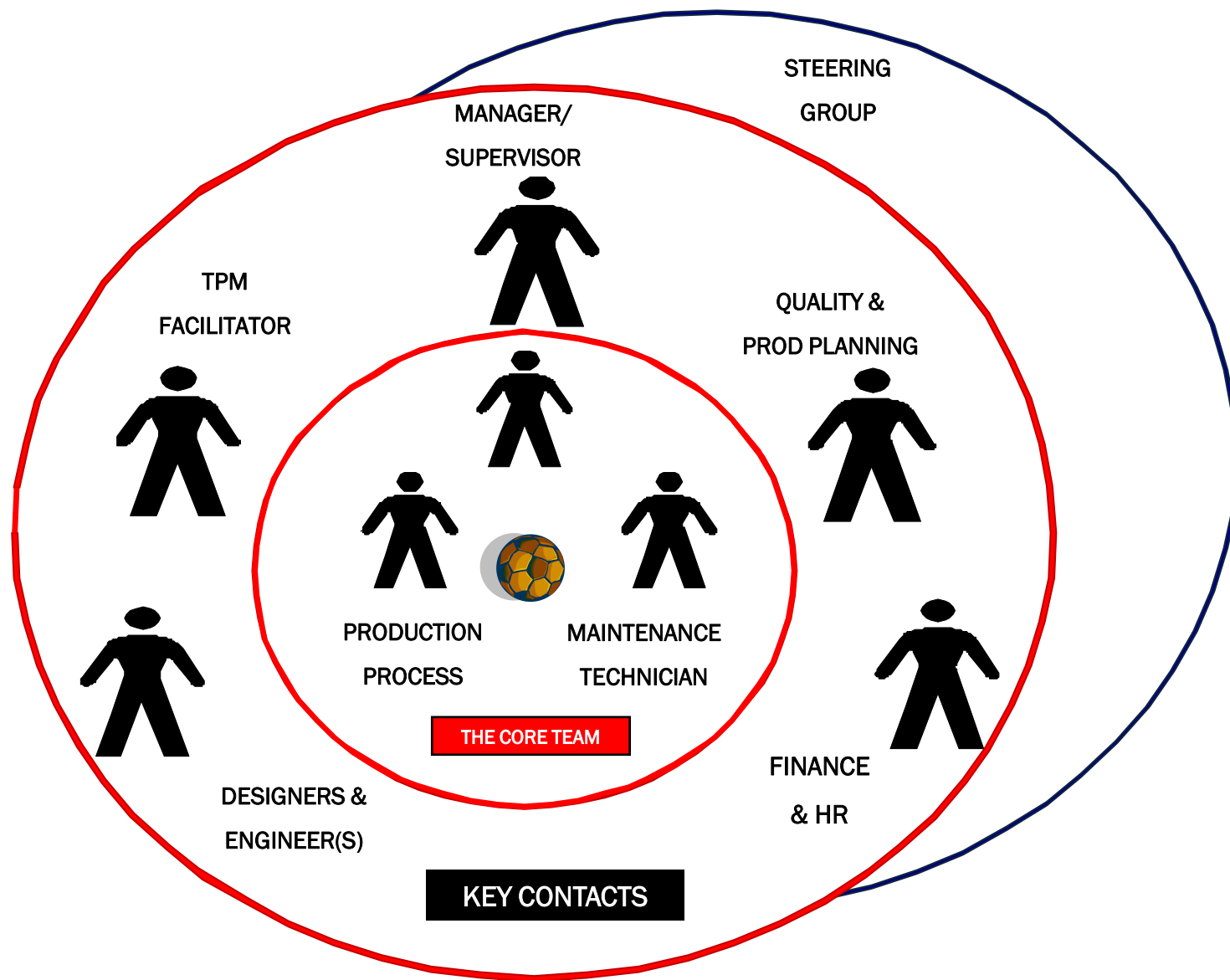
- Operational Excellence is the speed / pace/velocity with which you receive a customer's order and convert it into money in Company's bank account by eliminating waste in all that we do
- 5S Workplace Organisation is aimed at Creating Flow
- TPM is about Maintaining that flow through our critical assets

- You cannot achieve Operational Excellence (OE) without **Operational Basics** in place!!
- This means the fundamentals of:-
 - Standard Work (and therefore Safe) Operating Procedures,
 - Basic Manufacturing Process Control & Capability
 - Best Practice' Work Place Organisation / 5S
 - A Disciplined, self determined, Total Asset Care Regime
 - Reliable Data Collection & Interpretation
 - Continuous Development and Training of our People

TPM Implementation Journey -the Purpose

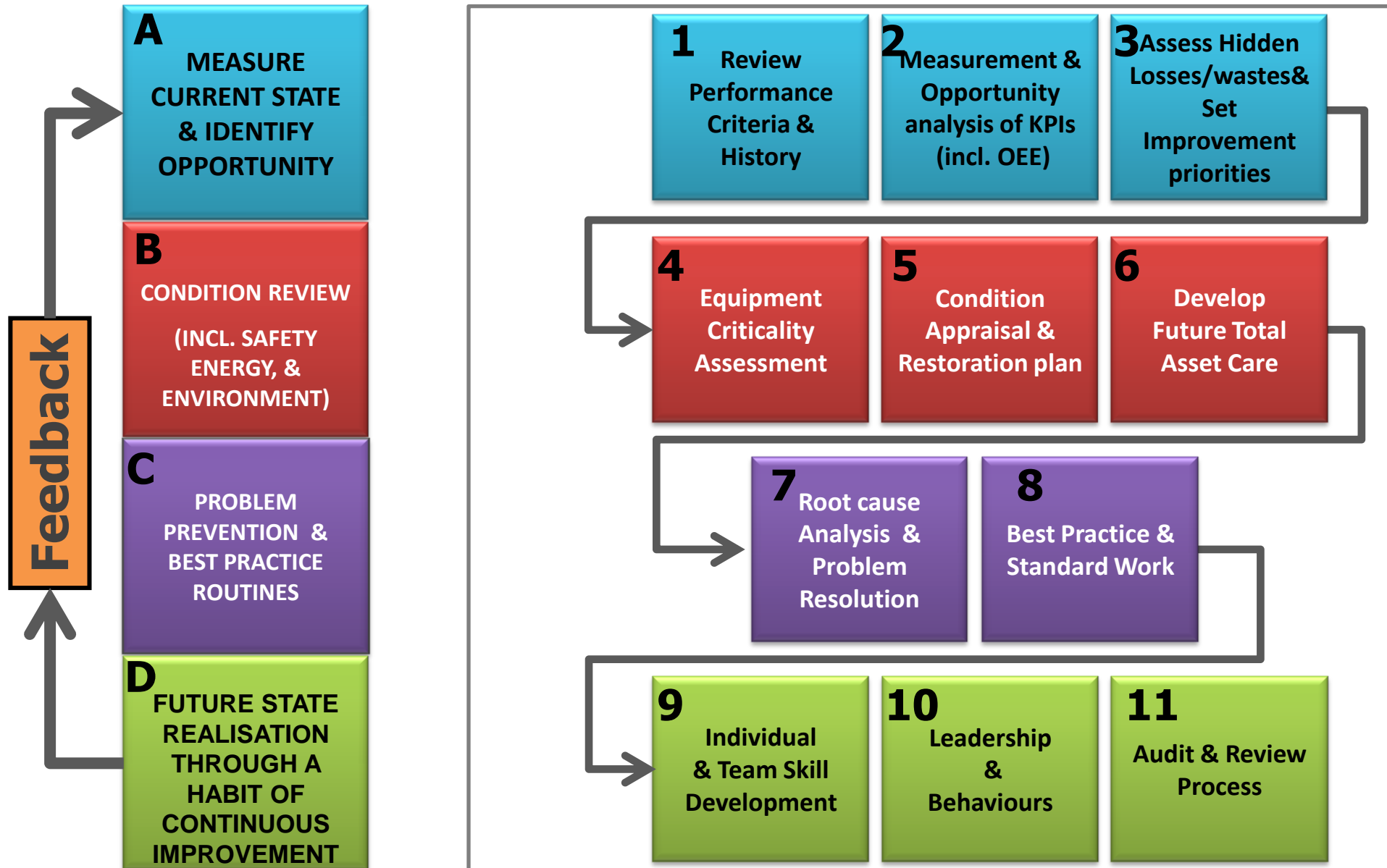


TPM is about Team-Work



Four Cycle-11 Step TPM Process

The Football



Four Cycle-11 Step TPM Process

A
**MEASURE
CURRENT STATE
& IDENTIFY
OPPORTUNITY**

1 Review
Performance
Criteria &
History

2 Measurement &
Opportunity
analysis of KPIs
(incl. OEE)

3 Assess Hidden
Losses/wastes &
Set
Improvement
priorities

Step 1 - Sources of Information

- What Sources do we have?
- How Comprehensive are they and...
- How Trustworthy are they?
- List and Rank them 1to 5, where:-
 - 1 is Poor,
 - 2 is Fair,
 - 3 is Adequate,
 - 4 is Very Good
 - 5 is Excellent

Example STEP 1 Sources of Information

1 = Poor, 2= Fair , 3= Adequate, 4= Very Good, 5 = Excellent

SOURCE	How Comprehensive ?	How Trustworthy?
SAP	4	1 to 5
Efficiency Files (AO1only)	3	3
Kissler Monitor (E14 only)	4	4 to 5
Operator Log Book	3	2
Maintenance Log Book	2 to 3	2 to 3
Tool History Log	3 to 4	3 to 4
Materials Handling Sy	3	5
Robot History (E14 only)	3	Rarely Used
OEM Manuals	4 to 5	2
Operator Knowledge	1 to 5	1 to 5
Maintainer Knowledge	1 to 5	1 to 5
M/C History Single Page	1	5
SORT-Suspect Parts	4	4
Spares Usage	5	5
Daily Activity Sheet	3 to 4	3 to 4
Daily Management Board	3	1 to 5
Material Cycle Count	4	4
Process Change Management	4	3

- Brainstorm and Review the number of different sources, their variety, their comprehensiveness and their integrity
- Is there scope to subject each source to the ECRS test?
- What sources can we **E**liminate or **C**ombine and if not, can we at least **R**eplace with something smarter or at least **S**implify ?
- Can we extract the OEE metric from these sources or do we need to design and implement a OEE Shift Log sheet ?



Step 2 Self Assessment Example

	Availability %	Performance Rate %	Quality Rate %	OEE %
	↓ Breakdowns ↓ Set Ups/ Changeovers	↓ Running at Reduced Speed ↓ Minor Stops & Idling	↓ Scrap Rework ↓ Start-up Losses	
Current 4 Wks Average OEE	80	90	97	70
4 Weeks Best of Best (BoB)	90 (Wk1)	95 (Wk3)	98 (Wk1& 4)	84
World Class	95	96	99	90

Difference between Current Average & BoB is $(14 / 70) \times 100\%$
= 20% Real improvement In Productive Capacity

Step 2-What is BoB & WC OEE Worth to Us?

If this asset is planned to be manned for 168 Hours per week

At 70 % OEE we only achieve 118 Productive Hrs / week

At **84% OEE** we can achieve **141 Productive Hrs / week**

Yielding a **benefit of 23 productive Hrs / week or 1,150 hrs / Yr**

Namely

a **CHOICE** of flexibility at 84% OEE that we do not enjoy

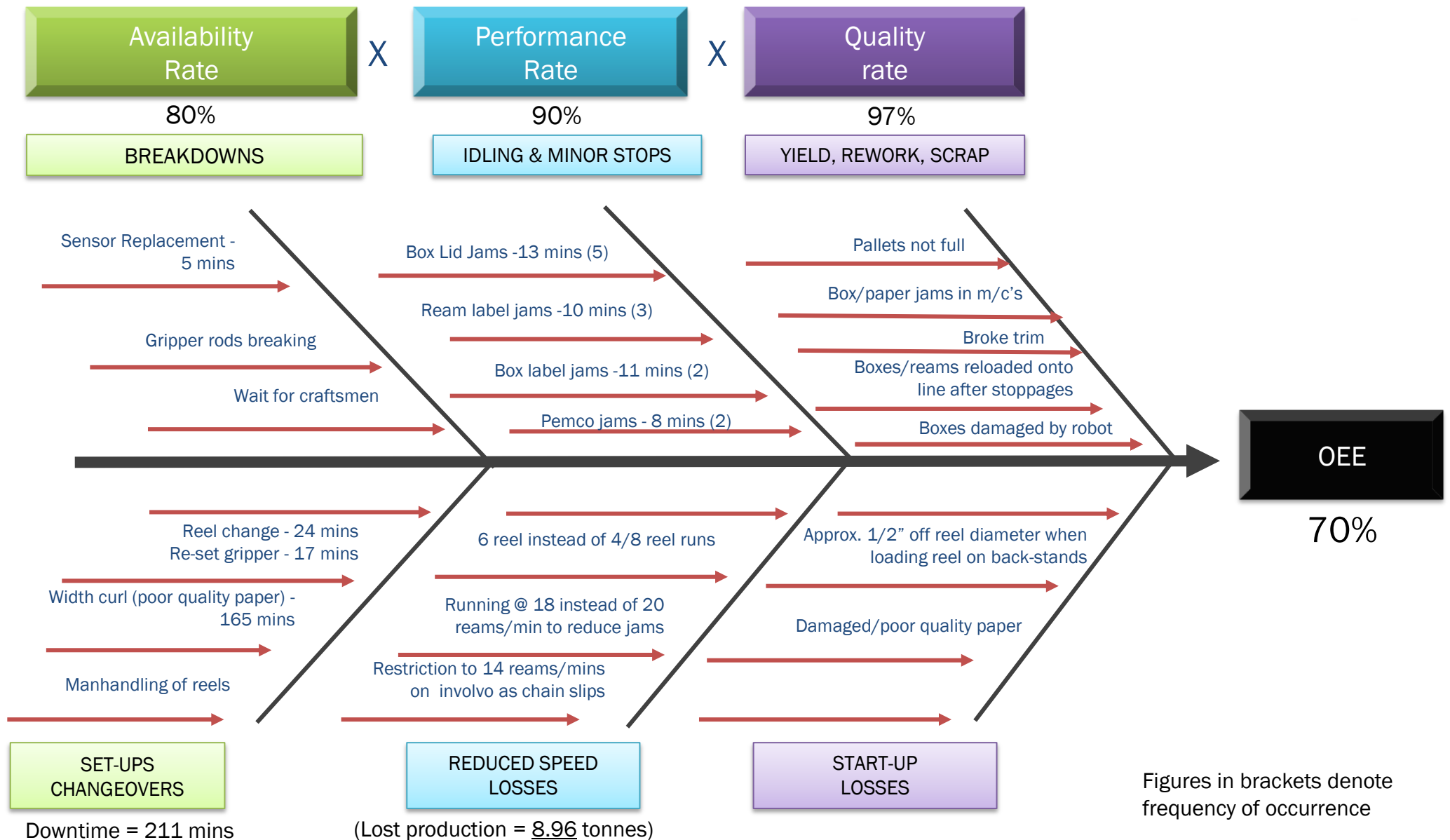
at 70% OEE !!

(When we hit WC levels of 90% OEE the benefit is worth

1,660 extra productive hrs / year)

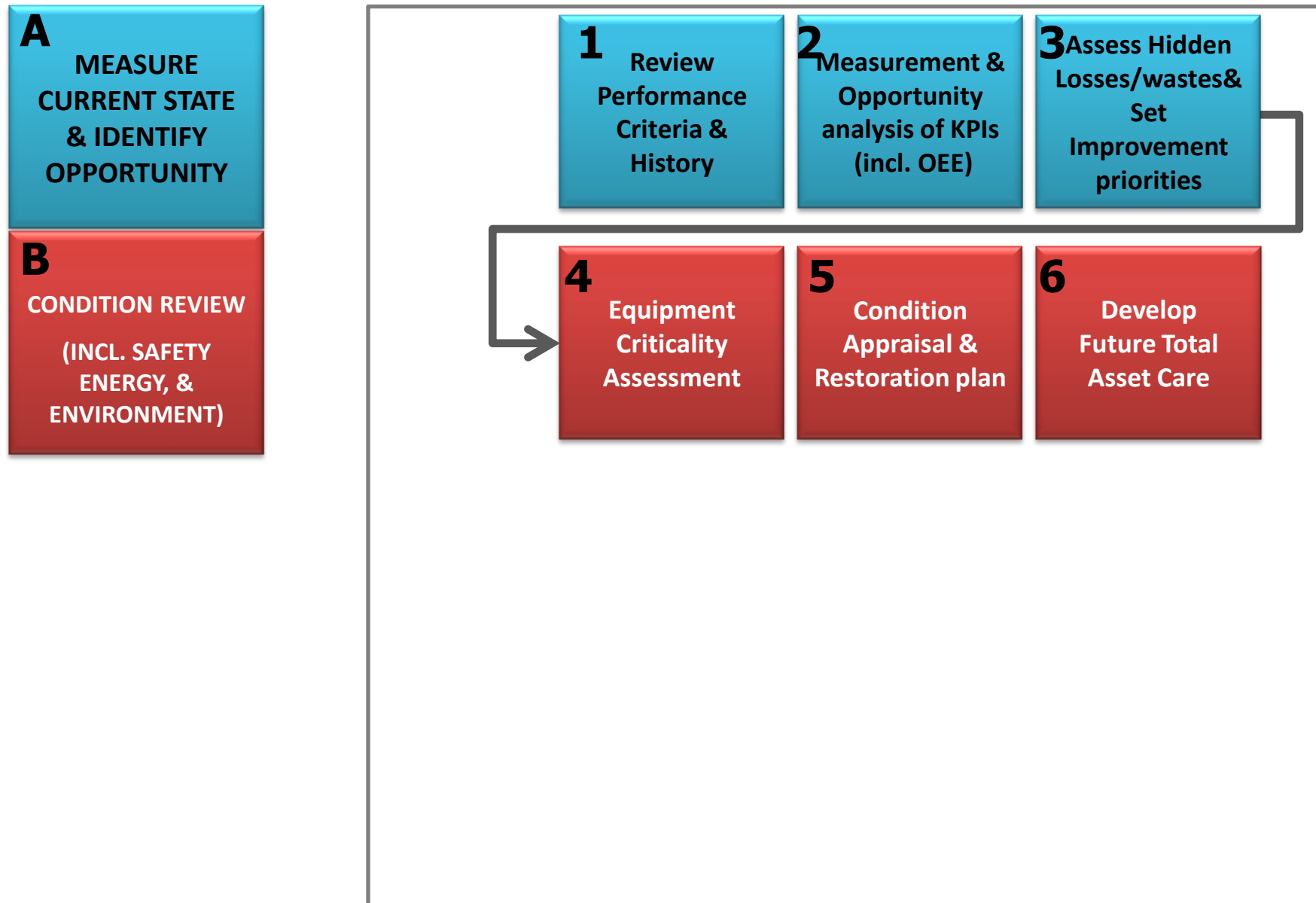
- Have we calculated a current average OEE?
- What is our interim Best of Best OEE target?
- What is our ultimate WC-OEE ?
- What is the value of additional productive hours per week when our BoB is achieved?
- This potential value will help to make a compelling business case to implement TPM and justify our step 5b) Refurbishment Plan

Step 3-Fishbone format for Assessing 6 Losses



- These are the classic 6 x loss reasons and why the current OEE is what it is
- Also differentiating between Floor to Floor
‘Equipment based Losses v’s the Door to Door or
‘Management Losses’

Four Cycle-11 Step TPM Process



Step 4: Criticality Assessment Outputs

List all
Elements



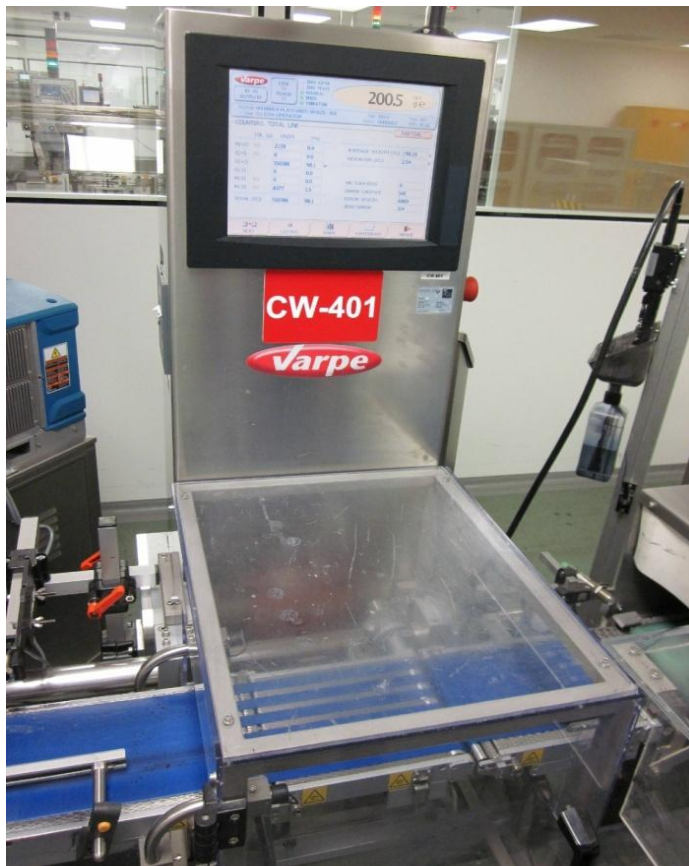
Assess all
Elements



Impact on
Six Losses



Optimum
Conditions



EQUIPMENT DESCRIPTION Packing Line 6 (P6)	1-3 RANKING AS IMPACT ON:								
	S	A	P	Q	R	M	E	C	TOT
1. Checkweigher	2	3	3	3	1	1	1	3	17



Optimum Checkweigher Conditions

- The checkweigher is calibrated (FLOAC)
 - The belts are clean (FLOAC)
- The correct format is entered (FLOAC)
 - Load cells are clean (FLOAC)
- Motors are in good condition and bearings are good (FLOAC, PM, condition monitoring)
- All rollers are free and easy to rotate (FLOAC, PM, condition monitoring)

- Safety
- Availability
- Performance
- Quality
- Reliability
- Maintainability
- Environment
- Cost
- 1 = No impact
- 2 = Some impact
- 3 = Major impact

Step 4 - Criticality Assessment Outputs

- ❖ **Builds Teamwork between Operators & Maintainers**
- ❖ **Understanding of the Equipment Functionality**
- ❖ **Checklist for Condition Appraisal (Step 5a)**
- ❖ **Focus for Future Asset Care Asset Care (Step 7)**
- ❖ **Highlights Safety & Environmentally Critical Items**
- ❖ **Potential Impact on OEE**
- ❖ **Highlights Weaknesses Regarding:-**
 - ☑ **Ease of Operation**
 - ☑ **Inherent Reliability**
 - ☑ **Ease of Maintenance**

- The Operators and their Maintenance colleagues become far more '***Equipment Conscious***'
- They now actually *understand* how the equipment works
- Highlights the Impact of Safety, Reliability, Environment and APQ(ie the OEE)
- Focuses on parts that need to be kept in Optimum Condition as part of Steps 7 & 8

STEP 5a 'Spot the Rot'

Go to the machine and systematically inspect every square centimetre for deterioration and refurbishment needs. Look for:

- ▶ Dirty or Neglected equipment (Packaging debris and / or dust particles)
- ▶ Disconnected hoses
- ▶ missing nuts and bolts producing visible instability
- ▶ steam leaks and air leaks
- ▶ Air Filter Drains That Need Cleaning
- ▶ jammed valves
- ▶ hydraulic, lubricating and oil leaks
- ▶ measuring instruments too dirty to read
- ▶ abnormal noises in pumps and compressors

Pay particular attention to critical components. They should be kept in optimum condition.

Step 5a)-Spot the Rot summary

Asset	Total No of Issues	Safety Issues	Environment Issues	High OEE Impact	Medium OEE Impact	Low OEE Impact	Cum OEE Impact
Auto 1	30	15	26	7	4	1	12
Auto 2	38	15	2	5	9	10	24
Tape	24	6	0	-	10	2	12
Braze	57	36	11	10	2	9	21
Total	149	72	39	22	25	22	69

Spot the Rot Summary

Total of 149 issues of which...

- 48% are potential safety issues,
- 26% environmental issues and
- 46% perceived as having a potentially negative impact on the OEE

- 1. TPM is about positive obsessive attention to detail.**
- 2. Using our God-given senses of Look, Listen, Smell, Feel/Touch, Discuss.**
- 3. Even the smallest thing wrong can develop into a major problem. At best it will stay as it is. At worst it will deteriorate. It certainly won't get better on its own !**
- 4. Use Photographic Evidence as a reminder of 'Before TPM...'**
- 5. Spotting what's wrong is only half of the solution. Correcting the problem with a permanent '100 year fix' solution is the other half.**
- 6. Many small problems have potential safety and/or environmental issues.**
- 7. Some will eventually impact on the OEE**
- 8. In the real TPM "Cleaning is Inspection.... is Spotting Deterioration.... is Catching it before it becomes Catastrophic.... is pride in the workplace.... is a "hassle free" shift.... Resulting in "Pride of Ownership".**

STEP 5b REFURBISHMENT

The objective of the Refurbishment Programme is to set up a Repair and Replacement Plan, based on the Condition Appraisal (step 5)

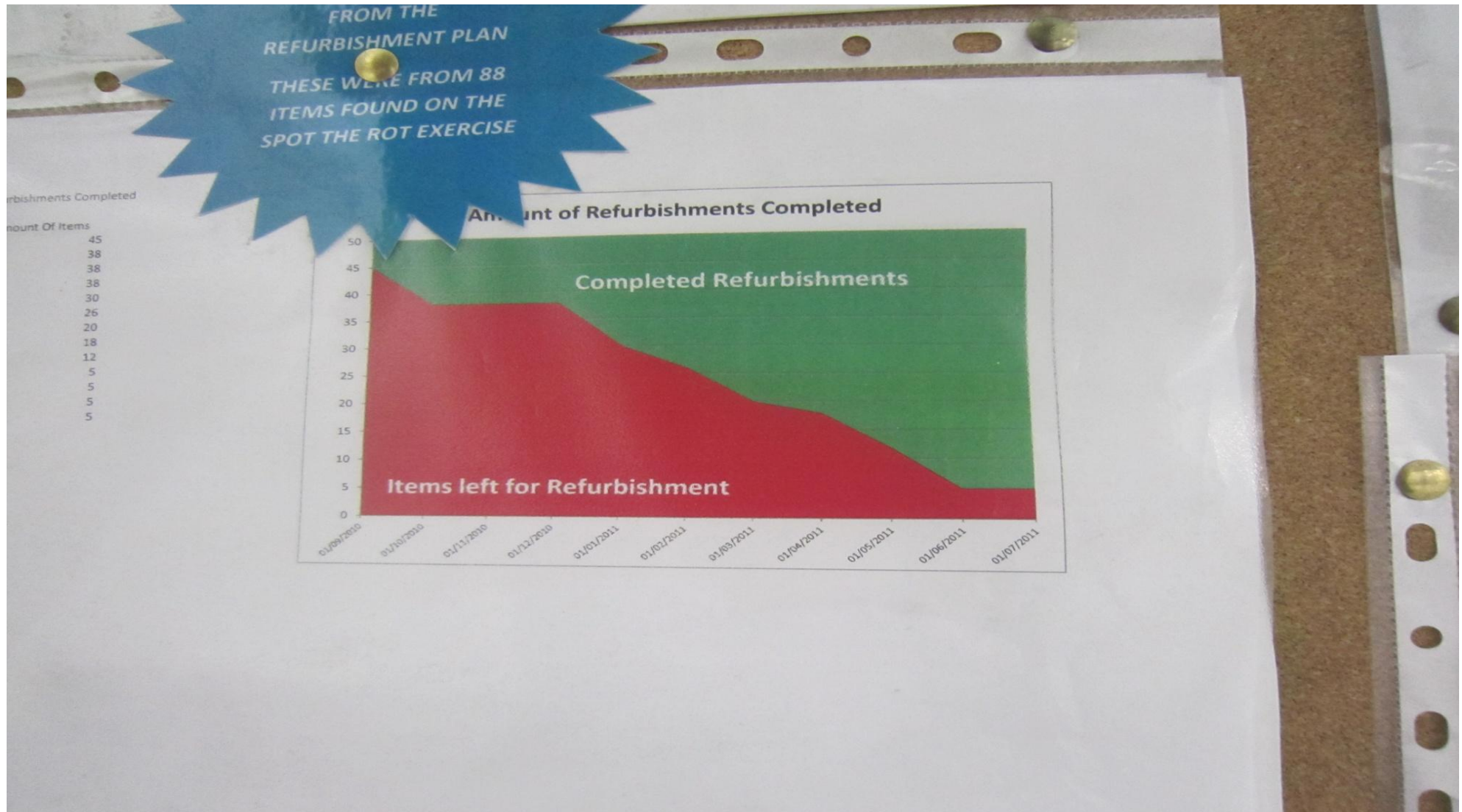
The plan will provide a detailed summary of actions to be co-ordinated by the team and will include:

- **Dates and Timescales**
- **Resource (labour, materials, time)**
- **Responsibilities**
- **Control and feedback (Management of Change)**

To aid Planning and Completion of Refurbishment Tasks, it may be helpful to categorise up to three work packages:

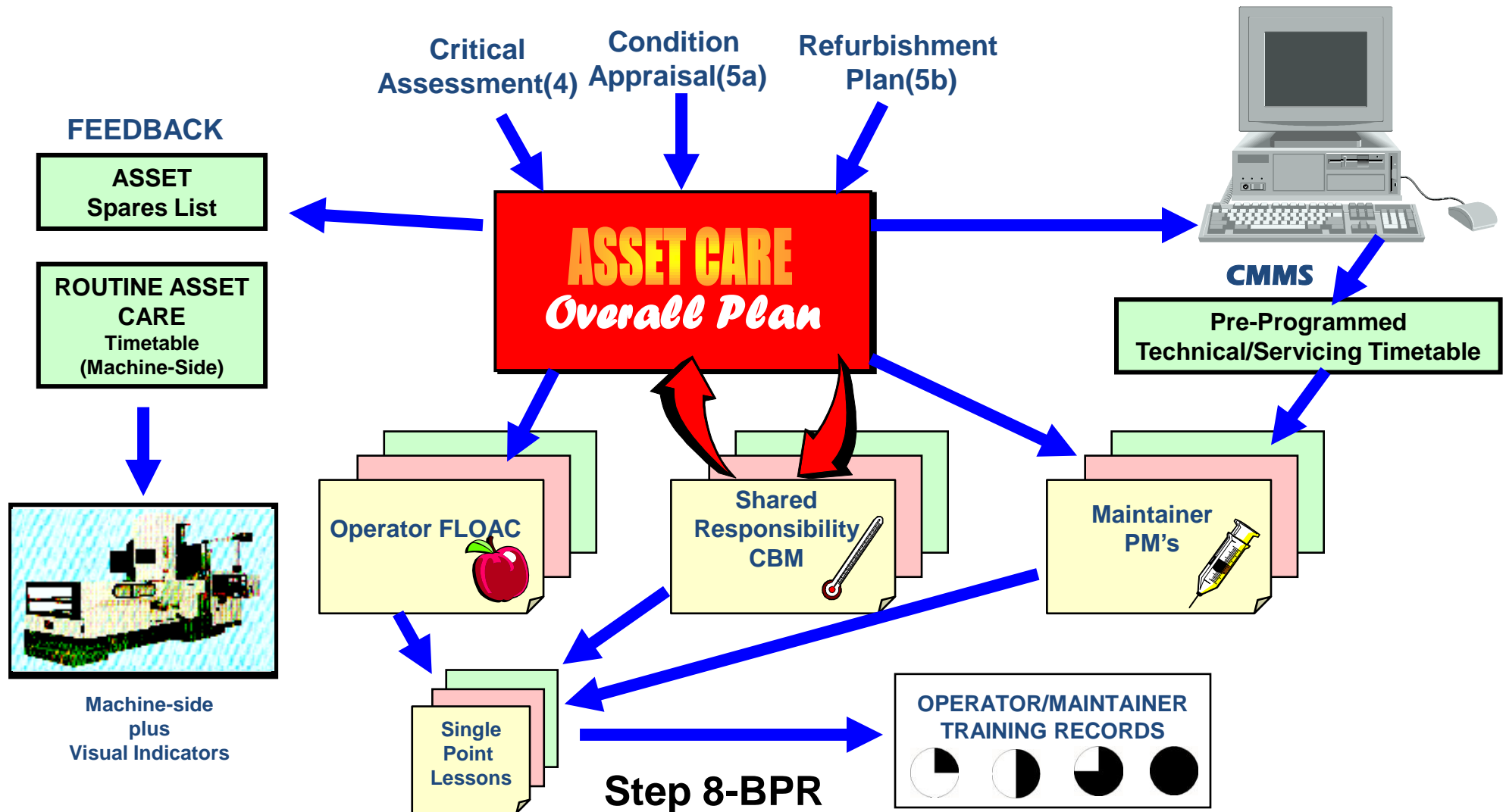
- **On the Run (Low Cost/Easy to Do/No Outage)**
- **Minor Planned Outage (8 to 24 hours)**
- **Major Planned Outage (involving Redesign/Fabrication).**

Step 5b) Refurbishment Plan Summary



- Restore to 'as new' condition,
- The need for a progress Tracker,
- Now able to justify cost/benefit via OEE's Best of Best additional productive hours

DEVELOP ASSET CARE LISTS, INSPECTION & PM'S



Step 6-Front Line Operator Asset Care (FLOAC) Operator as the Nurse

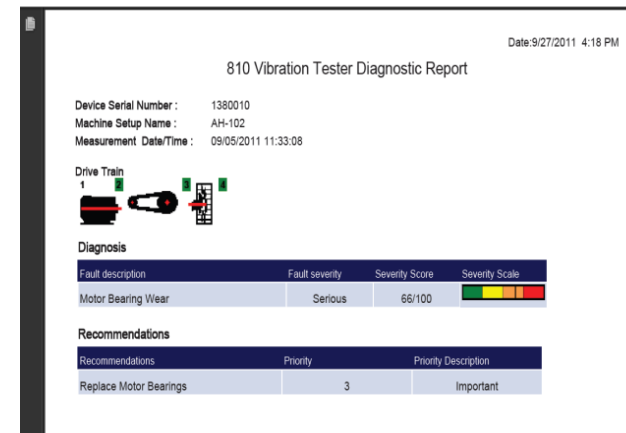
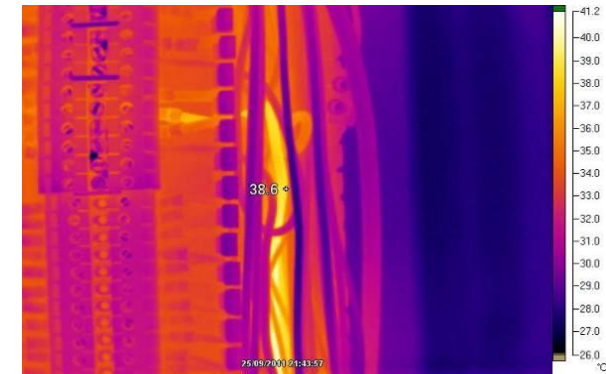


- The operator takes on the role of first line asset care
- Checking the condition of the equipment during operation
- Carrying out checks during the weekly asset care shift windows
- Progressing carrying out change overs on equipment



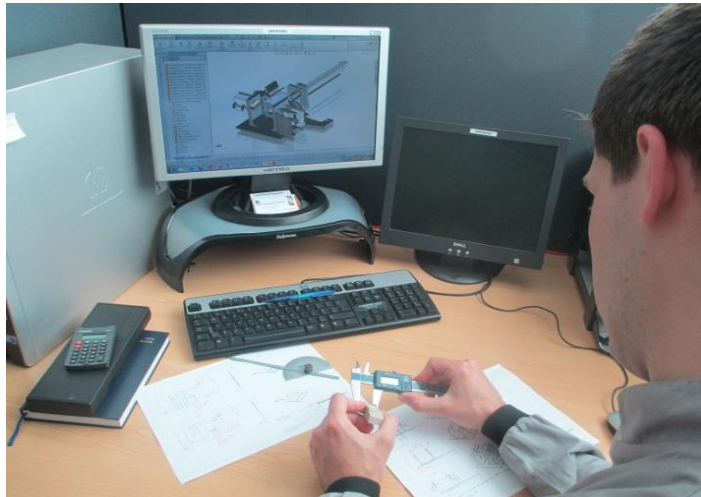
- The operator carries out more interesting tasks and expands their knowledge

Step 6-Condition Based Maintenance via the Maintenance Technician

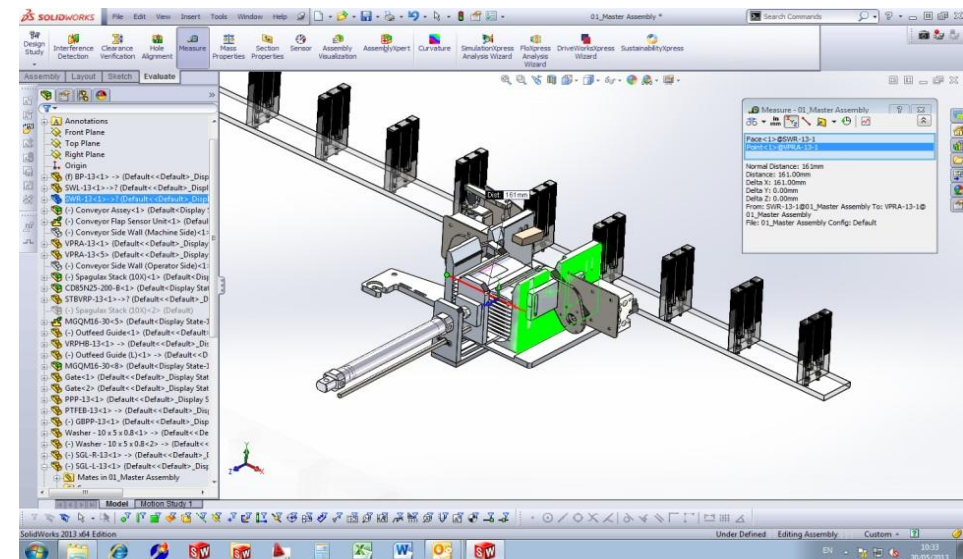
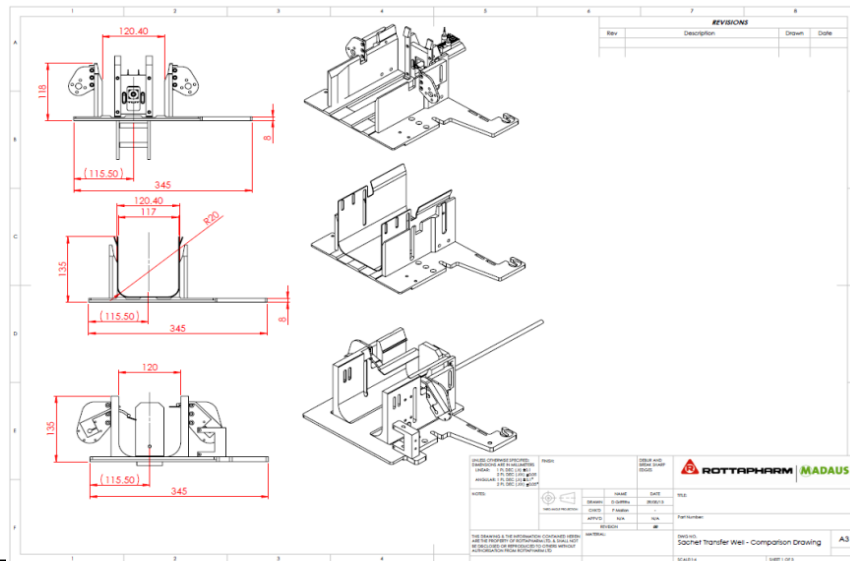


**CBM via Vibration Monitoring, Oil Debris analysis & Thermography
is the responsibility of the Maintenance Technician (the Doctor)**

Step 6-Maintenance Technician as the PM Engineer (Doctor)



- As well as PM's-The technicians spends more time on design and engineering out problems (the occasional Surgeon)
- Less work is outsourced
- More knowledge and ability is developed in-house
- Technicians feel more motivated and more valued



Step 6 FLOAC Example

Line Six East Satellite Asset Care

What's This ?

E 1	RESIN SPILLAGES
E 2	CONEVATOR SUCTION PIPE
E 3	WATER FLOW INDICATOR
E 4	WATER FLOW INDICATOR
E 5	WATER FLOW INDICATOR
E 6	OIL TEMP IN
E 7	OIL TEMP OUT
E 8	OIL FLOW INDICATOR
E 9	OIL FILTER CONDITION INDICATOR
E10	SUPPLY TANK WATER LEVEL
E11	DRIVE MOTOR AIR LEAKS
E12	GEAR BOX OIL LEVEL
E13	GEAR BOX OIL LEAKS
E14	WATER TEMPERATURE
E15	OIL PRESSURE OUT
E16	BARREL COOLING WATER LEVEL
E17	WATER PIPE LEAKS
E18	GENERAL CLEANLINESS
	CHANGE CONEVATOR PADS
	RETURN USED PACKS TO STORES

See next Slide ►

Step 8

Make It Easy to do Things Right

E 3 WATER FLOW INDICATOR

CHECK THAT THE WATER FLOW INDICATOR IS SPINNING

IF IT IS NOT SPINNING, PLEASE RAISE A JOB REQUEST AND RECORD THE JOB REQUEST NUMBER AND DATE ON A RED TAG AND ATTACH THE RED TAG TO THE INDICATOR.

THE ASSET CARE SHEET OF THIS SECTION SHOULD BE FILLED WITH A RED PEN

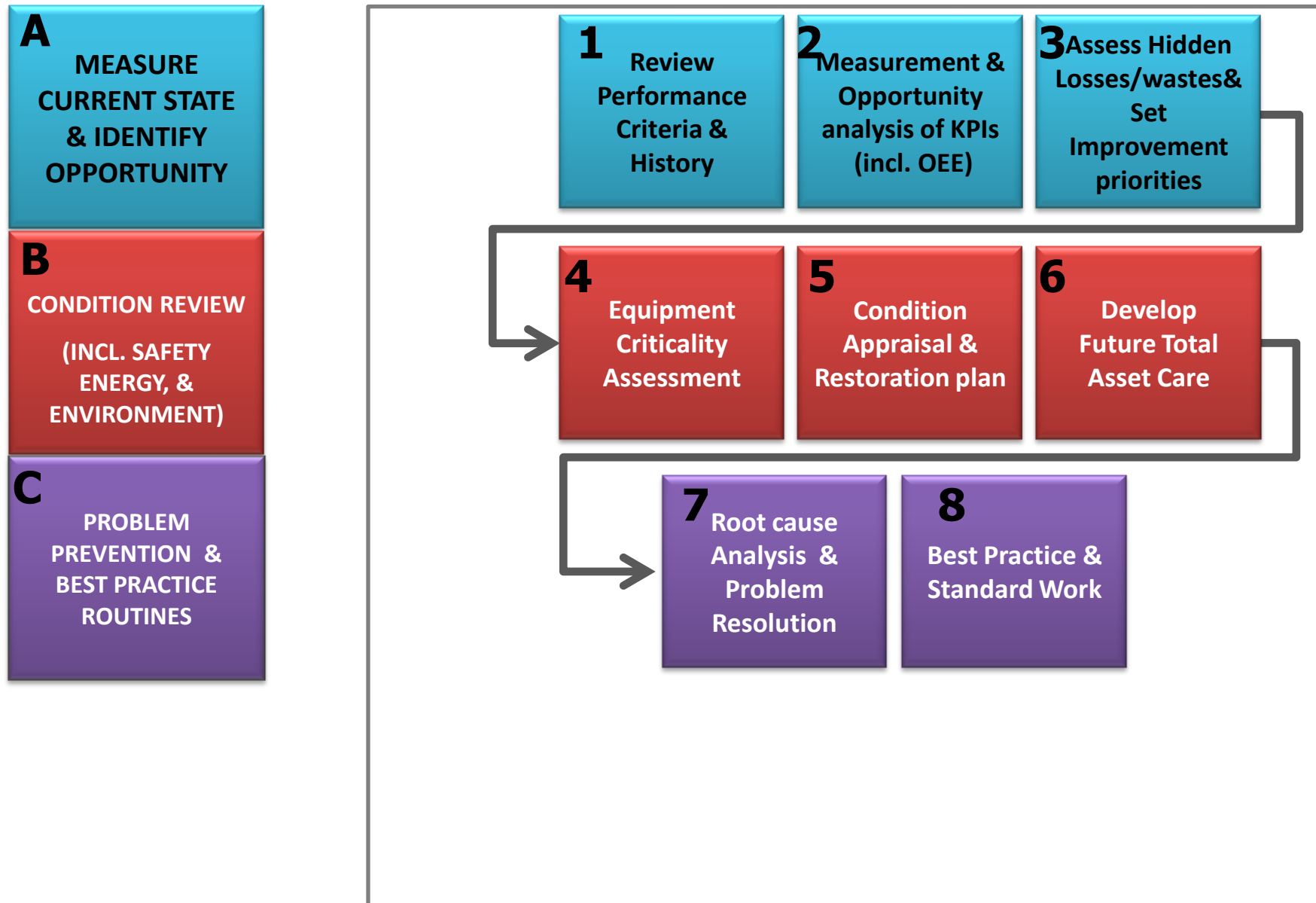
FAILURE TO RECTIFY THIS COULD RESULT IN DOWNTIME

E 3 WATER FLOW INDICATOR



- FLOAC's - Use of Visual Indicators ,
Make it Easy to do right, and difficult to do wrong,
- How many minutes (usually less than 10)
to carry out FLOAC checks.
- Full Step 6 must also include CBM
& a comprehensive review of the fixed interval PM's

Four Cycle-11 Step TPM Process



P-M Analysis is the Problem Solving Tool used in TPM, which Emphasises the Machine/Human Interface:

There are:

The 4 P's

Caused by:

Problems, due to

Phenomena, which are

Physical, which can be

Prevented

Because they are to do with:

The 5 M's

Involving:

Materials & **M**other nature

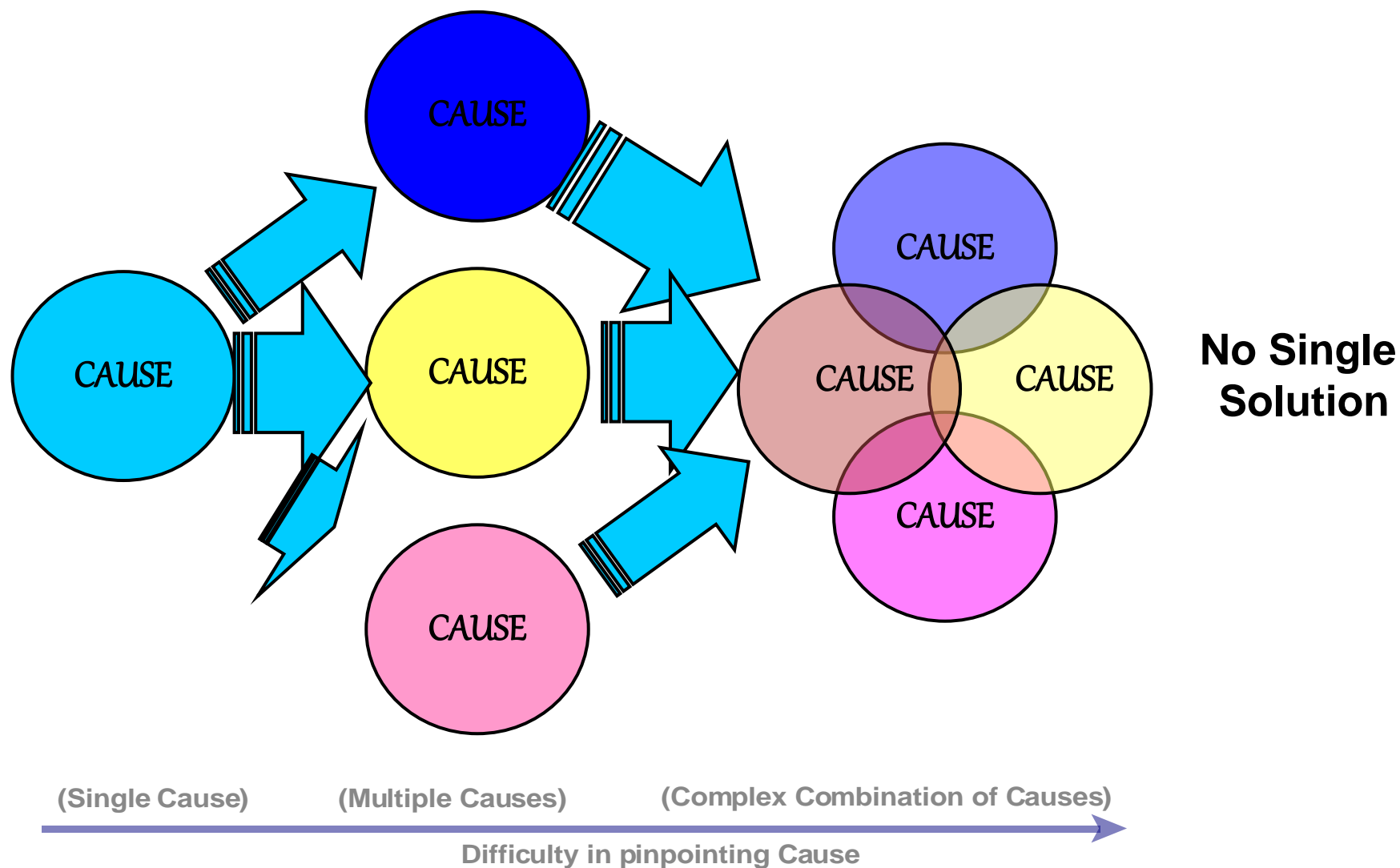
Machines

Methods

Manpower

.....and We Need a 6th M Which is Measurement

Step 7 -Problem Solving Causes Of Chronic Losses

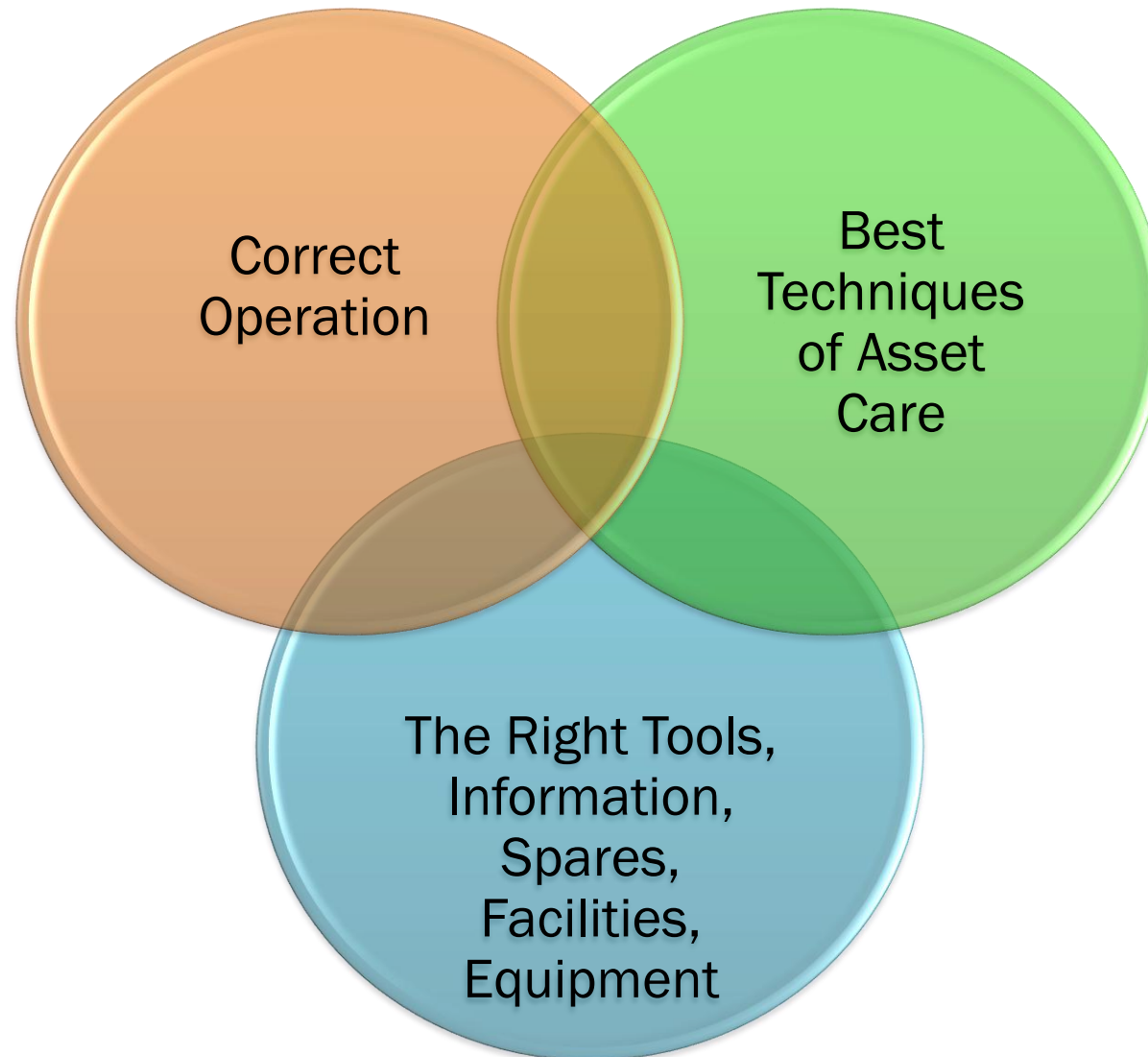


- Use of the Event Analysis form to not only solve the problem but to also prevent re-occurrence with the '100 year fix'
- The importance of the P-M mindset of the 4 x P's and 6 x M's
- Strong links back to solve highlighted issues on Step 3 fishbone
- Use of Ask Why? 5 x times or A3, DMAIC and FMEA tools to deliver the 100 year fix mentality

- Agree Best Practice
- Standardise (Train and Assess)
- Practice and Refine (Pass on Lessons Learnt)



Step 8 - Best Practice Framework



Step 8

Make It Easy to do Things Right

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FAILURE TO RECTIFY THIS COULD RESULT IN DOWNTIME

E 3 WATER FLOW INDICATOR



Step 8-Single Point Lessons

- Contain content which can be delivered in 10 minutes or less
- Are highly Visual
- Are an Essential aid to communication for Operators, Maintainers, Managers and Support Staff
- Address the Main Stages of the Learning Process:-

Explain (Awareness)

Demonstrate (Understanding)


Practice (Skill Development)

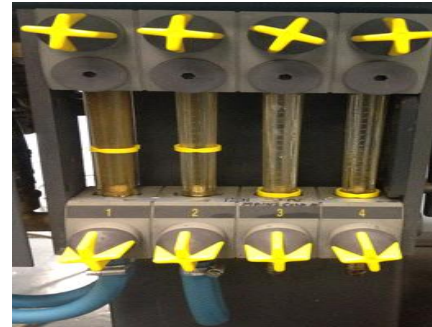

Confirm (Competent to Train Others)



Step 8: Develop Best Practice Standard Work and SPL's

JOB BREAKDOWN SHEET

MAJOR STEPS (WHAT)	KEY POINTS (HOW)	REASON FOR KEY POINTS (WHY)
STEP # 1 <u>Turning On The Grip Verification For The Robot</u>	1) Turn the key to pgm/man mode. Press the power button , then press the GRIP VER. button to enable the green light. 	1) To ensure the robot will not operate if it fails to pick sprue. This ensures the mould won't close on sprue and damage tooling.

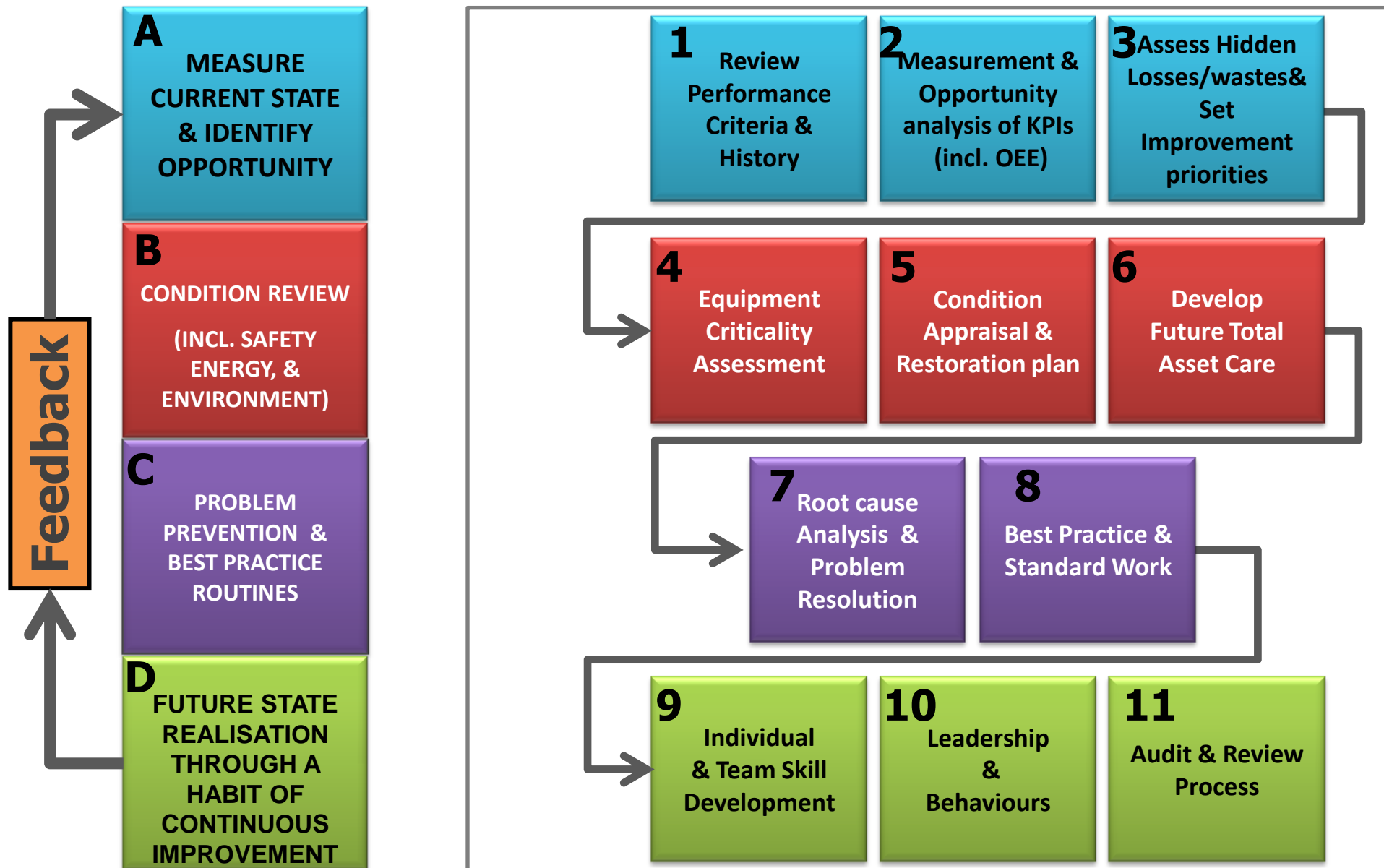
STEP # 5 <u>Checking The Water Flow In The Machine</u>	1) Check and make sure that there's an adequate water flow level in the machine. 	1) To ensure that the water system is operating correctly.
STEP # 6 <u>Check To Ensure The Regrind Return Selector Box Is Switched To No.2 For L.C.P Return</u>	1) Check to ensure that the selector box which is located at the rear of the machine is on the correct number to co-operate with the regrind return system. 	1) To ensure the regrind return works correctly.



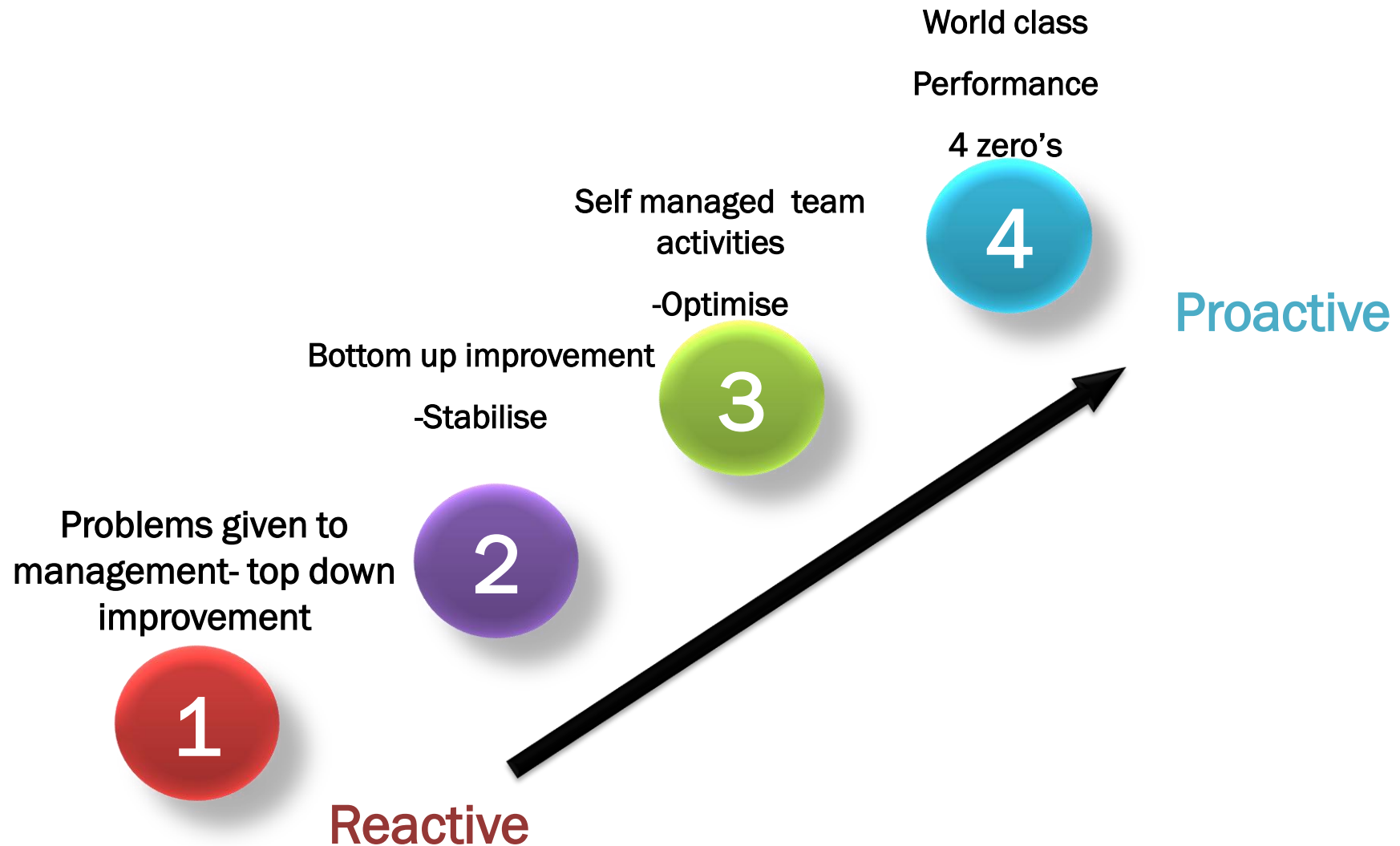
Step 8 KLP's

- **There is only one Best Way**
- **Use of SPL's & Skills Matrix**
- **Standard Work**

Four Cycle-11 Step TPM Process



4 Milestones of TPM & Team Performance-People



- Practitioners Competency can be certified to **Cardiff University Lean Competency System, Basic Intermediary and Advanced.**
- Training workshops incorporate class room learning, process simulations exercises and shop floor activity.



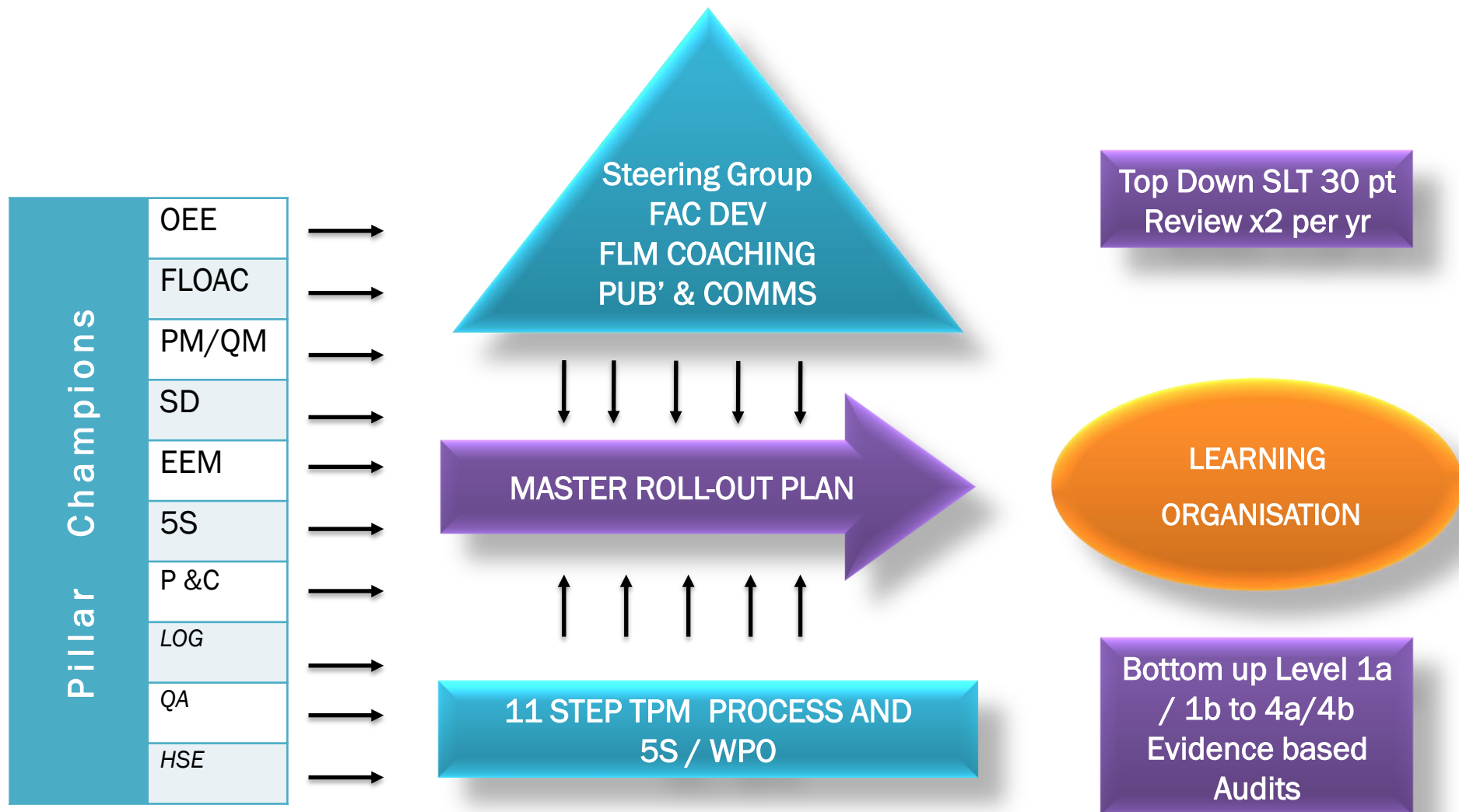
It's important to recognise the different industry characteristics in for example , Process, Manufacturing, Packaging ,Utilities, Warehousing, Especially (but not exclusively) in terms of :-

- ***OEE Measurement***
- ***Operator Impact on Performance***
- ***Maintainer Impact on Performance***
- ***5S Work place Organisation***
- ***Changeovers***

Recognising the differences

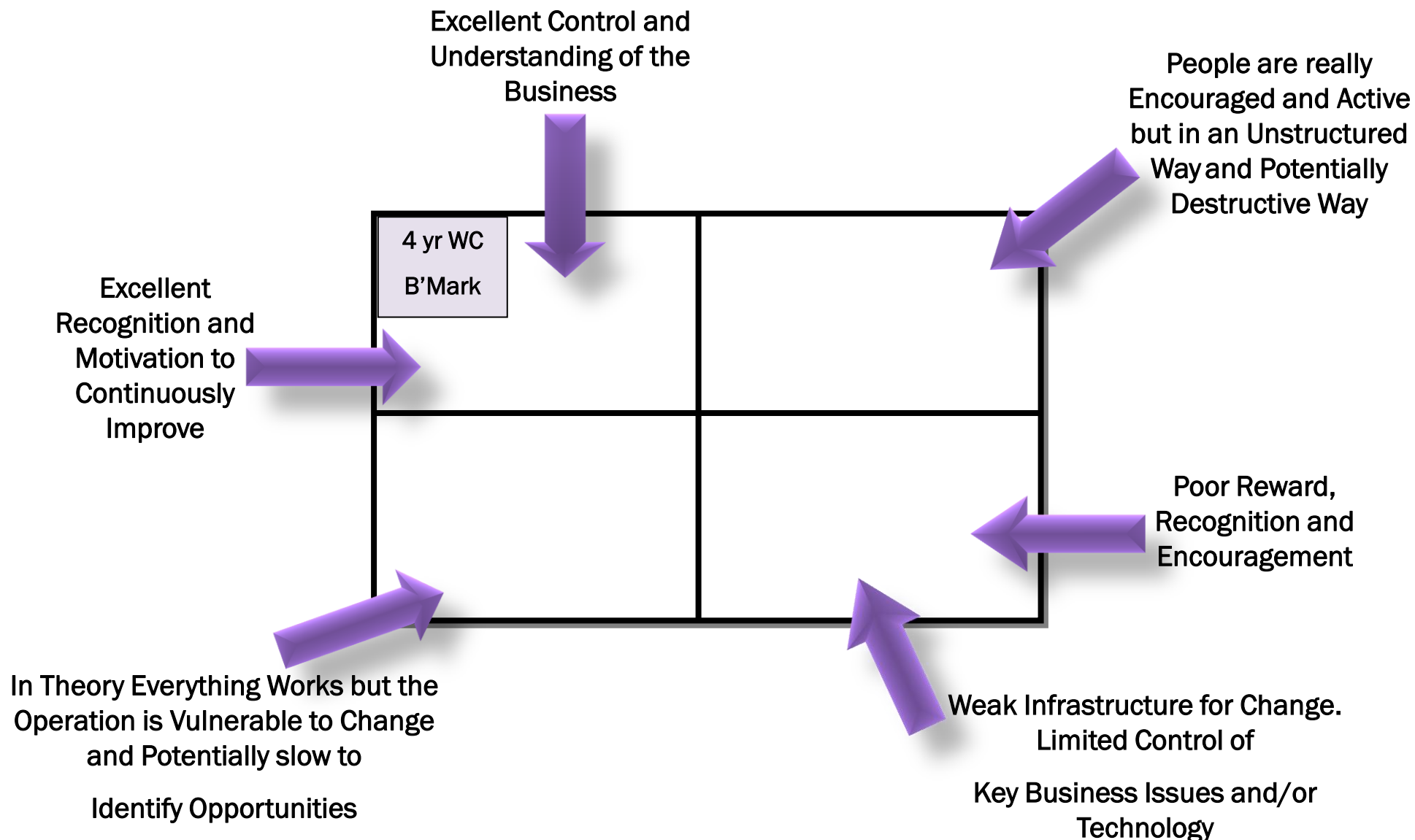
Type of Facility	OEE Measure	Operator Impact	Maintainer Impact	5S -WPO	Change overs
Process	<i>Campaign or Batch OEE or a Fixed Repeating Schedule</i>	<i>Significant</i>	<i>Major</i>	<i>Significant (contamination control)</i>	<i>Significant + CIP's</i>
Manufacturing	Running Clock OEE	Major	Major	Major (to create Flow)	Major
Packaging	<i>Running Clock OEE</i>	<i>Major</i>	<i>Major</i>	<i>Major (to create Flow)</i>	<i>Major</i>
Utilities	Relevance of OEE??	Very Little	Major	‘Housekeeping’ Eng ‘Pride’	N/A?
Warehousing	<i>Running Clock OEE</i>	<i>Major</i>	<i>Major</i>	<i>Major (to create Flow)</i>	<i>Pre-Kitting ECRS</i>

CI-TPM Infrastructure for Programme Governance



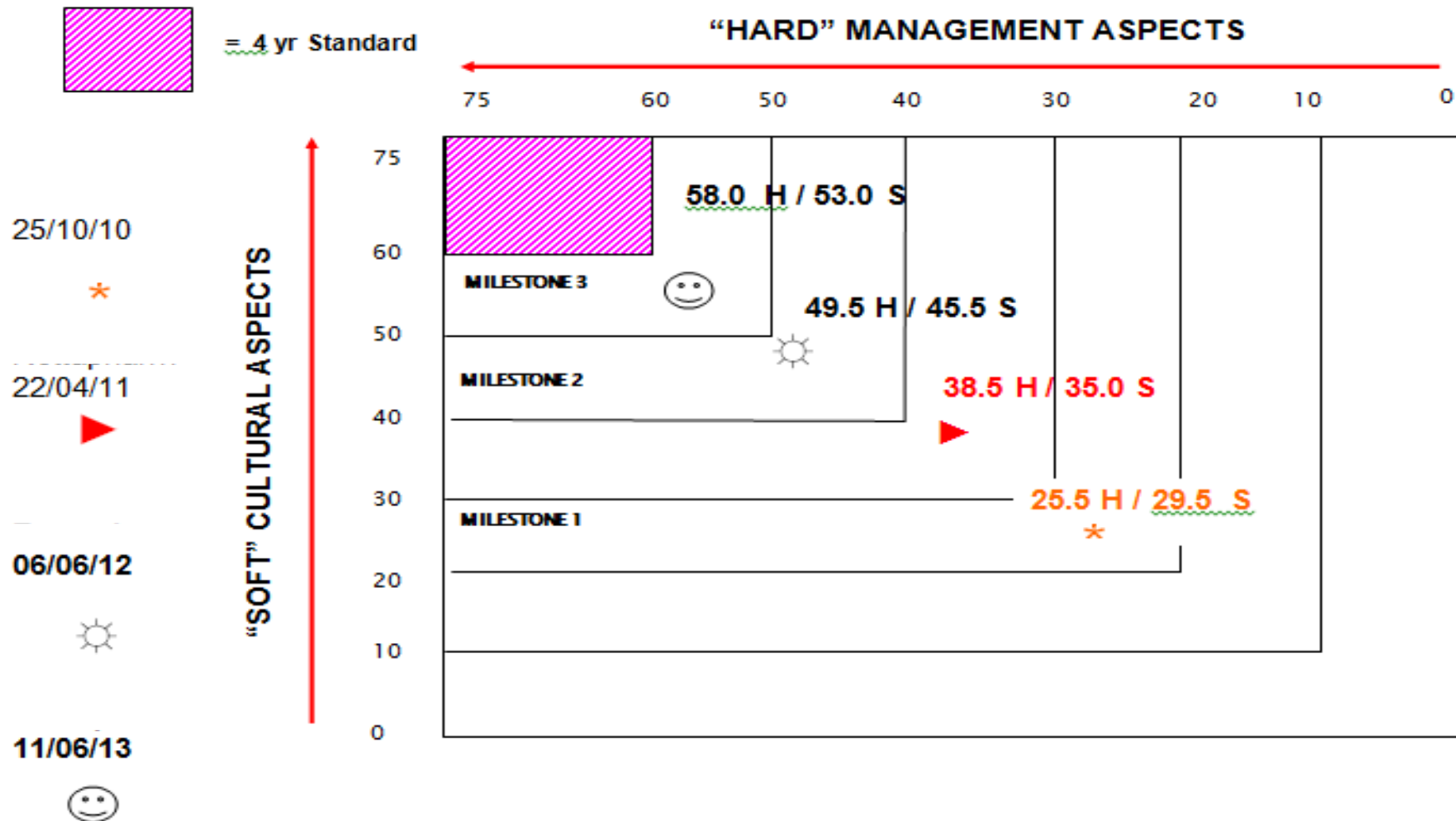
Typical Pillar Champions

Pillar Champion	Typical Job Holder
OEE	Value Stream Managers (+Fin manager)
FLOAC	Production Manager (Shift Supervisors)
PM & Q of M	Maintenance Manager
Skill Development (Generic)	Human Resources Manager
Skill Development (Technical)	Production Manager
6S –Workplace Organisation	Shift Supervisors (Production Manager)
EM/Major Projects	Manufacturing Engineering Manager
Publicity and Comms	TPM Facilitator
(Logistics)	Planning Manager
(Quality)	Quality Manager
(HSE)	HSE Manager

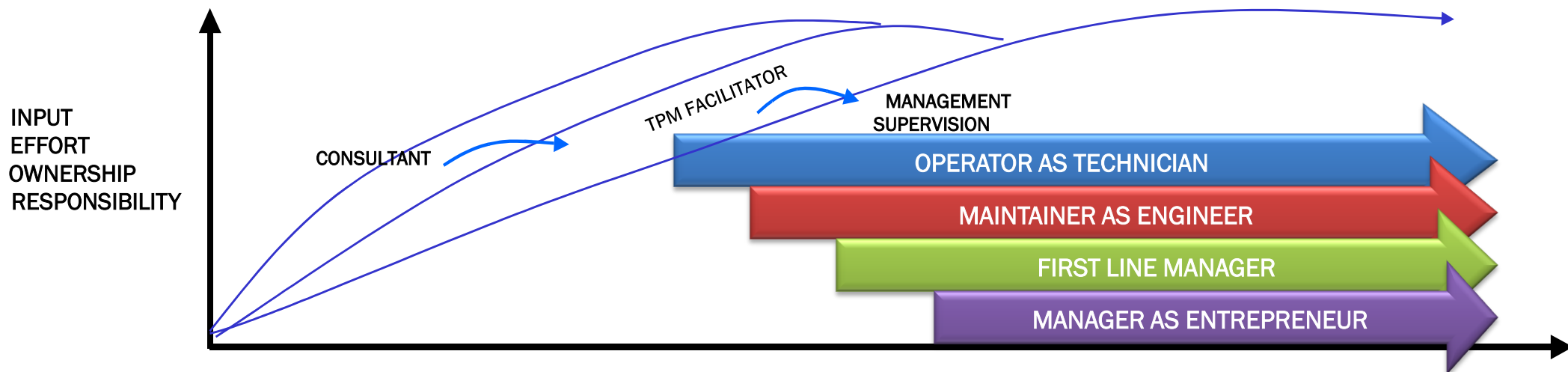
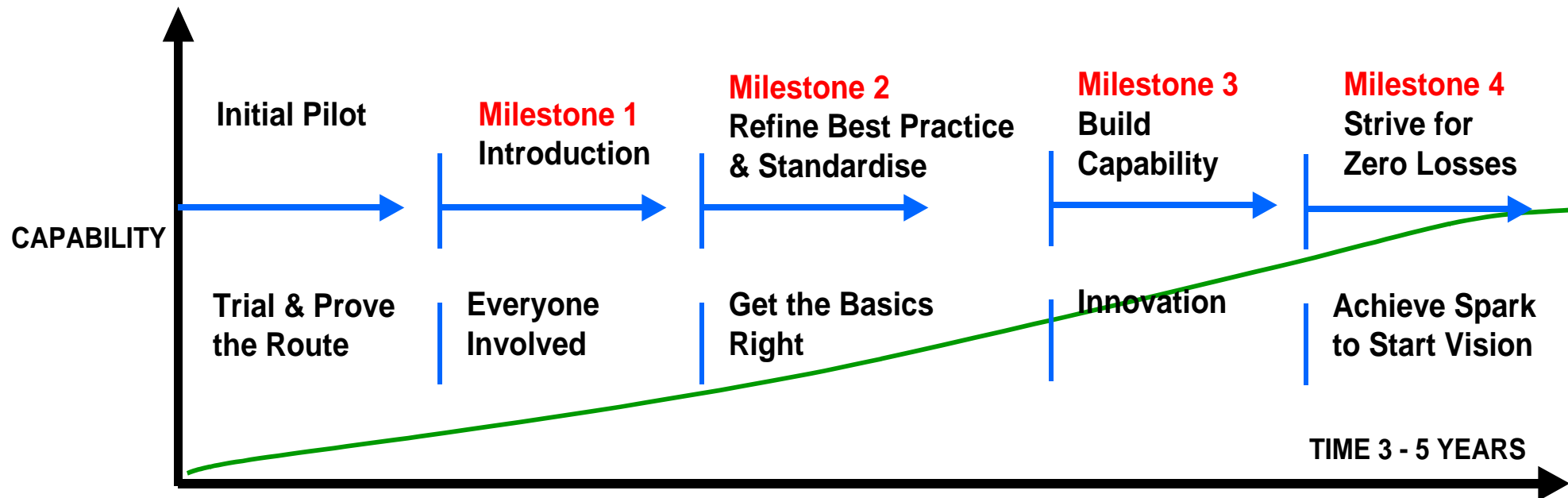


Top Down 30 Point Bi-Annual Review Example of Results

TPM REVIEW: WORLD CLASS BENCHMARK



TPM Roll Out Evolution



Step 11 - Organisational Learning

4 x Milestones.

Delivering the Production Response through 10 Point Audits / Reviews

Milestone 4: Strive for Zero Targets

- Achieve Optimum Conditions
- Reduce Effort
- Increase Customer Responsiveness
- Reset Vision

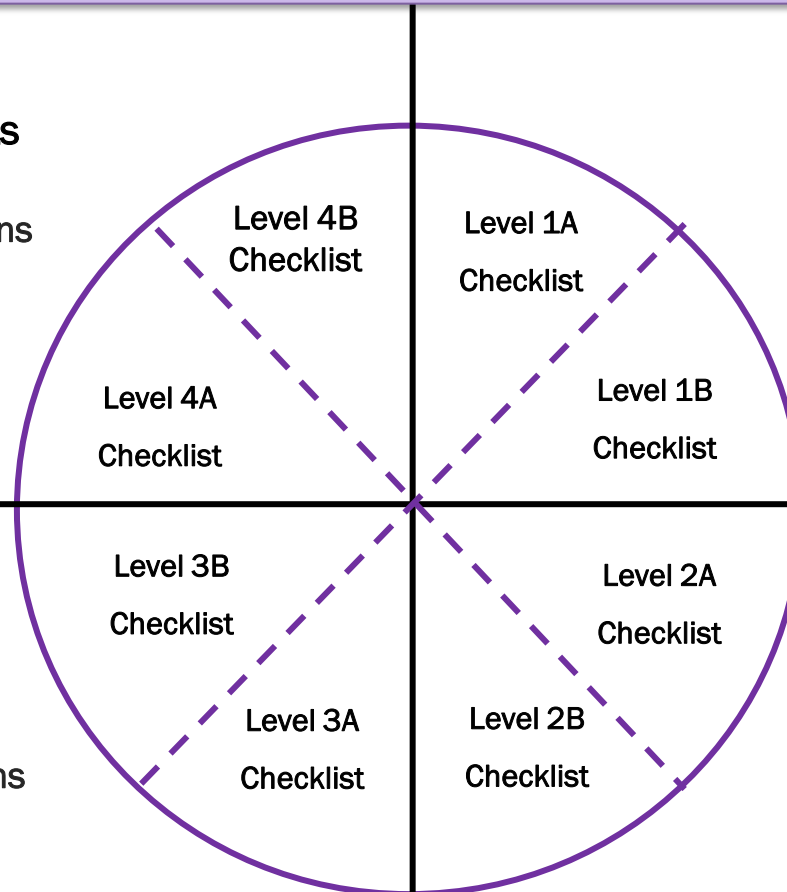
Milestone 1: (Introduction)

- Set Fast Track
- Everyone Involved
- Define Accountabilities

Milestone 3: (Build Capability)

- Define Optimum Conditions
- Use P-M Analysis
- Improve Equipment Precision
- Improve the Quality of Maintenance
- Achieve skill levels for zero targets

- #### Milestone 2: (Refine Best Practice & Standardise)
- Define Training Needs
 - Make it Easy to Do
 - Involve Support Departments
 - Set up Early Warning System
 - Achieve Adherence



- Respect every individual
- Lead with Humility
- Flow and Pull Value
- Assure quality at the source
- Seek Perfection
- Focus on process
- Embrace Scientific thinking
- Think systematically
- Create constancy of purpose
- Create value to the customer

1-Respect every individual

Behaviour	Potential Impact of TPM	At What Milestone onwards
My organisation maintains open and honest two-way communication throughout the entire organization	2	MS 3
My organisation treats all ideas as equal in value, no matter whose idea it is	2	MS 1
Leaders and managers focus on asking supportive questions rather than giving answers or solutions	2 to 3	MS 2
We are always accountable for our work and our results	2	MS 2
% Significance	71%	

0 = No Impact ,1 = Some Impact, 2 = Significant Impact, 3 = Major Impact

Summary

Potential impact of TPM

Principle	% significance
1. Respect every individual	71%
2. Lead with Humility	79%
3. Flow and Pull Value	79%
4. Assure quality at the source	67%
5. Seek Perfection	83%
6. Focus on process	100%
7. Embrace Scientific thinking	67%
8. Think systematically	71%
9. Create constancy of purpose	71%
10. Create value to the customer	75%
Total	76%



TPM Benefits

after 9 months (**and after c .2 years**)

1st 9 Months

• Reduced Maintenance spend	\$ 52,000
• Reduced Non core Hours Over Time	\$ 211,000
• Less Consumables	\$ 50,000
• Additional Annualized Savings	\$ 213,000
• TOTAL	\$ 526,000
• Plus Cap Ex Cost Avoidance	\$ 950,000

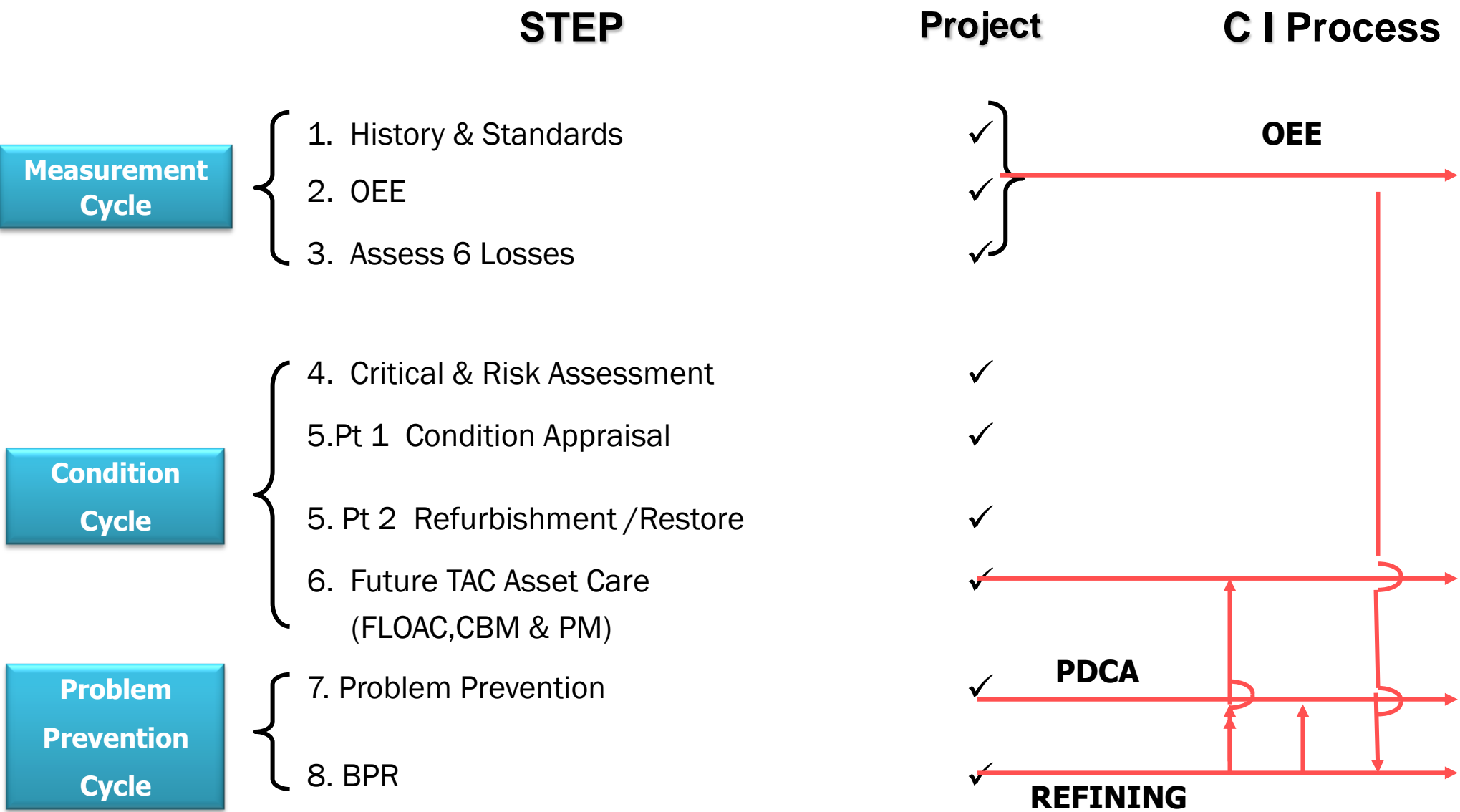
(After c.2 years ,accumulated cost avoidance = \$ 4.75 m)



Fill & Pack Line 6 Improvements (at Milestone 2 Achievement)

<u>12 Months</u>		<u>Improvement</u>	<u>Following 9 x Months</u>
<u>Average Reference Point</u>			<u>4 Wks Moving Average</u>
OEE	20.7%	x 2.5 increase	49.5%
Eq Failures	25.7%	Down by x 6	4.0%
Idle Time	38.0%	Halved	21.5%
No Data	2.1%	Eliminated	0%
Line Restraint	5.9%	Eliminated	0%
Minor Stops	7.8%	Down by 65%	2.7%
Actual v. Target	73.0%	100% OTIF	100 %
(Prod Plan)			

	STEP	Project
<div>Measurement Cycle</div>	1. History & Standards	✓
	2. OEE	✓
	3. Assess 6 Losses	✓
<div>Condition Cycle</div>	4. Critical & Risk Assessment	✓
	5.Pt 1 Condition Appraisal	✓
	5. Pt 2 Refurbishment /Restore	✓ CLOSE OUT → X
	6. Future TAC Asset Care (FLOAC,CBM & PM)	✓
<div>Problem Prevention Cycle</div>	7. Problem Prevention	✓
	8. BPR	✓



Line-side Weekly Review GAP Boards from an example

Asset & VS

A01 – VS1

2015 Strategic Intent Goals

- 12% Yr on Yr Productivity Improvement
- CC's / QN's down from 68 to 40

Month

Oct 2015.

• Goals

- OEE-78%
- Schedule Ad-98%+
- CRD <8 days
- MPD <7 days
- Unit cost <€0.15/k
- Spl's signed off
- Training / Skills matrix

● Actions for Nov

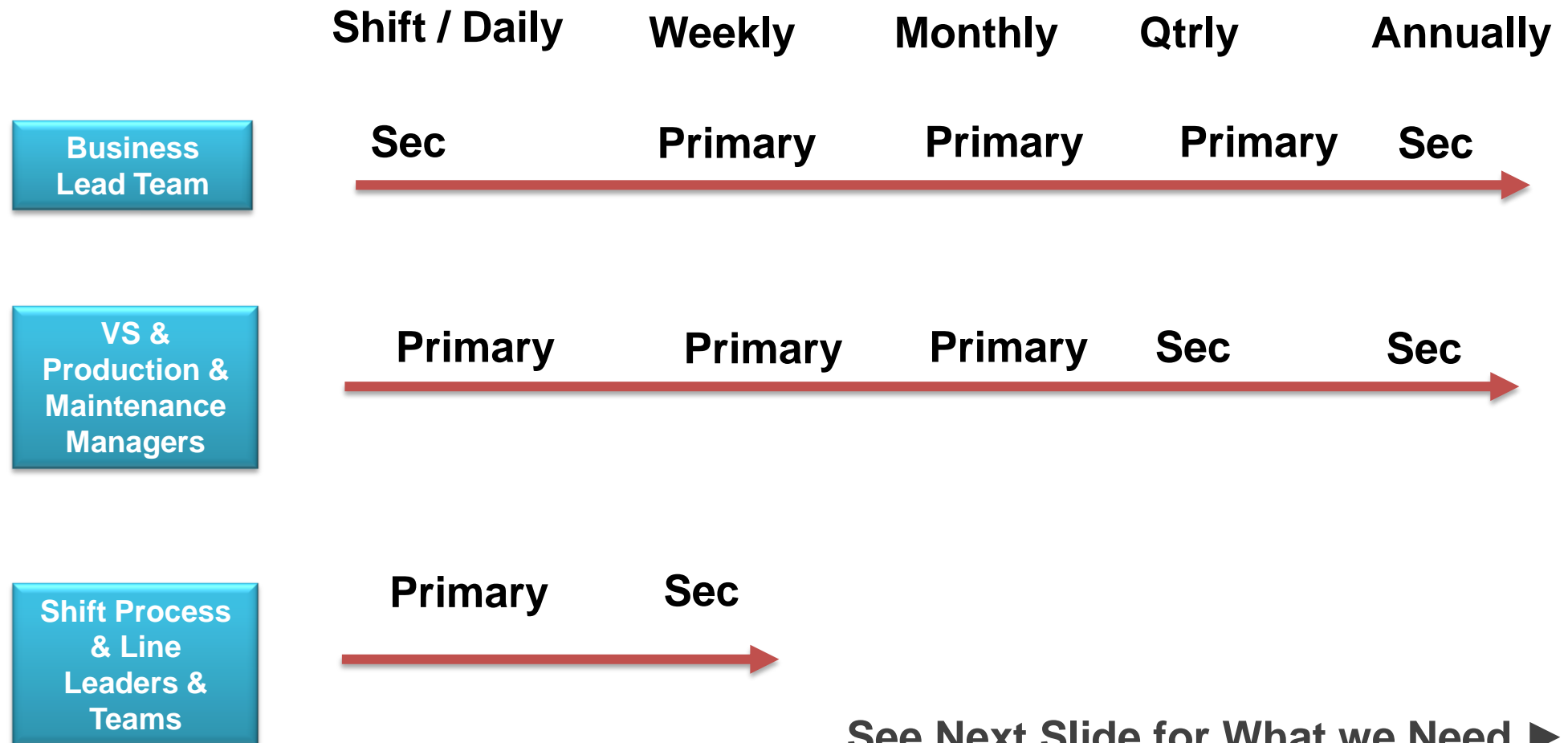
- Mould Protect Project
- PI Review 15 Nov
- Offer 7 days
- Keep in check
- Keep on track
- Complete next 30
- 3 x sessions planned

• Performance

- 72%
- 94.5%
- 8 days
- 6.5 days
- €0.12/k
- 18
- 60% adherence

Focus & Influence Time Horizons

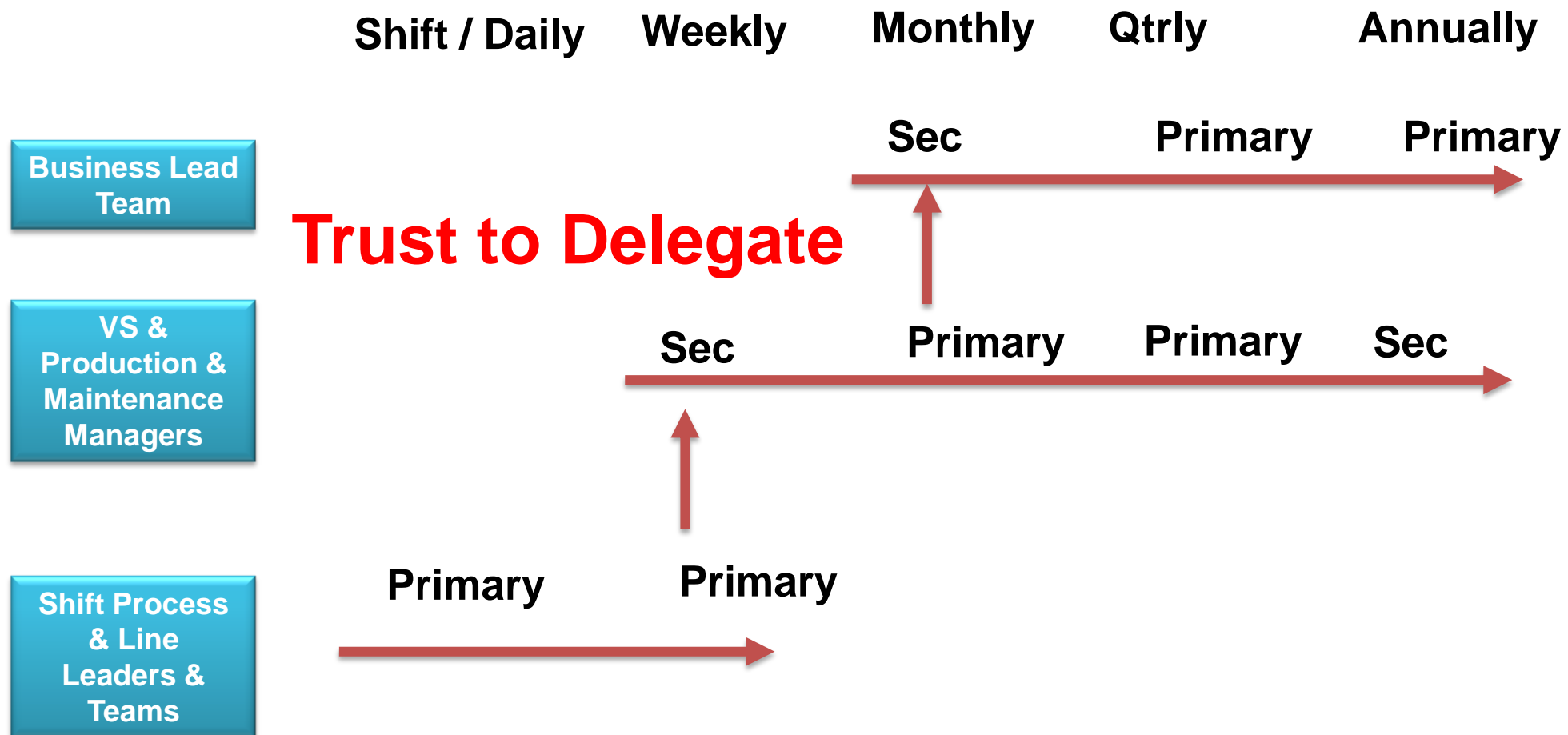
What we have today-(Micro Management)



Note-Sec=Secondary Focus

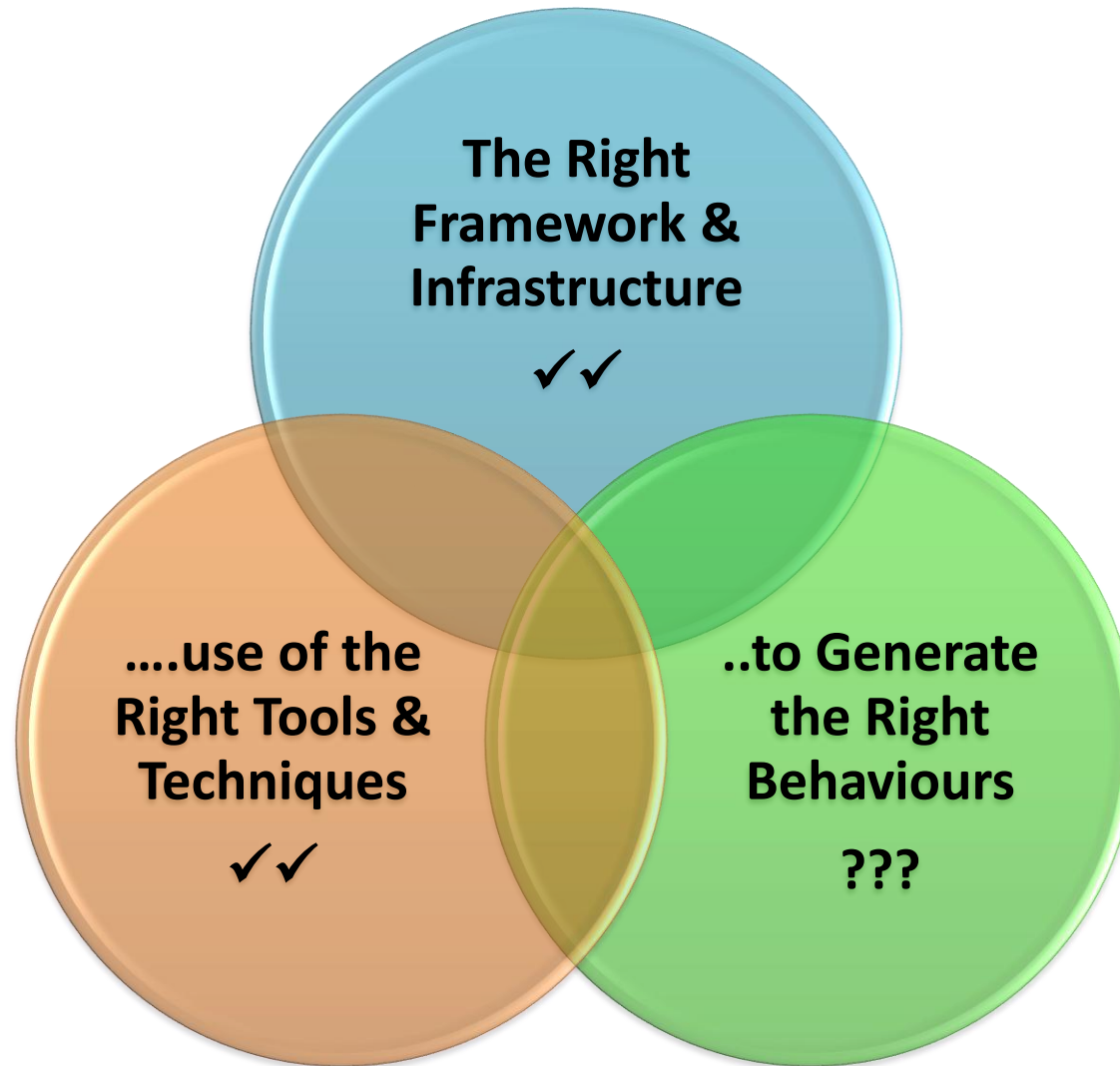
Focus & Influence Time Horizons

What we need from tomorrow onwards!



Note-Sec=Secondary Focus

A *Sustainable* Continuous Improvement Environment Demands:-



Reasons Why Change Fails or is not Sustainable-A Health Warning

- Lack of Clear, Consistent Leadership and Direction
- Lack of Planning and Preparation, Measurement and Feedback
- Change Programme has no Clear Vision
- Lack of a thorough Risk Assessment & Countermeasure Definition
- Poor Communication
- Unclear Roles / Responsibilities / Accountabilities (as described & delivered via the Bi-annual , Top Down 30pt Review)

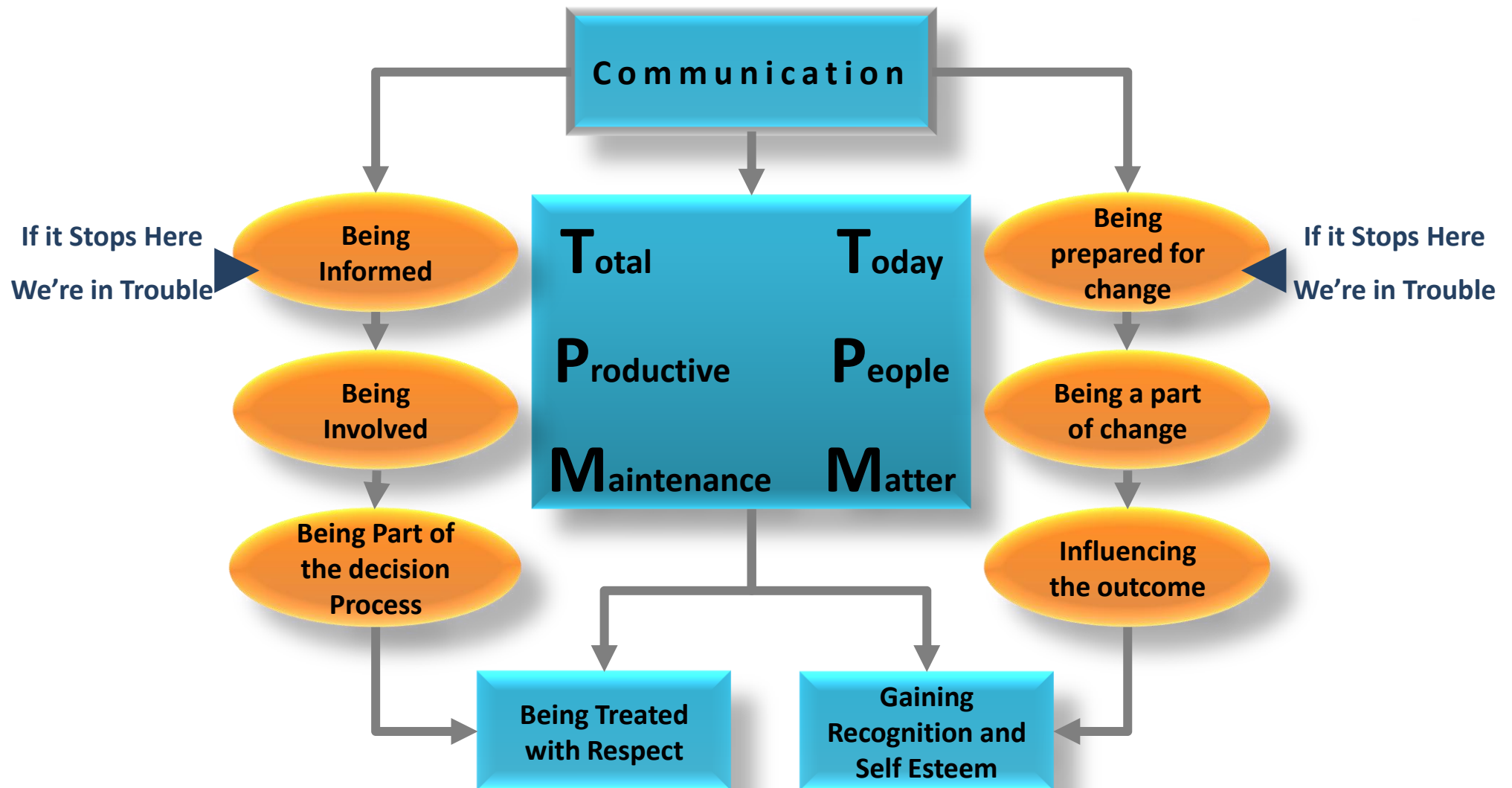
Minimising these 6 x RED risks via correct Governance

9 x other common Reasons Why Change Fails or is not Sustainable

- Goals are set ,but too far in the Future
- Misunderstanding of what Change is
- The Quick- fix Solution
- The Legacy of Previous Change
- Sacred Cows-‘This is the way we do things around here’
- Fear of Failure
- Employee Resistance
- Ill-Prepared Employees
- Inappropriate and Inadequate external training and advice

Poor Communications = Resistance





This is Our Aspiration !!



Think big - Seek Perfection

“The greatest **DANGER** for most of us is not that
our aim is **TOO HIGH** and we **MISS IT**, but that
it is **TOO LOW** and we **REACH IT.**”

Michelangelo c.1450

*“If we **Strive** for **PERFECTION** we might not reach it.....*

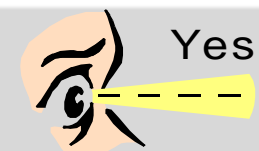
*....But at least we will be **‘Making Progress’**”*

Anon 2015

Tell Me and I Forget



Show Me and I Believe



Let Me Practice and I Understand



Let Me Improve and I Take Care



Let Me Innovate and I Master



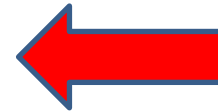
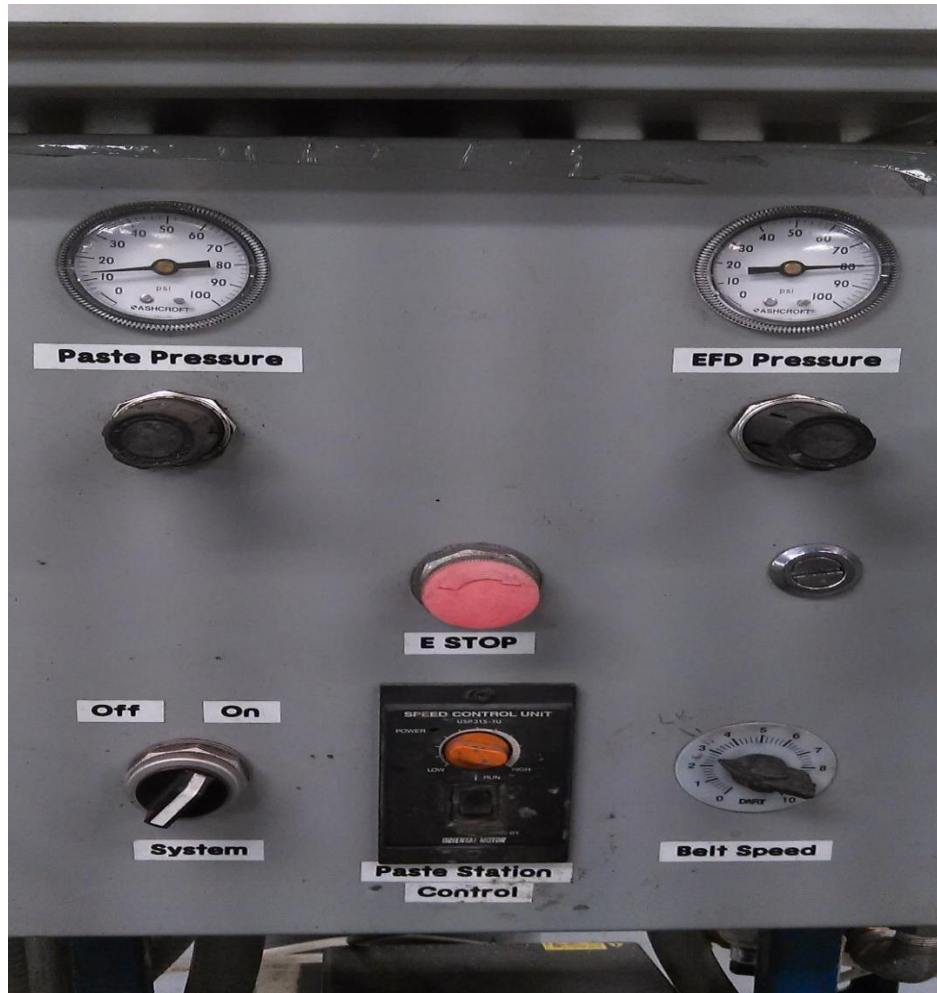
Before TPM Activity



After TPM Activity 16 Weeks Later



Control Panel-Make it easy to do things right & Difficult to do wrong



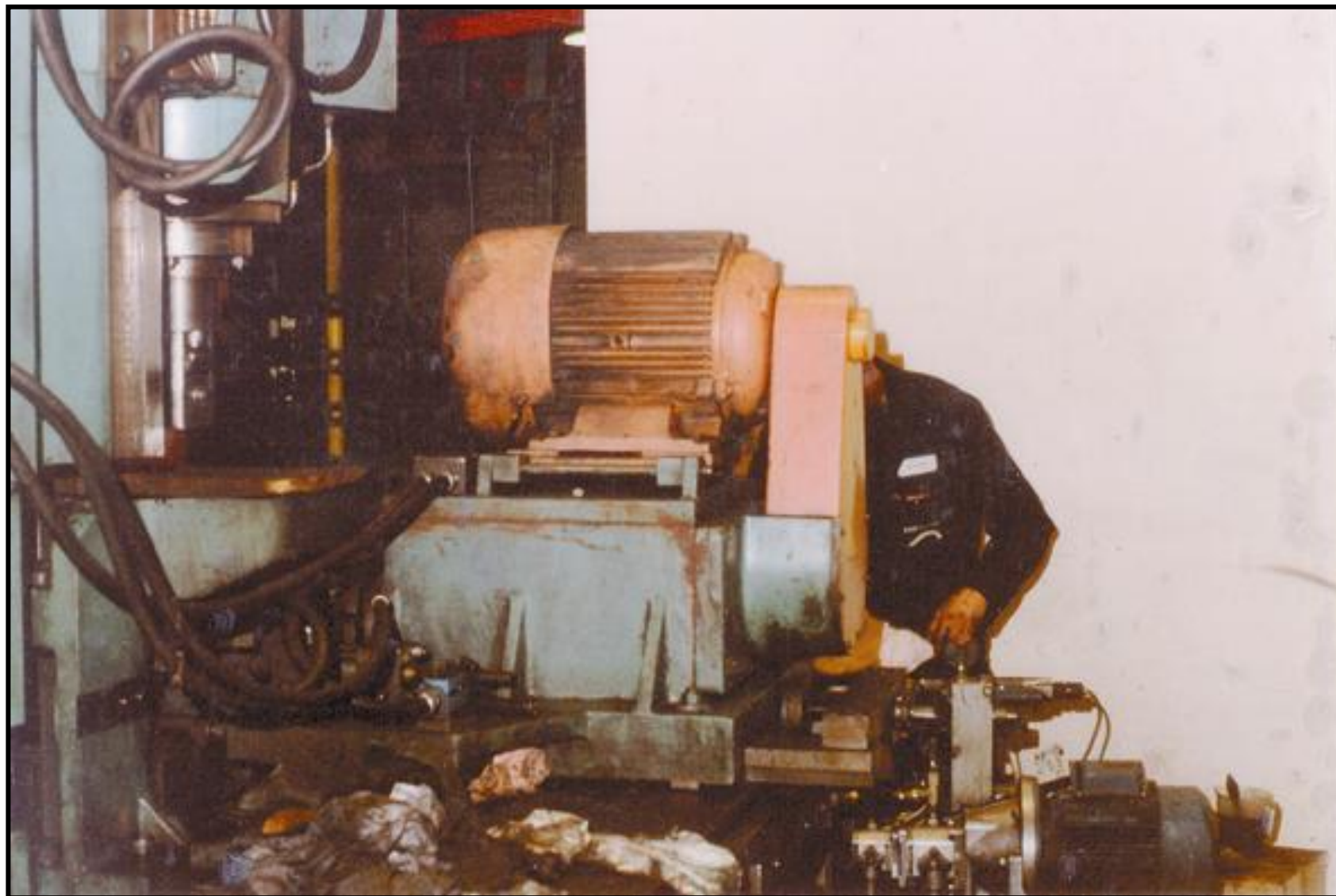
Before TPM



After TPM



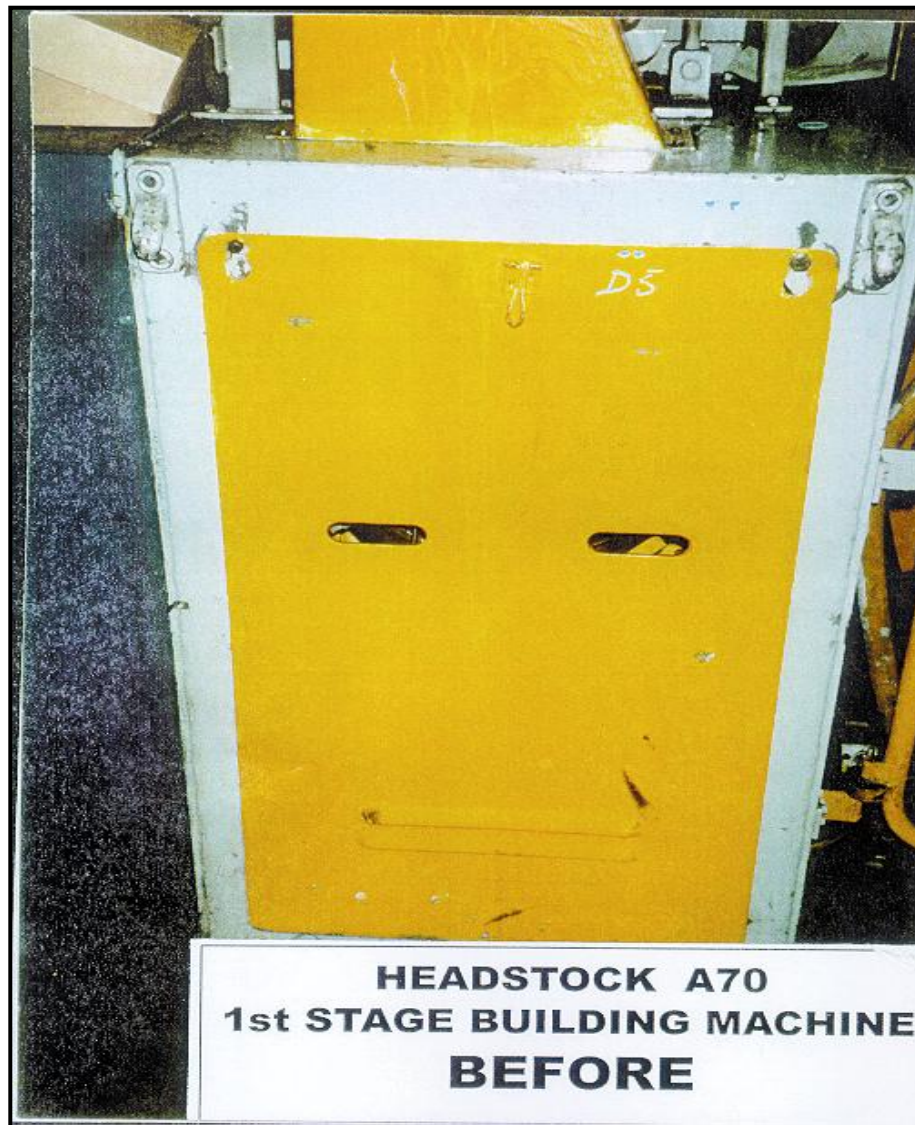
Before TPM



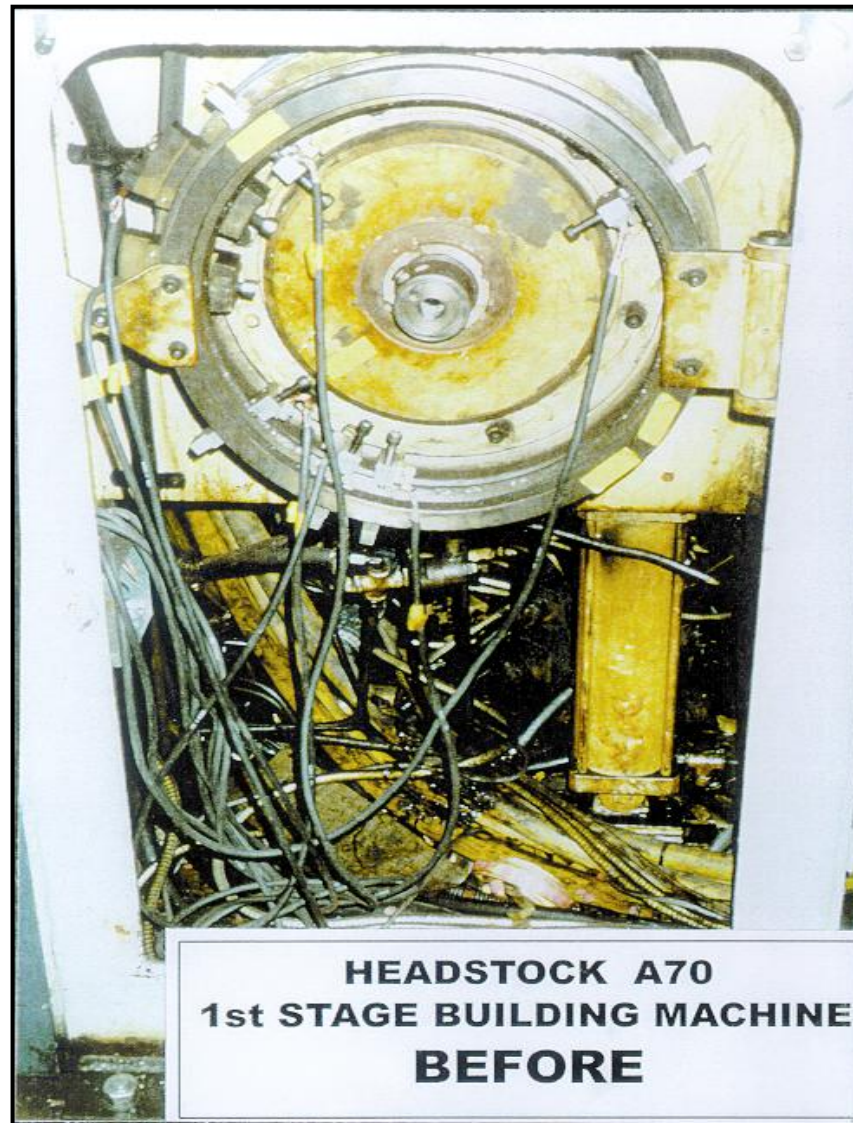
After TPM



Before TPM-out of sight



Before TPM-in sight !!



After TPM Activity



Visual Equipment Indicators



BEFORE



AFTER



BEFORE

~~XXXXXX~~



AFTER



Pinch Point Asset	Mile Stone Maturity Level	%OEE Start	%OEE Current	% Increase in Productive Capacity
Average OEE of all 12 Assets	1 to 4	35%	64%	83%

Pinch Point Asset	Mile Stone Maturity Level	Alarms Start	Alarms Now	Moulding Starvation Hrs -Start	Moulding Starvation Hrs- Now
Materials Handling System	3	463 /wk	76 /wk	18 hrs /wk	3 hrs /wk

5S - Stamping



5S- Auto Assembly





Milestone Audit Level Achievement

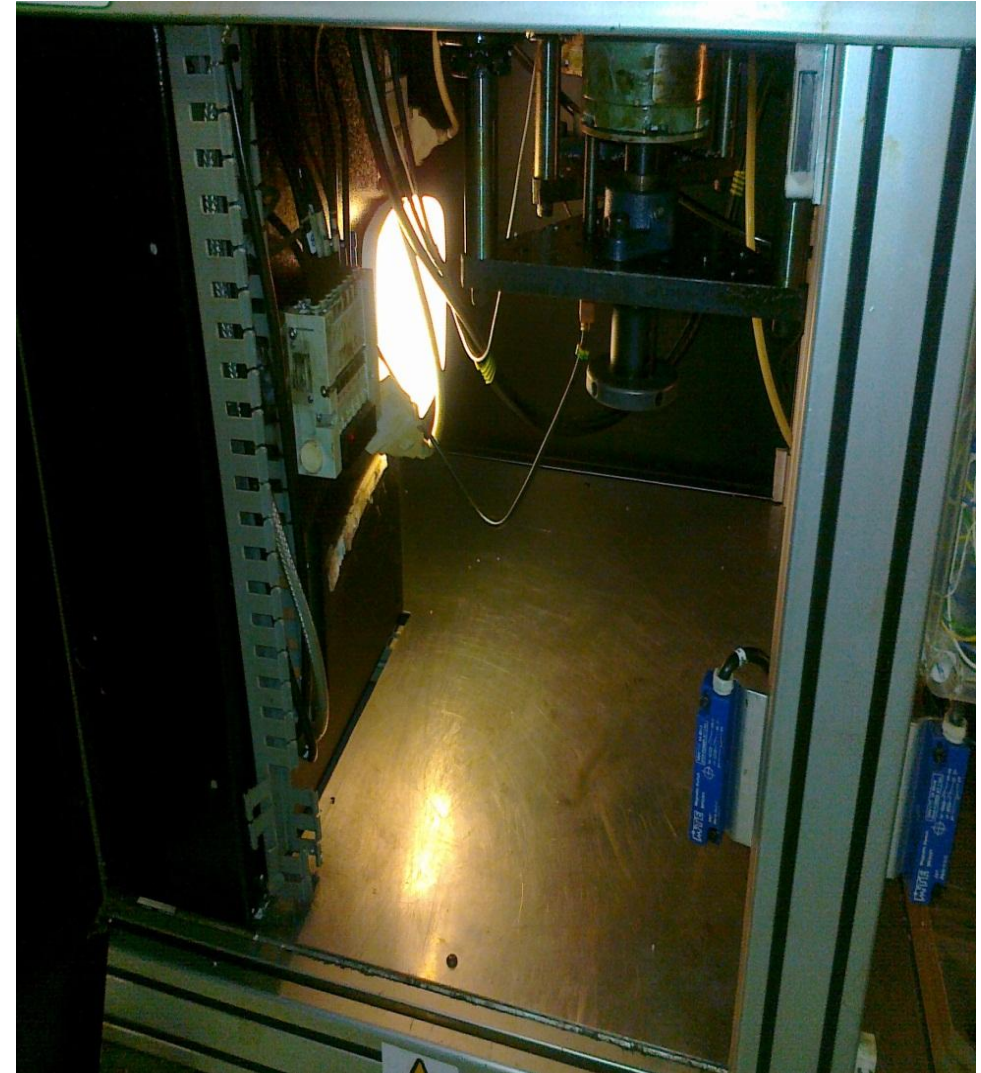
Milestone Audit Level	Current Achievement
4	
3	
2	
1	

Where would you prefer to work ?

OEE of 30%



OEE of 65%



Thank You for Listening and....

Any Questions ???