WEA Conference

McLaren Vale - 19 June 2014

Ensure your New Equipment Adds Value to your Business

Presentation by:
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'The order has just been placed for your new equipment - now you just wait for it to arrive, be installed and start running to meet the expectations from your customers'.

If it were only that simple!

Many of us have had enough experience to know that it never is!

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How do we ‘Ensure Your New Equipment Adds Value to Your Business’

and not cause pain

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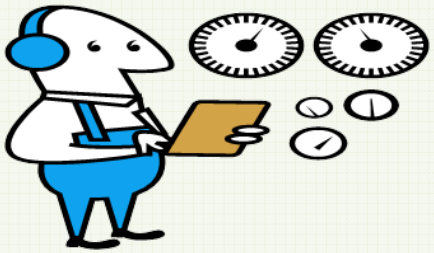
Outline of Presentation

Ensure your New Equipment Adds Value to your Business



1. Typical or Traditional Approach
2. The 5 Stages of New Equipment Management
3. 3 Key Concepts to ensure your new equipment adds value:
   - Prevention at Source
   - User Friendly
   - Compliance Testing by Competent People
4. Making it Happen through a Team approach
5. Key Learning

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1. Traditional approach to New Equipment

- Senior Management decide what new equipment is required
- Project Engineering is given the task to scope out the work and arrange any contracts required
- Purchasing are given a Bill of Materials and requested to buy the new equipment not supplied by the contractors
- Equipment arrives and is installed
- Project Engineering arranges for Commissioning then hands over to Production
- Maintenance gets called when it doesn't work
- Production and Maintenance then battle to get new equipment to perform as expected
- Project Engineering don't want to know about any problems because they are busy with the next project

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2. The 5 Stages of New Equipment Management

Stage 1 **Design** *(Specification & Performance)*

Stage 2 **Procure** (*Purchase, Transport & Store*)

Stage 3 **Accept** *(Factory Test & Receipt Test)*

Stage 4 **Install & Commission** *(Production Acceptance)*

Stage 5 **Perform, Monitor & Learn** *(Post-Launch)*

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3. 3 Key Concepts to ensure your new equipment adds value

and not cause pain

The Concept of 'Prevention at Source' for New Equipment isn't understood or practiced

Getting all affected parties involved at the earliest possible time to use their collective experience to specify and design the new equipment

so any problems are identified at the earliest possible time

for example: during design, rather than during commissioning

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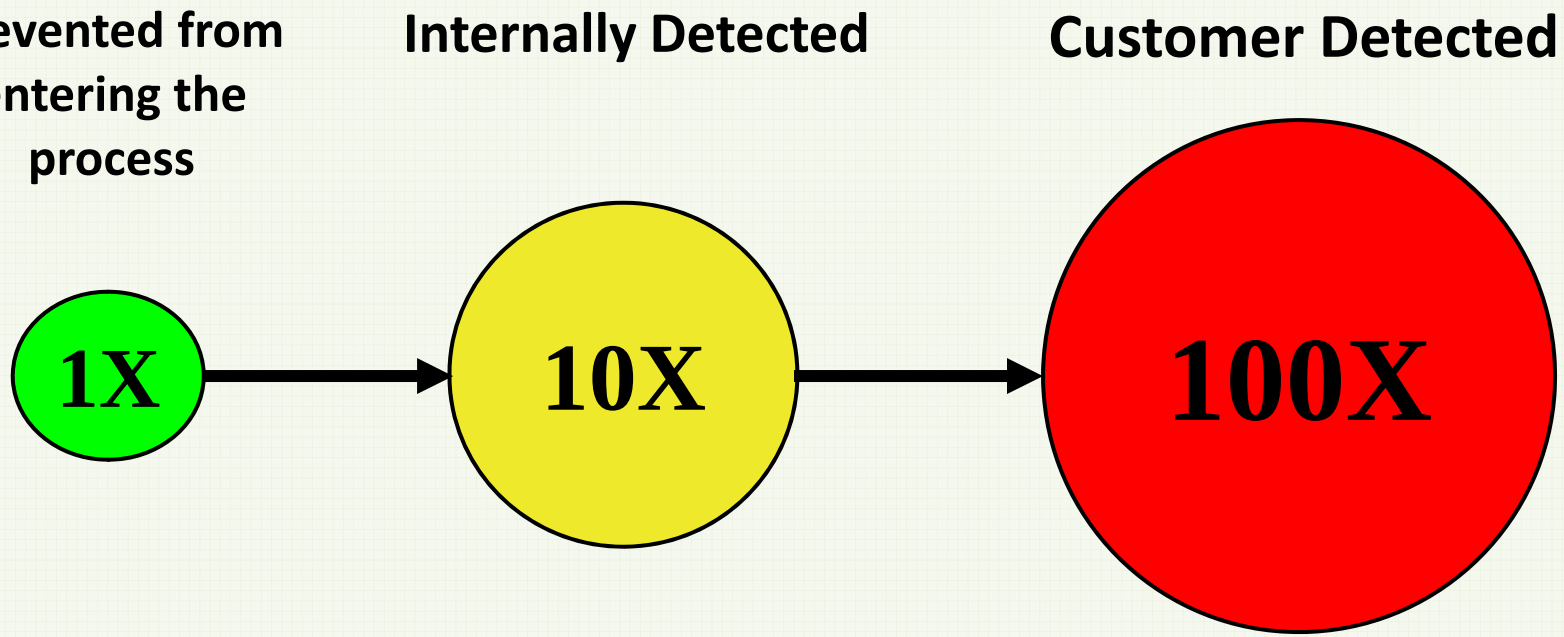
Prevention at Source for Product

The cost of Product Defects when they are:



finding problems at the earliest possible time

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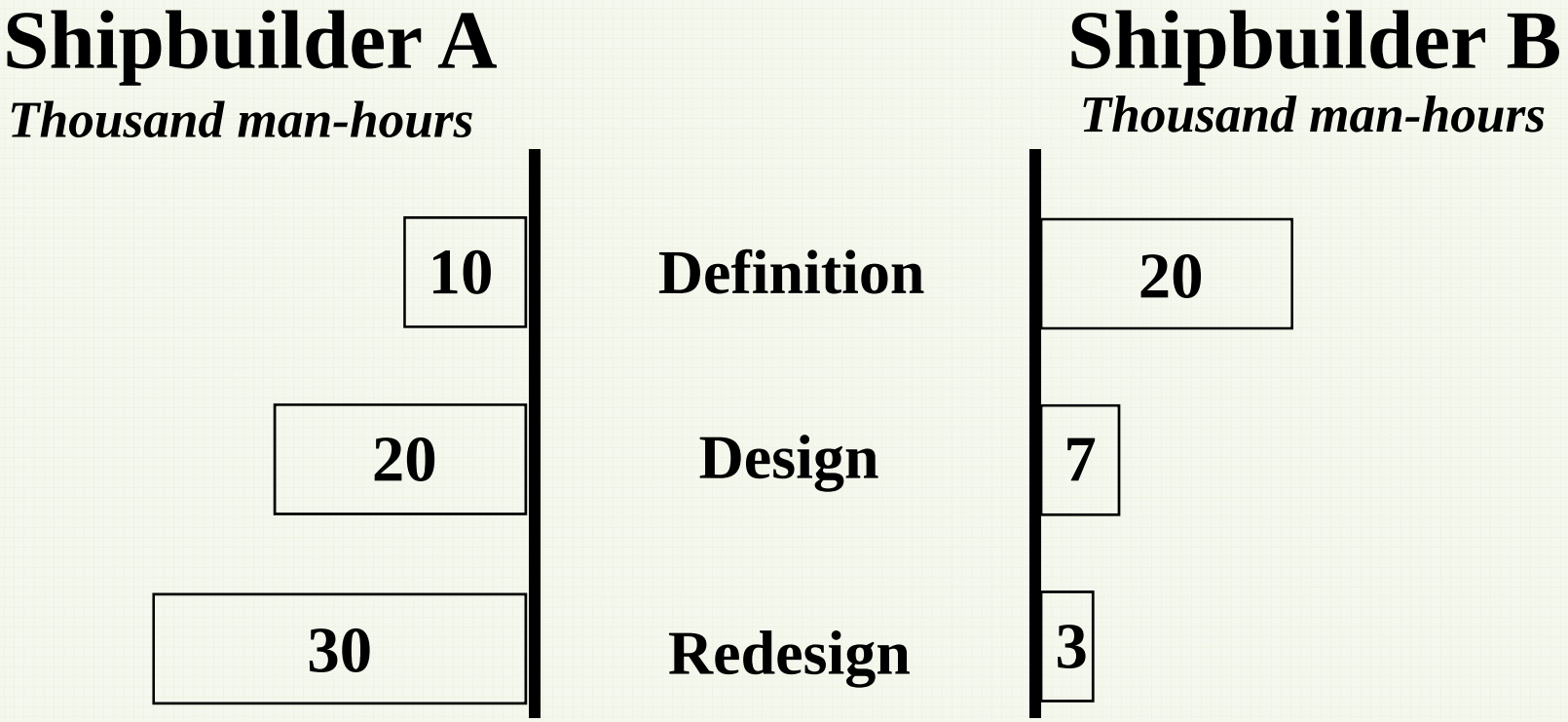
Prevention at Source for Design



60,000 man-hours Vs 30,000 man-hours

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3. 3 Key Concepts to ensure your new equipment adds value

and not cause pain

The Concept of ‘User Friendly’ for New Equipment isn’t understood or practiced

“Engineers traditionally look at ***Functionality*** as the prime objective of design and often pay limited attention to ***Operability, Maintainability, Standardisation*** and ***Trainability”***

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Examples of User Friendly Equipment

Operability	• Easy to Clean and Inspect for equipment defects • Easy to Access for Cleaning, Inspecting and Servicing • Easy to find Safety, Quality and Equipment problems at the earliest possible time • Easy to monitor equipment condition • Easy Set-ups and Changeovers
Maintainability	• Maximum life of components to reduce Planned Downtime • All repairs completed within 1 hour to allow work to be completed during regular Clean for Inspection time • Excellent documentation so it will be easy to train operators in the functioning of the equipment • Visual Controls to highlight equipment condition • Good identification tagging of equipment so Operators can easily explain where problems are
Standardisation	• Minimum type of nuts & bolts • Site Standard Pneumatics
Trainability	• Easy to understand and comprehensive Standard Operating Procedure, Work Instructions, Job Breakdown Sheets, Standardised Worksheets

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Operability

It's the Frontline who create the bottom-line

Making equipment so it is easy for Operators to:

1. Identify process and quality problems at the earliest possible time
2. Identify equipment defect at the earliest possible time
3. Conduct Set-ups and / or Changeovers in the shortest possible time

Remember!

Make it easy to do right and difficult to do wrong

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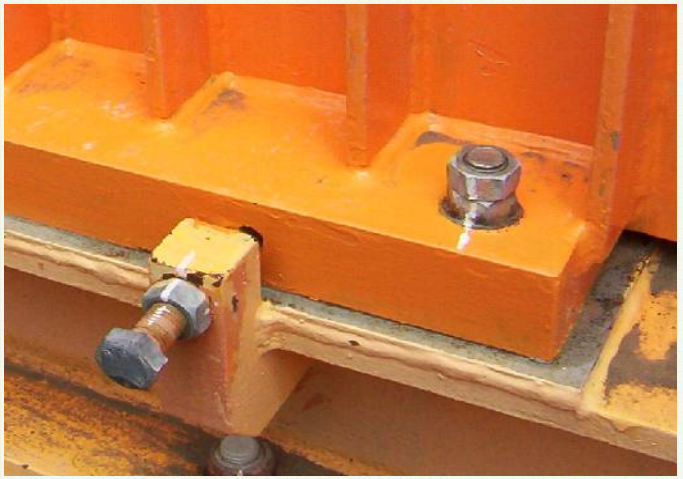
Equipment Visual Controls



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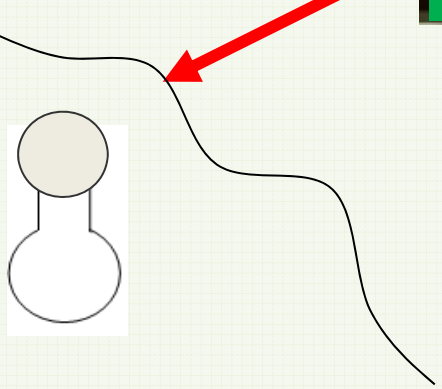
Equipment Visual Controls

Visual Inspection of belts stretching, with the machine working.

Pulleys and Sprockets:

Must have indication of rotation direction and visual working indication, coloring them orange and green.

Fastening guards without tools.



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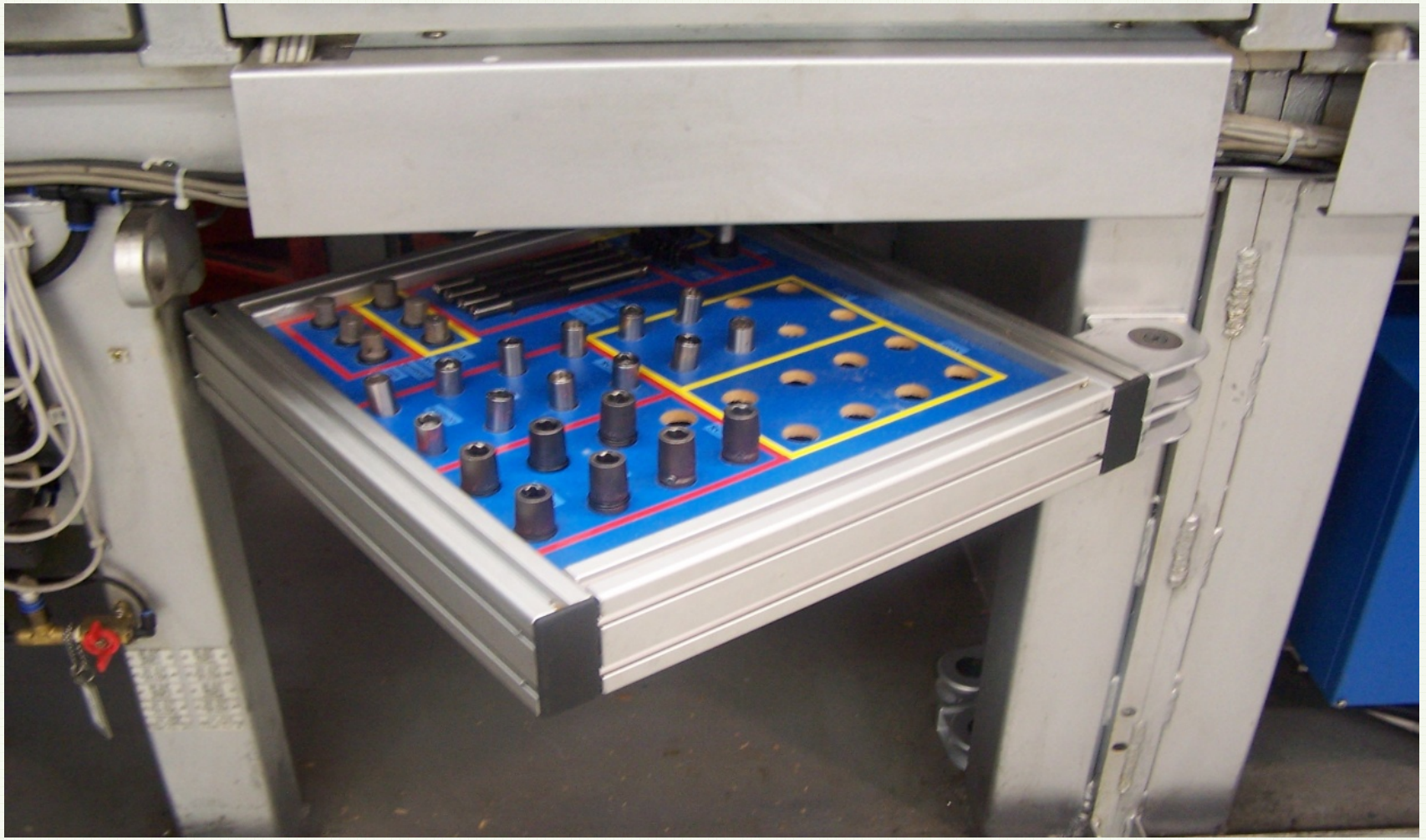
Visual Workplace



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Visual Workplace – Changeover Trolley

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3. 3 Key Concepts to ensure your new equipment adds value

and not cause pain

The Concept of ‘Compliance Testing by Competent People’ for New Equipment isn’t understood or practiced

Sending the Project Engineer or Operations Manager overseas to check equipment before it is dispatched is often a recipe for disaster

Believing that transporting equipment from overseas doesn’t cause problems is also a naive view

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What can a Container Experience?

Believing that transporting equipment from overseas doesn't cause problems is also a naive view – hence need for good Compliance Testing

4. Making it Happen through a Team Approach

Stage	Team	Purpose
1	**Macro NEM - Design (Spec & Performance)**	Develop specification for procuring a New Production Line / Process / Plant eg New Bottling Line
	Micro NEM - Design (Spec & Performance)	Develop specification for procuring a section or piece of New Equipment eg New Filler for Bottling Line

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4	**Special Micro NEM - Install & Commission**	Install and Commission New Equipment and if necessary, modify to ensure it is *"User Friendly"*
5	**WAM / OEM - ABTs and FE&PI – XFTs**	Performance, Monitor and Learn through rapidly progressing Work Area Management and the 7 steps of Operator Equipment Management Area Based Team (ABTs) activity supported by Focused Equipment & Process Improvement Cross-functional Teams (XFTs)

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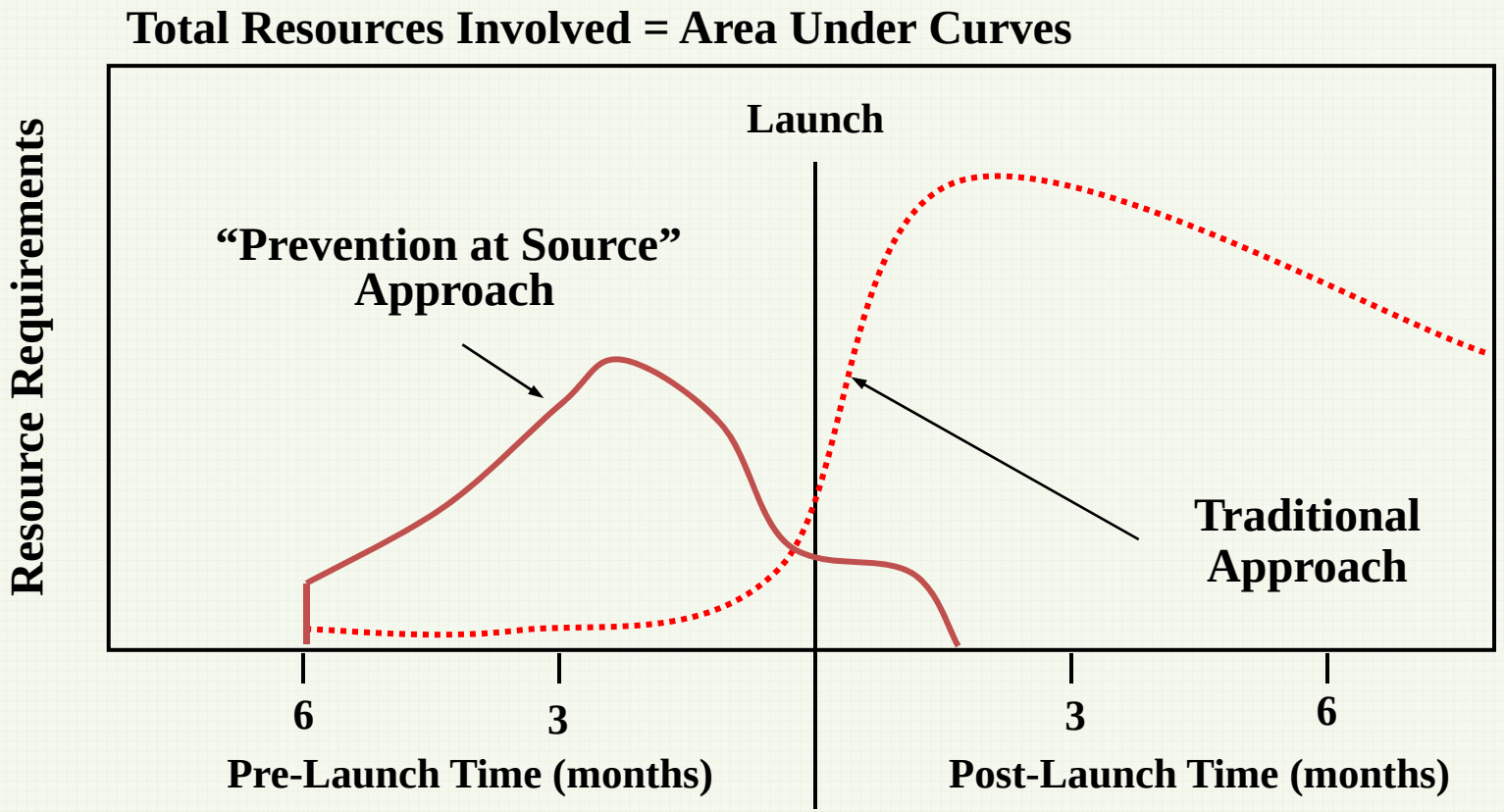
5. Key Learning

Resource Impact from “Prevention at Source”



Learning:

More resources up front but overall much less total resources required

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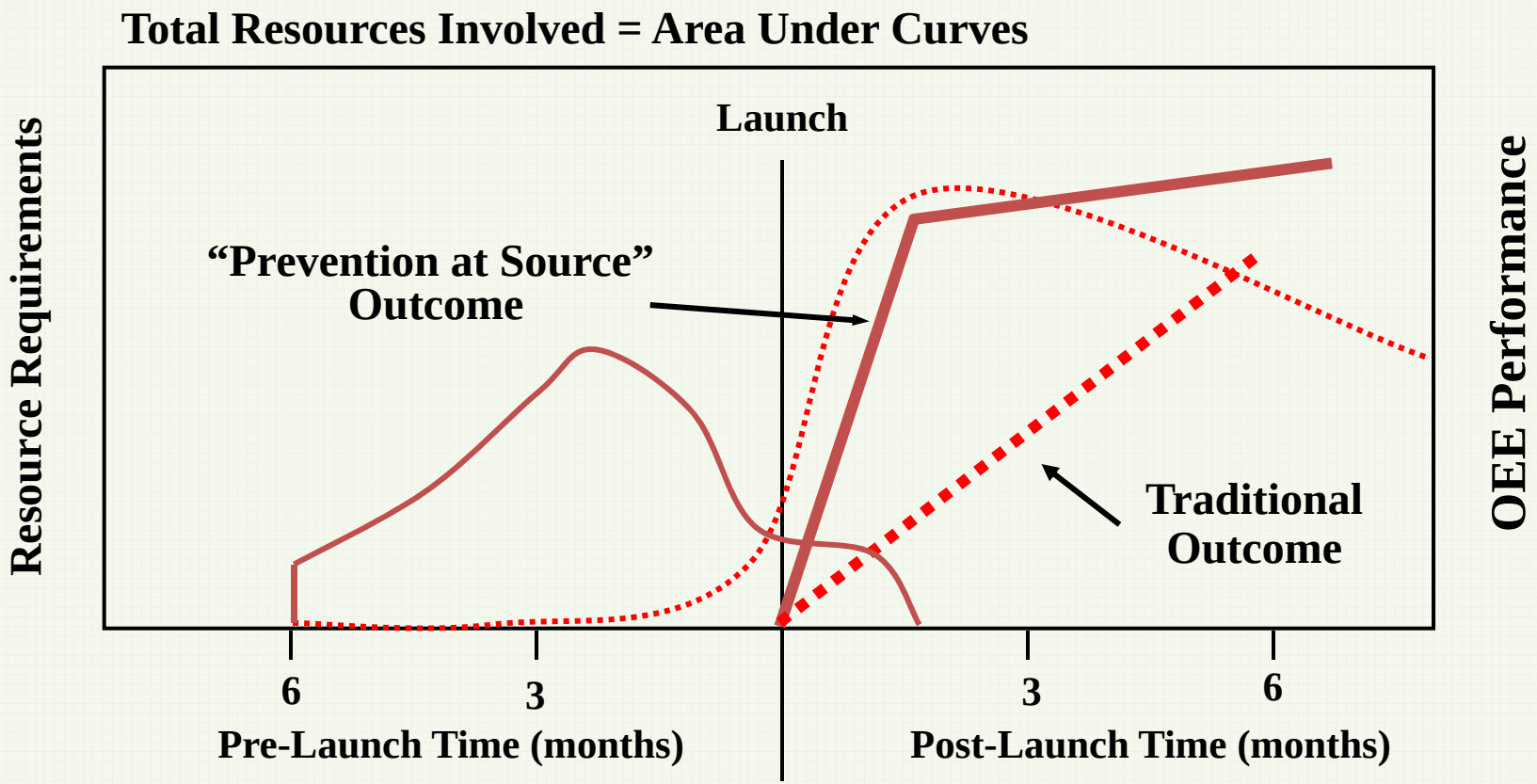
5. Key Learning

OEE Performance Impact: “Prevention at Source”



Learning

Less problems at launch resulting in much higher OEE in shorter timeframe

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Case Study

The Label Guys

New Equipment Management (NEM)

Objective:
The objective of New Equipment Management is to provide everyone with the framework, systems and opportunity to input into new equipment being introduced into the site. The concept of Life Cycle Cost (LCC) as the "driver" for focusing new equipment improvement activities is established, and the Design, Engineering and Operations departments work together as a team in the design of new equipment. The teams apply their previous TPM³ experience to new equipment designs through Prevention at Source Design Activities so as to minimise Life Cycle Costs utilising a Macro and Micro team approach, and also apply their TPM³ experience to new equipment in order to maximise TPM³ Friendliness utilising a Mini Micro team approach. With TPM³ Friendliness meaning to make the new equipment easy for operators to identify process and quality problems at the earliest possible time, to identify equipment abnormalities, and to perform quick set-ups, all through the use of visual controls and effective training programs using One Point Lessons, Training Aids and Boards etc.

Area Based Team: The Label Guys (Cycle 11 - 2007)
The "Label Guys" team was set-up to undertake a Mini Micro New Equipment Management improvement activity with a mandate to identify and implement the most effective equipment modifications and training to make it easy to identify Equipment Defects at the earliest possible time, and ensure Basic Equipment Conditions are maintained during operations. The team was also to complete the activity in the timeframe of 8 weeks.

Starting off, the team reviewed the New Equipment, New Work Area and New Training to ensure all was to be considered TPM³ Friendly.

"TPM³ Friendly" Equipment - Sample Checklist

VISUAL CONTROLS – To assist in operating and trouble shooting	YES	NO	COMMENTS
SAFETY			
1) Basic machine flow: any hazard (black or signs)?	X		
2) How many emergency stops and where are they located?	5		Around the machine and exists Station
3) Are switches be locked out and tagged out?		X	Stores switch is tagged out, only the main switch is lockable
4) What are the machines safety interlocks?			From Company Technician
MAINTENANCE, FITTINGS AND PIPES / HOSES – Visual Controls			
1) Are nuts & bolts (set bolts), wheels etc. for adjusting and settings?	X		
2) Colour coding and labelling of pipework?	X		Coloured pipes
3) Direction of flow on pipework?		X	
4) Marking of open and closed positions for valves?	X		Valves with LED heads
5) Labelling of inlet and outlet ports?	X		Unnecessary supplies
6) Colour markings on gauges and dials so we know a right the correct operating settings? (eg. Air Pressure)		X	
7) Do we have quick release fittings and fixtures for adjustment?	X		

"TPM³ Friendly" Work Area - Production Requirements for Labeller Layouts

CURRENT	REQUIREMENTS	
	KHS LABELLER	TOPMATIC
Change Parts: • 750ml – KHS & Topmatic • Full Topmatic only	- 750ml Change Parts	- 750ml Change Parts - Full Change Parts
Hot Water requirements:	- Cleaning water (Temp to be kept) - Hot water for Flushing of Machine - Hot water for Cleaning machine etc.	- Cleaning water (Temp to be kept)
Cold Water (RO water)	- Cleaning water - Wash down hose for floors etc.	- Cleaning water - Wash down hose for floors etc.
Sink for washing Parts	- Sink to wash change parts	- Sink to wash change parts
Lights inside machine – Topmatic	- Internal lights for machine	- Internal lights for machine
Label Storage Trolley	- Trolley to store & transport labels for days production.	- Trolley to store & transport labels for days production.
Blue basket trolley	- Trolley to store & transport glue buckets for days production.	- Trolley to store & transport glue buckets for days production.

"TPM³ Friendly" Training - Sample of 3 Day Training Program
Day-2 Troubleshooting & Error Elimination:
- Possible malfunctions and "Help Text" examples
- Set machine to zero point
- Vario Drive in basic - Function, Rotation Check, Function test and Changeover at the machine
- Lubrication plan and points
- Lubrication and inspection

After the review many improvements were identified such as the Cleaning System in place which would automatically clean the glue drum and pallets with hot water.

Lessons Learnt by the Team:
- Size of Label needed to change to suit and accommodate Laser Coder;
- Material specifications for glue need to be suitable for Australian suppliers; and
- Would help to have a supplier representative as team member in future teams.

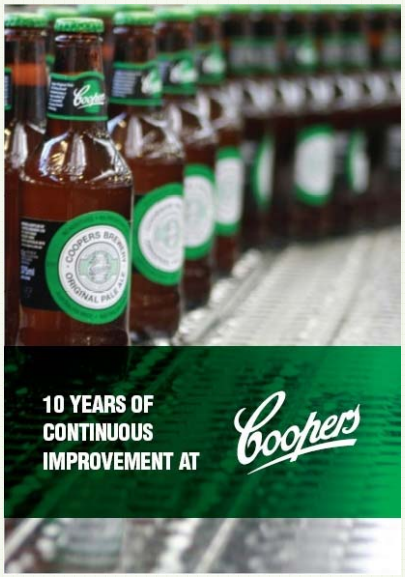
Recommendations:
- No production possible during the floor preparation and installation;
- 20/08/07 – 26/08/07 floor preparation Topmatic relocation;
- 3/09/07 – 09/09/07 floor preparation KHS labeller;
- All changes in services to be completed prior to installation of the both Labellers;
- Operator & Maintenance Training program to be agreed to prior to machine arrival and to be competency based; and
- Team to reconvene prior to project commencing

Team Member Profile:

Andrew McIntyre (24 Years - Operator)
As part of the "Label Guys" team Andrew enjoyed the opportunity to not only have his voice heard, but to cover all aspects of the machine and set-up the work area to suit. "Becoming an expert of the machine was really rewarding and developing that understanding of the machine to detect faults before they breakdown made for a pleasant environment to work in," says Andrew. "As well as developing a better understanding of the machines, I have also improved my communication skills with colleagues, teams and through presentations to leadership."

Further Team's to have undertaken NEM:

Cycle	Team Name	Area of Focus	Date
Cycle 5	Mead for Speed	Bottling Line - BW250 – Clusterpak	Feb 2005
Cycle 5	Warp Speed	Bottling Line – Rinser, Filler & Crowner	Feb 2005
Cycle 10	The Label Guys	Bottling Line – Innoket Labeller	Feb 2007
Cycle 14	NewPal	Bottling Line – Palletiser	April 2008
Cycle 14	Nice Cans	Bottling Line – Can Filler	April 2008
Cycle 16	Filter Blockers	Lager Cellar – New Filtrox Filter	Oct 2008
Cycle 17	Multipaks	Bottling Line – Multipak Machine DD1250	Jan 2009
Cycle 22	Newpak	Bottling Line – Packer	April 2010
Cycle 22	De- Palletiers	Bottling Line – Depalletiser	April 2010
Cycle 27	Mr. Beer	Homebrew – Mr. Beer	Jan 2012
Cycle 31		Bottling Line – New Line 2	April 2013



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Any Questions Please?

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