



CTPM

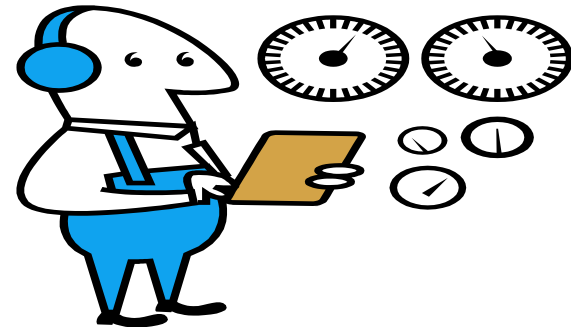
Australasia

CTPM Webinar: Taking the Pain out of Introducing New Equipment to your Site

Wednesday, 17 July 2013 – 11:00-11:30 EST



Presentation by:
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CTPM Victoria Director



Welcome & Outline of Presentation

Taking the Pain out of Introducing New Equipment to your Site:

1. What is New Equipment Management (NEM) & Key Concepts
2. The need for Operability, Maintainability, Standardisation & Education/Training, as well as Functionality.
3. Key Learning's to getting the perfect Vertical Start Up?



What is New Equipment Management?

New Equipment Management (NEM) Goal

To minimise the **Life Cycle Cost (LCC)** in equipment
through

Prevention at Source Design Activities

by applying:

TPM³/Lean experience & learning's in the field,
Maintenance history data and
the latest **proven** Technology.

More simply, it means designing and installing equipment
that is ***highly reliable, easy to operate and maintain.***

What is New Equipment Management?

How do we achieve this Key Goal of New Equipment Management *By*

Establishing an effective and efficient Cross-functional Team
with TPM³ competent members

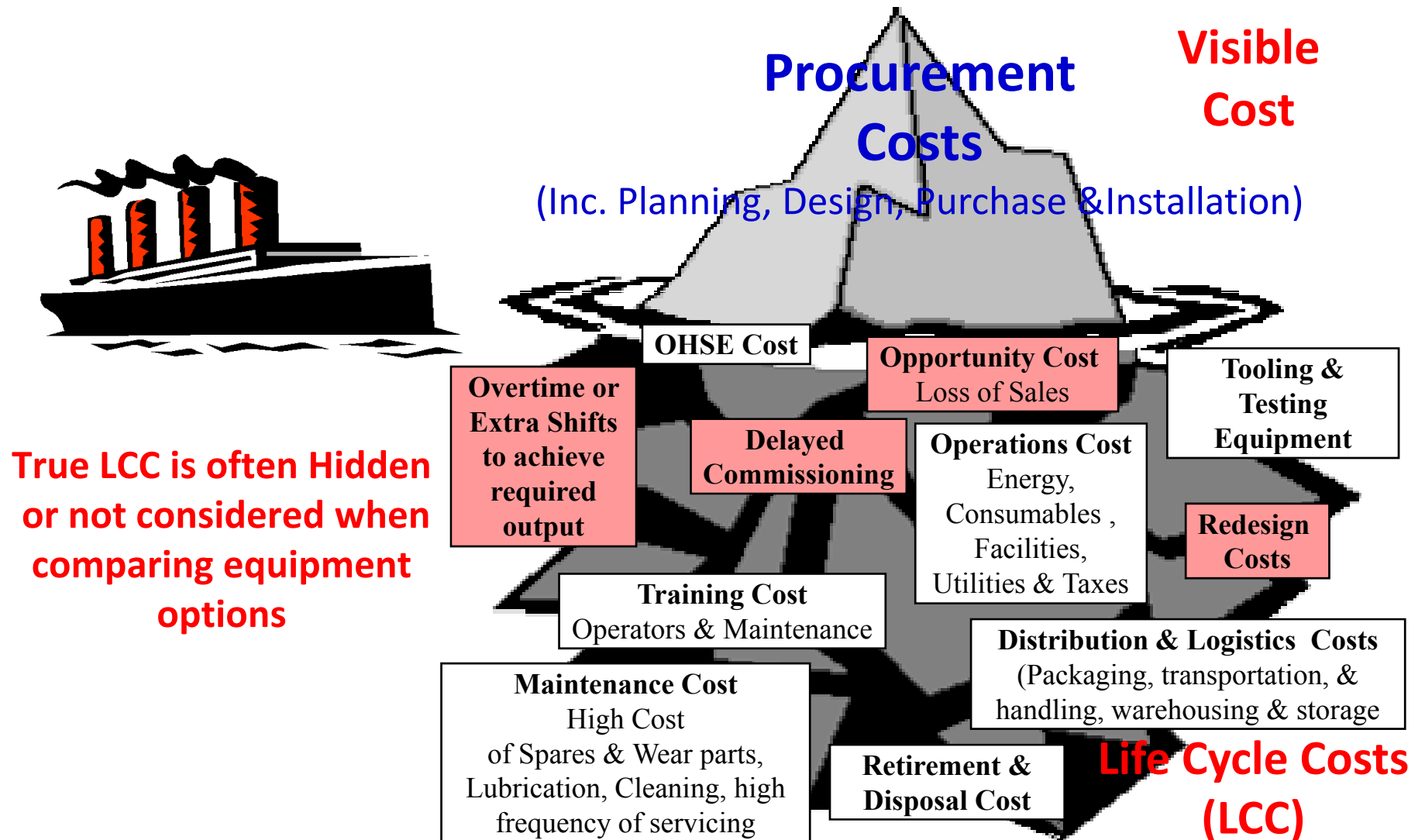
and providing

everyone the framework, systems and
opportunity to input into the new equipment and workplace

where

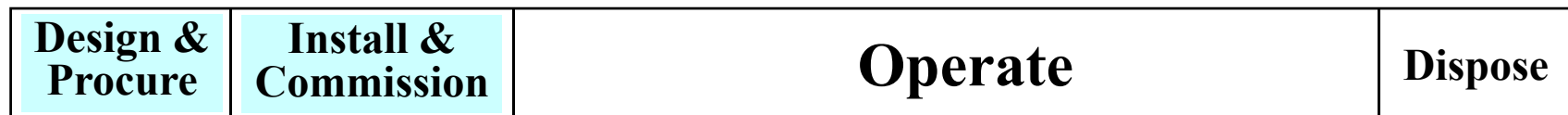
All key players (**Design, Engineering, Operations
& Maintenance**) work together to achieve a **Vertical Start-up**

Understanding the True Cost of New Equipment



Understanding Life Cycle Cost (LCC³)

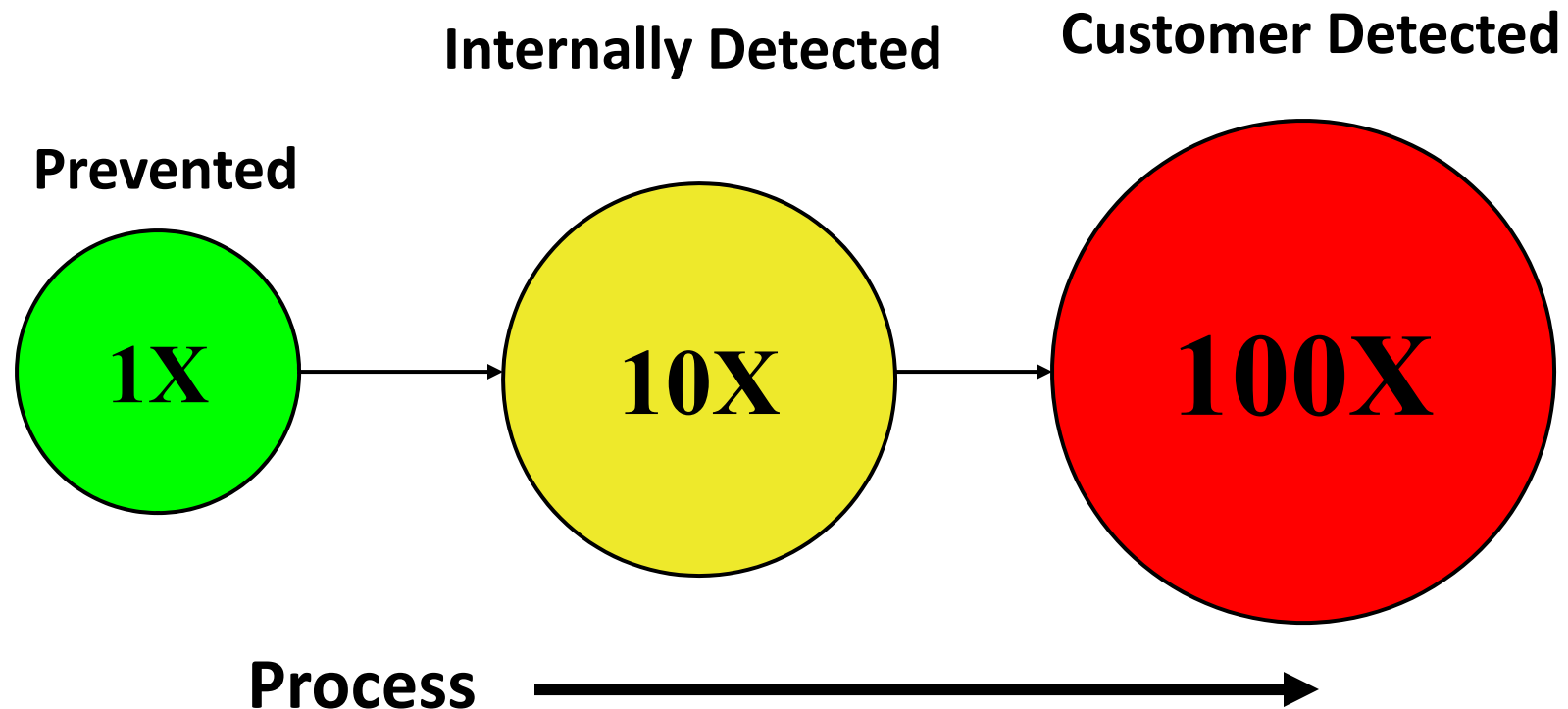
LCC³ is used as a design parameter to calculate the most economical designs & installations and is impacted on by the ability of the equipment and manufacturing process to achieve and sustain world class operational performance within the shortest period of time



$\text{Operate} = \text{OHSE} + \text{Production} + \text{Maintenance} + \text{Planning}$

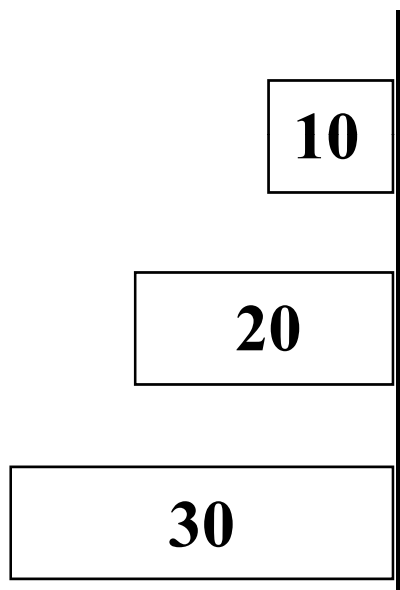
Prevention at Source (Product Defect Avoidance)

The cost of Product Defects when they are:



Understanding Prevention at Source (PaS) Design

Shipbuilder A

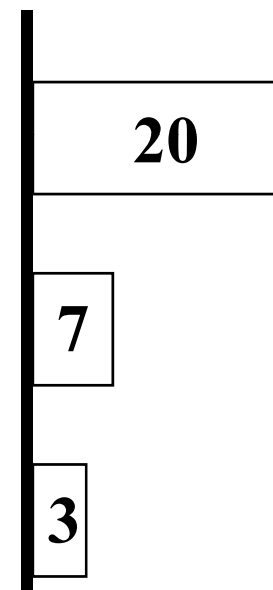


Definition

Design

Redesign

Shipbuilder B



(Thousands of man-hours)

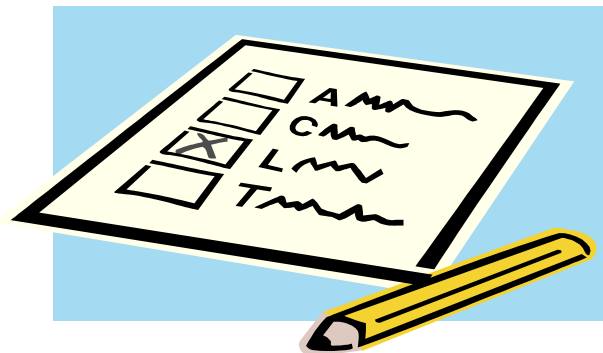
Understanding Prevention at Source (PaS) Design

Prevention at Source Design involves activities carried out during the planning and construction of new equipment, that will ensure that the new equipment has high degrees of:

- reliability
- maintainability
- economy
- operability
- safety

while considering production and maintenance information and new technologies so as to minimise LCC (entire iceberg)

Time for the 1st Poll



Question 1.

Does your company use both Life Cycle Costing (LLC) and Prevention at Source (PaS) Design when procuring new plant and equipment?

- a) Yes
- b) No
- c) Not Sure

Consider more than just Functionality

To minimise ***Life Cycle Cost*** you need to
consider more than just good equipment
Design or Function!



Consider more than just Functionality

What do you need to consider to minimise LCC?

Operability:

“Make it easy to do right and difficult to do wrong”

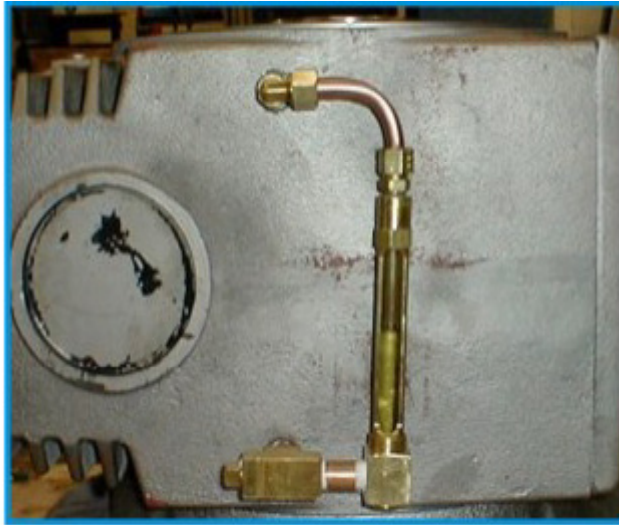


Examples of things to consider:

- How long is the equipment set-up time? (SMED)
- How often does the machine require cleaning and how easy is it to clean?
- Has Error/Mistake proofing being built in to avoid quality problems or equipment damage
- Have visual controls been utilised to make easy to identify normal /abnormal conditions

TPM³ Friendly or Compliant Equipment

Example of Equipment Visual Controls

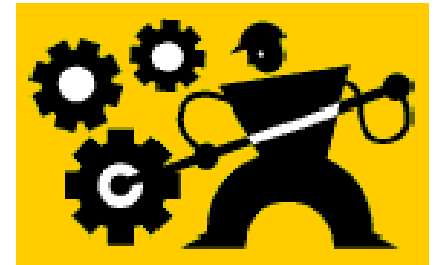


Consider more than just Functionality

What do you need to consider to minimise LCC?

Maintainability:

“Try to eliminate maintenance or to make it easy, infrequent and low cost”



Examples of things to consider:

- Self /automatic lubrication system or centralised lubrication points (manifolds)
- Does the equipment have self-diagnostic functions to improve fault finding to reduce equipment downtime?
- The life & cost of wear parts & consumables

Consider more than just Functionality

What do you need to consider to minimise LCC?

Standardisation:

“Create standards for all, auxiliary equipment, fittings, guarding and etc, to reduce spare parts & consumable costs”

Examples of things to consider:

Knowledge Data Base of Design Standards

PLCs

Pumps & Valves

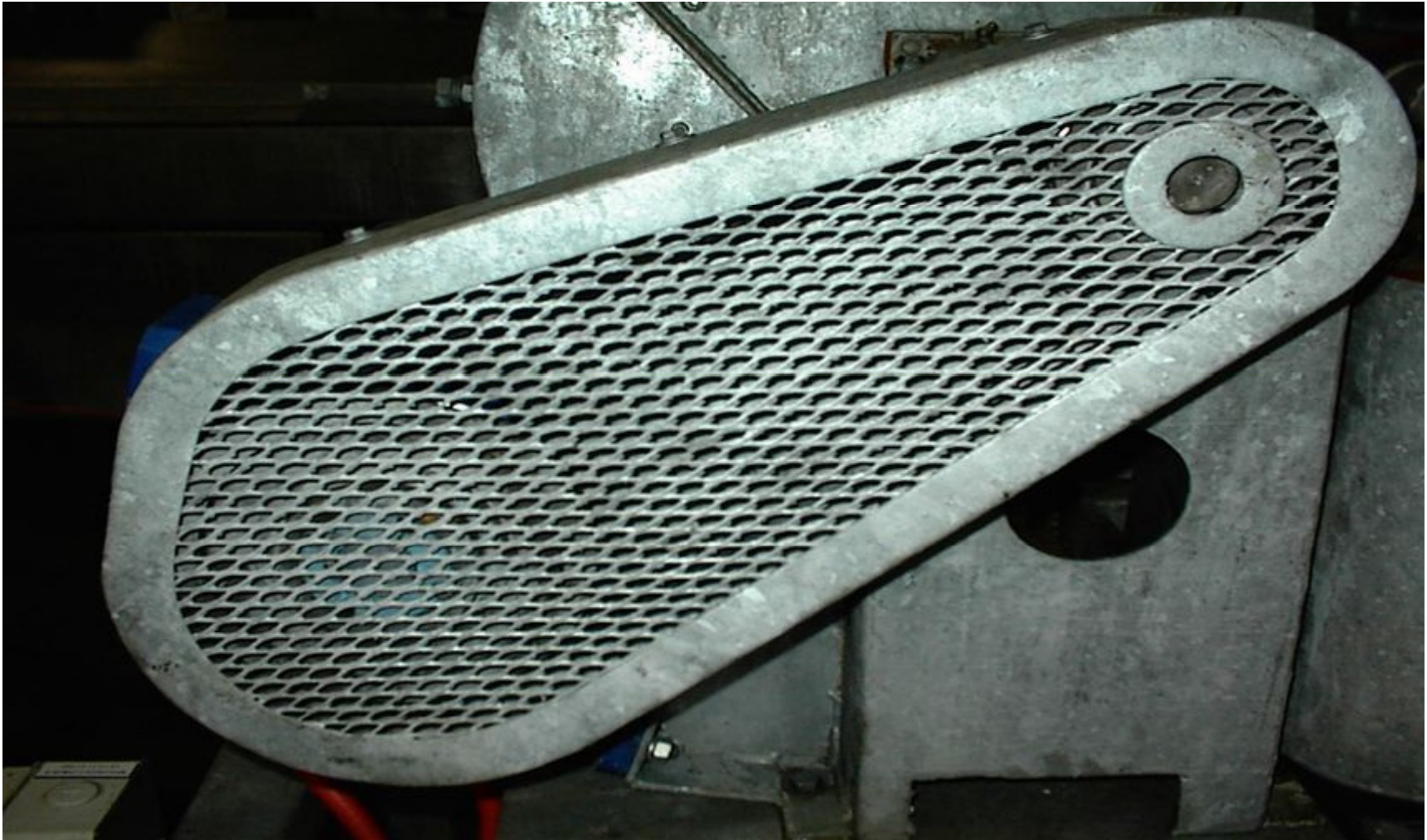
Fixtures & Fittings

Pneumatics

Guarding



How much Time & Effort would it take for a Maintainer/Operator to inspect this Chain Drive?



What Training & Tools are required?

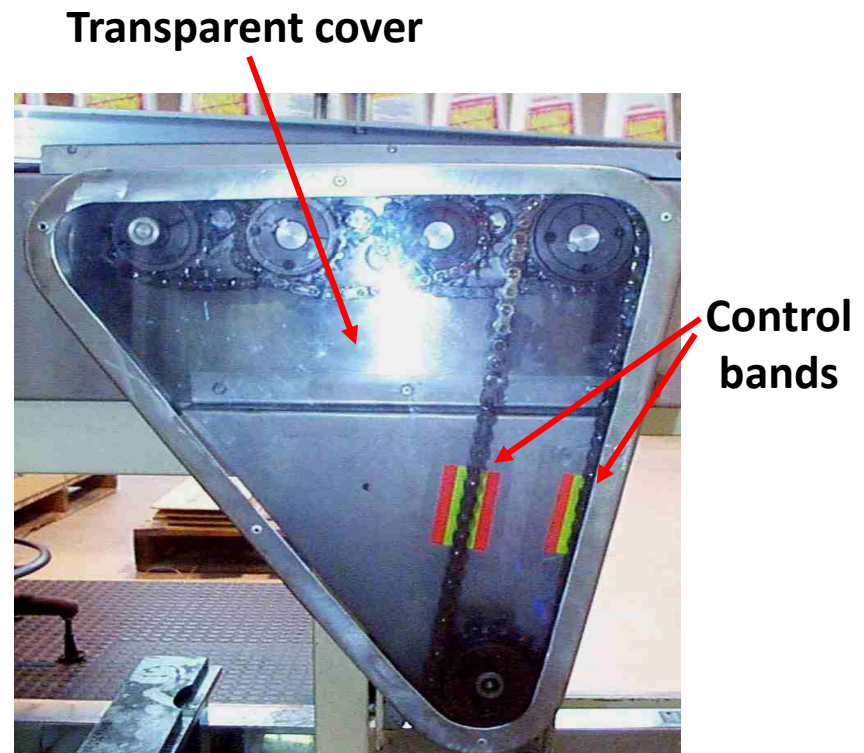
Equipment Visual Controls



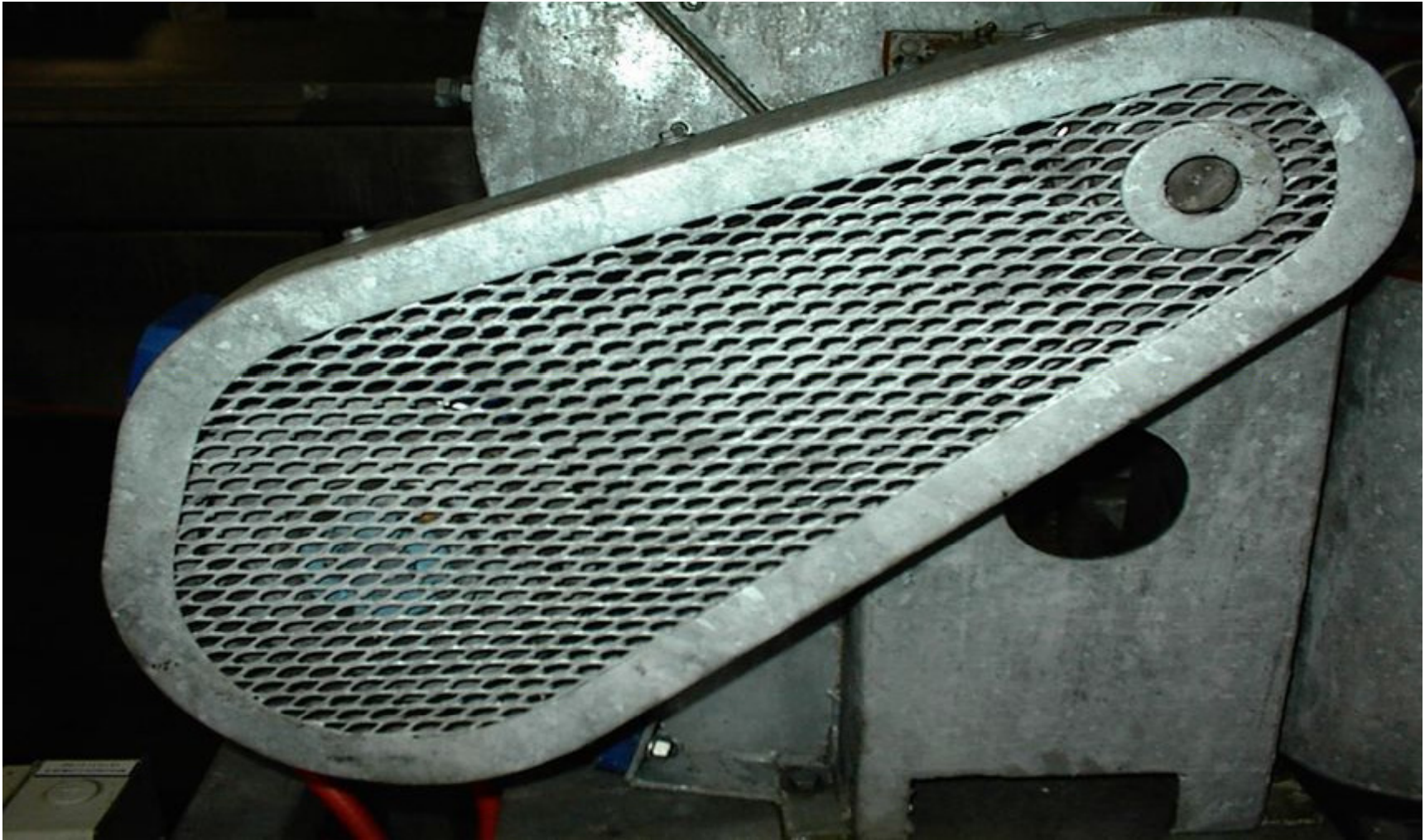
Green band indicates permissible range for distention



Red band indicates inadequate range of distention – chain needs tension



Chain tension visual check



Consider more than just Functionality

What do you need to consider to minimise LCC?

Education & Training:

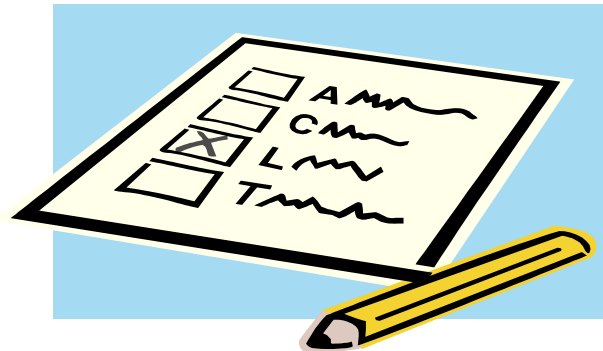
***“To ensure all operators and maintainers have the
Base Skills
to achieve the production plan.”***



Examples of things to consider:

- Development of a Education & Training Plan with supplier(s)
- Developing of Education & Training Modules with supplier(s)
- Training Materials (e.g. Job Instruction, One Point Lessons)
- What assessment methods will be used?
- Who will conduct the training?

Time for the 2nd Poll



Question 2.

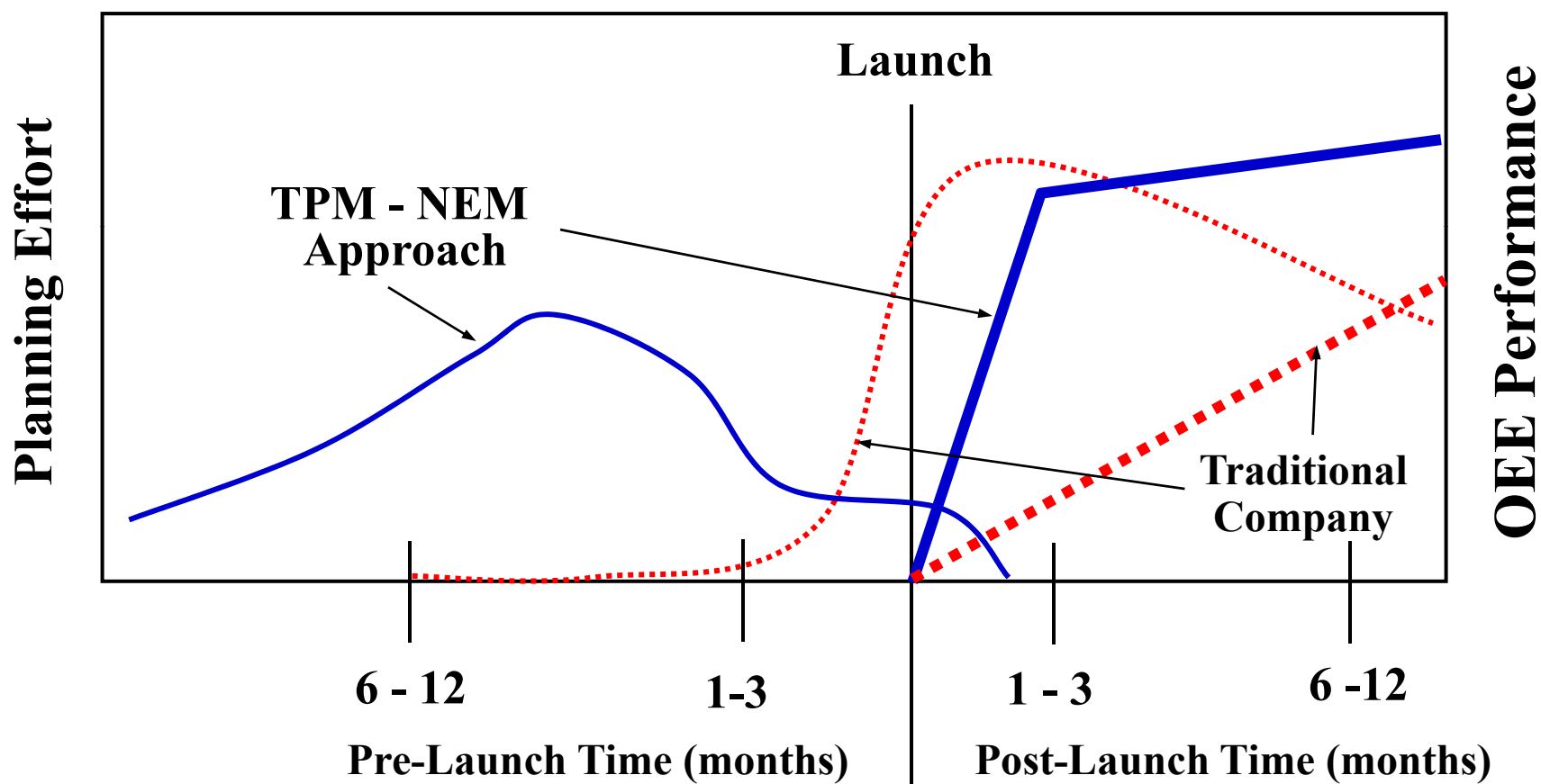
Does your company consider operability, maintainability, standardisation and Training?

- a) Yes
- b) No
- c) Not Sure

Vertical Start-Up

Impact of Prevention at Source Design

Planning for Start-up - Knowledge & Skills



The 4 Stages of New Equipment Management

- Stage 1 Design & Procure (*Pre-Launch*)**
- Stage 2 Acceptance Testing & Site Presentation
(*Pre-Launch*)**
- Stage 3 Install & Commission (*Launch*)**
- Stage 4 Perform, Monitor & Learn
(*Post-Launch*)**

A diagram illustrating a factory assembly line. It shows a central machine with a large opening and a conveyor belt extending from it. Workers are positioned at various stations along the line, performing tasks such as assembling parts, inspecting products, and packaging. The line is divided into sections by barriers, and the flow of production is indicated by arrows.

- ✓ Start with a true cross-functional team involving operators, maintainers, quality/technical staff and engineers, to consider operability, maintainability and standardisation and minimise LCC

Key Learning's Continued...



Four Key Learning's;

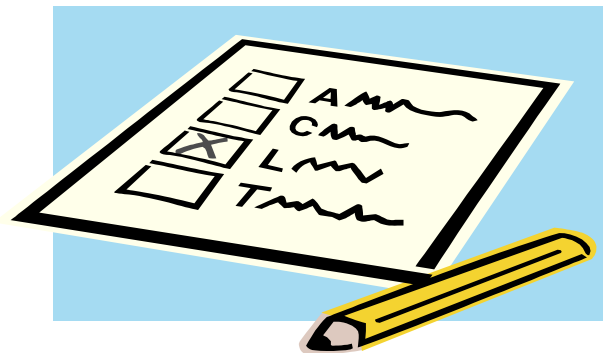
3. *Acceptance Testing (4 Types)*

- ✓ Factory Acceptance Testing (FAT)
- ✓ Testing Upon Receipt
- ✓ Installation Acceptance Testing
- ✓ Start-Up & Commissioning Testing

4. *Training of Operators & Maintenance staff*

- ✓ Good Quality training, less damage/defects in the equipment
- ✓ Insist on a Master Trainer! Its worth investing in your people
- ✓ Start planning for training at the design & development, not at Installation & Commissioning

Time for the last Poll



Question 3.

Does your company involve operators and maintainers from the beginning of the New Equipment project (Design & Procurement)?

- a) Yes
- b) No
- c) Not Sure

Any Questions Please?

