



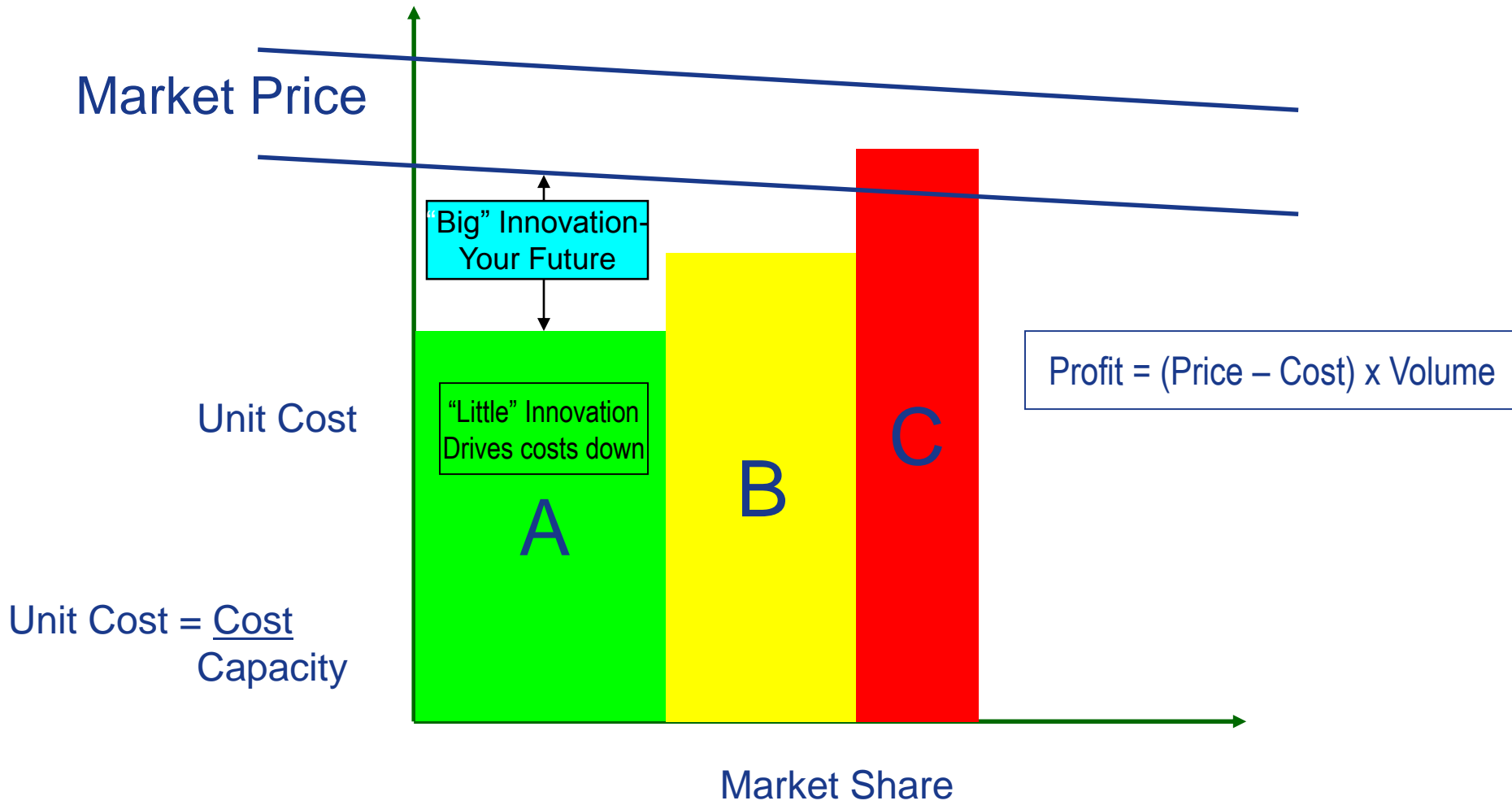
# Why top manufacturing companies make reliability a *core business value*

Andrew Fraser  
Managing Director

- The Business Case:
  - Financial
  - Health, Safety and Environment
- Achieving High Reliability Performance
- Questions & Answers

# **The business case - financials**

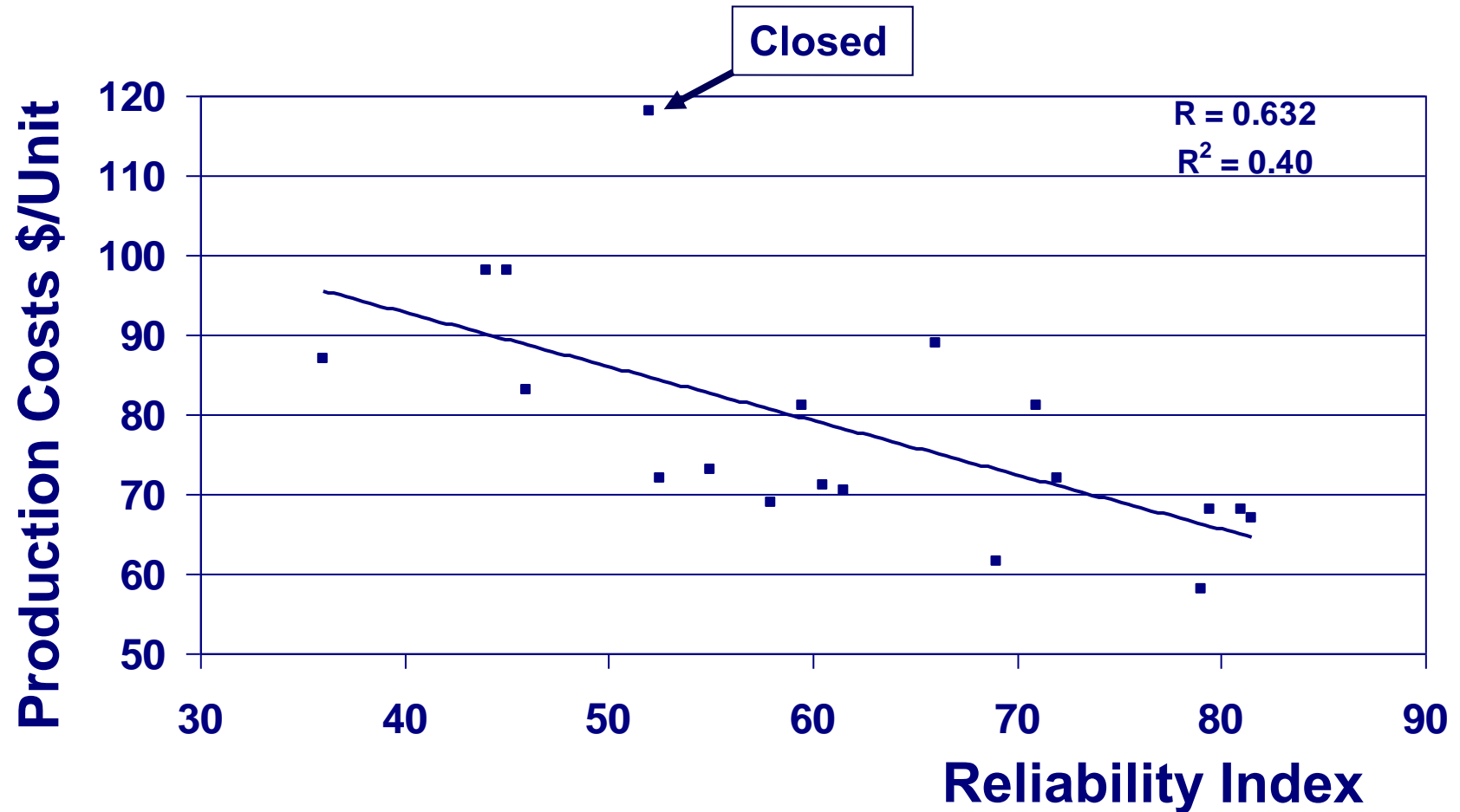
# Market Survivor Profile



# Effect of reliability on unit cost

$$\text{Unit Cost} = \frac{\text{Cost}}{\text{Capacity}}$$

# Impact of reliability practices on unit cost

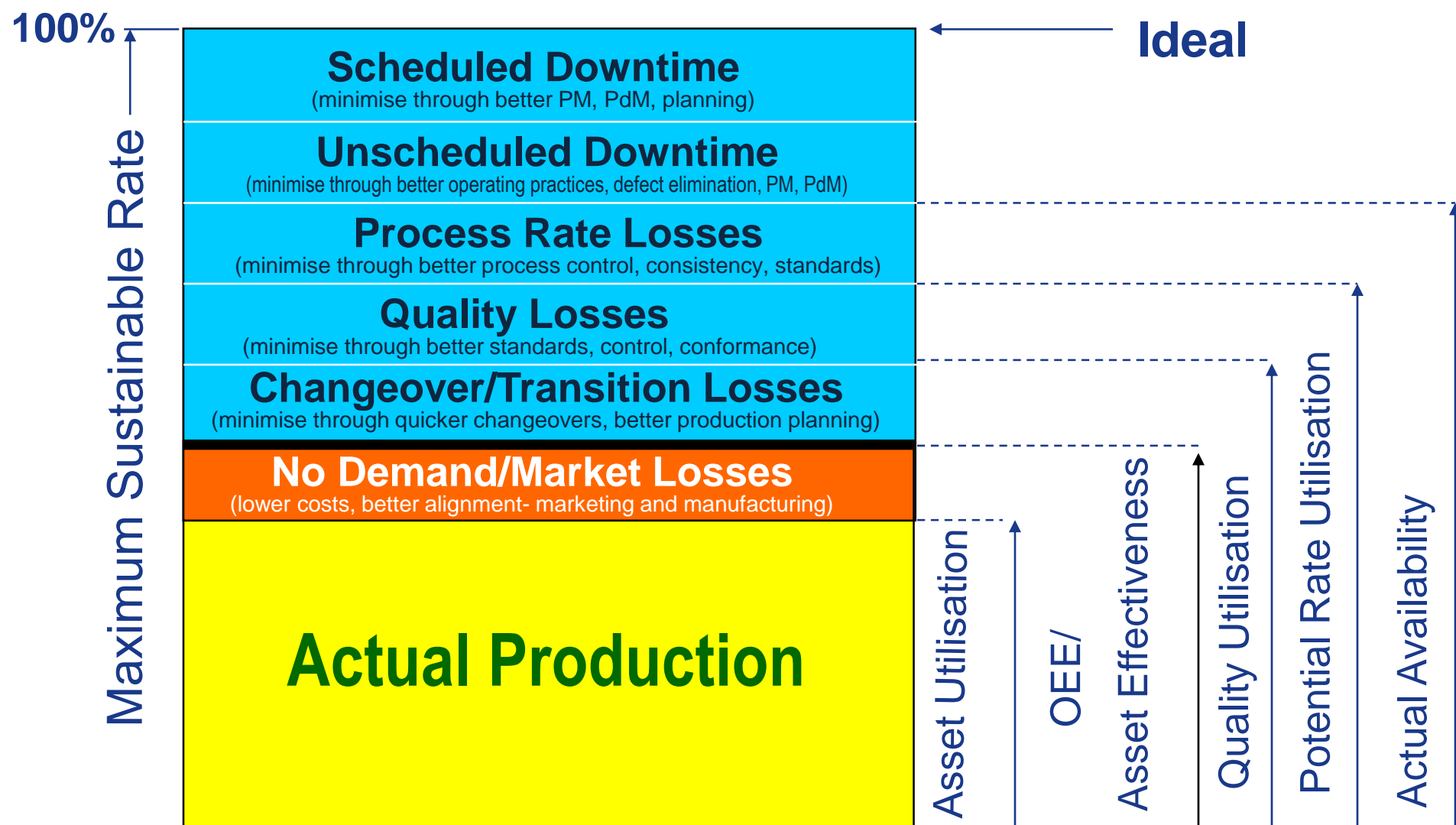


# Asset Utilisation/ Overall Equipment Effectiveness

*“If you could run your plant 8,760 hours per year, making 100% first-pass, first-quality product, at 100% of your maximum demonstrated, sustainable rate, with no losses for changeovers:*

- How much could you make?
- How much are you making?
- Where are your losses from ideal?”

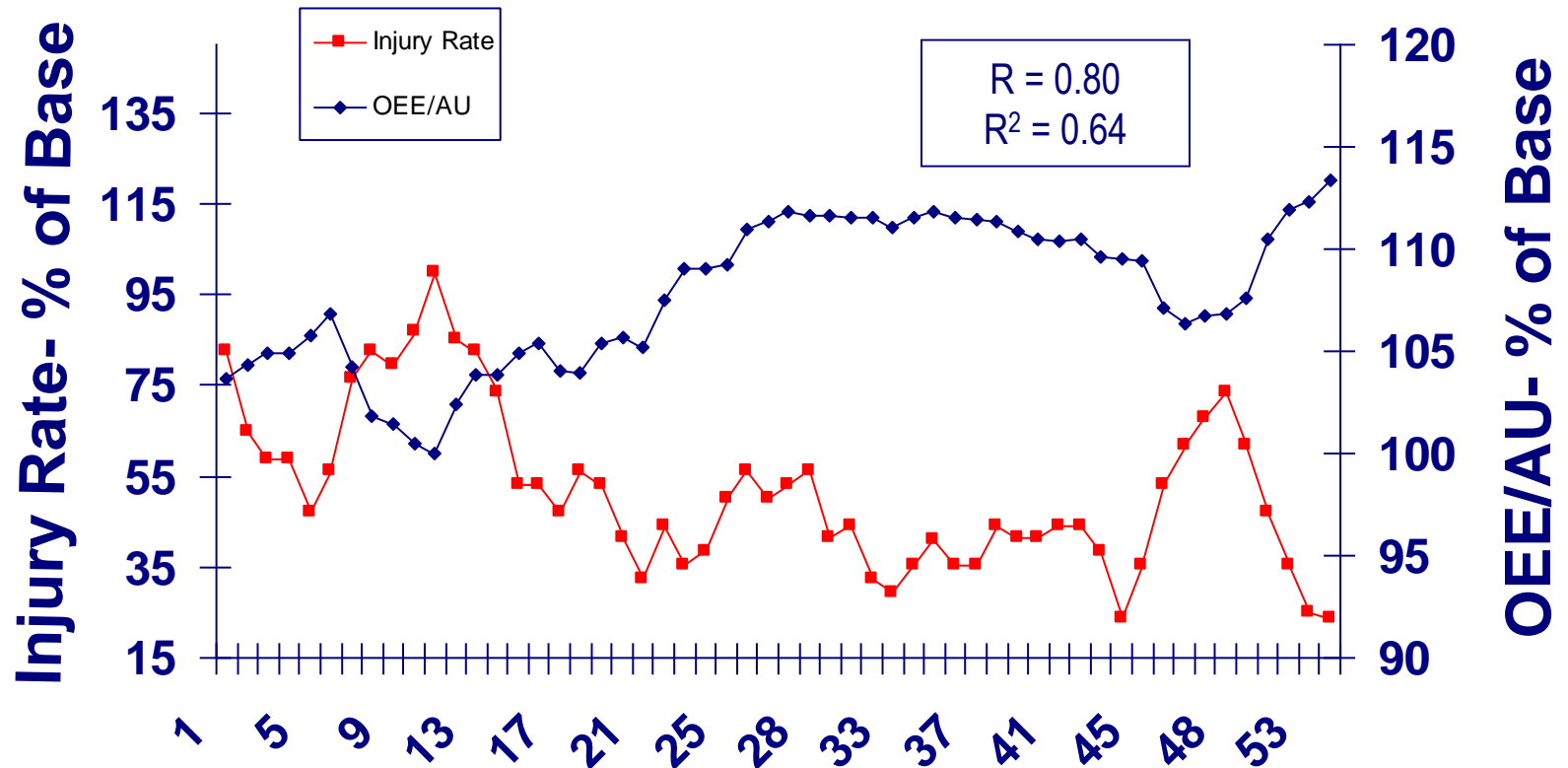
# AU/OEE & Loss Accounting





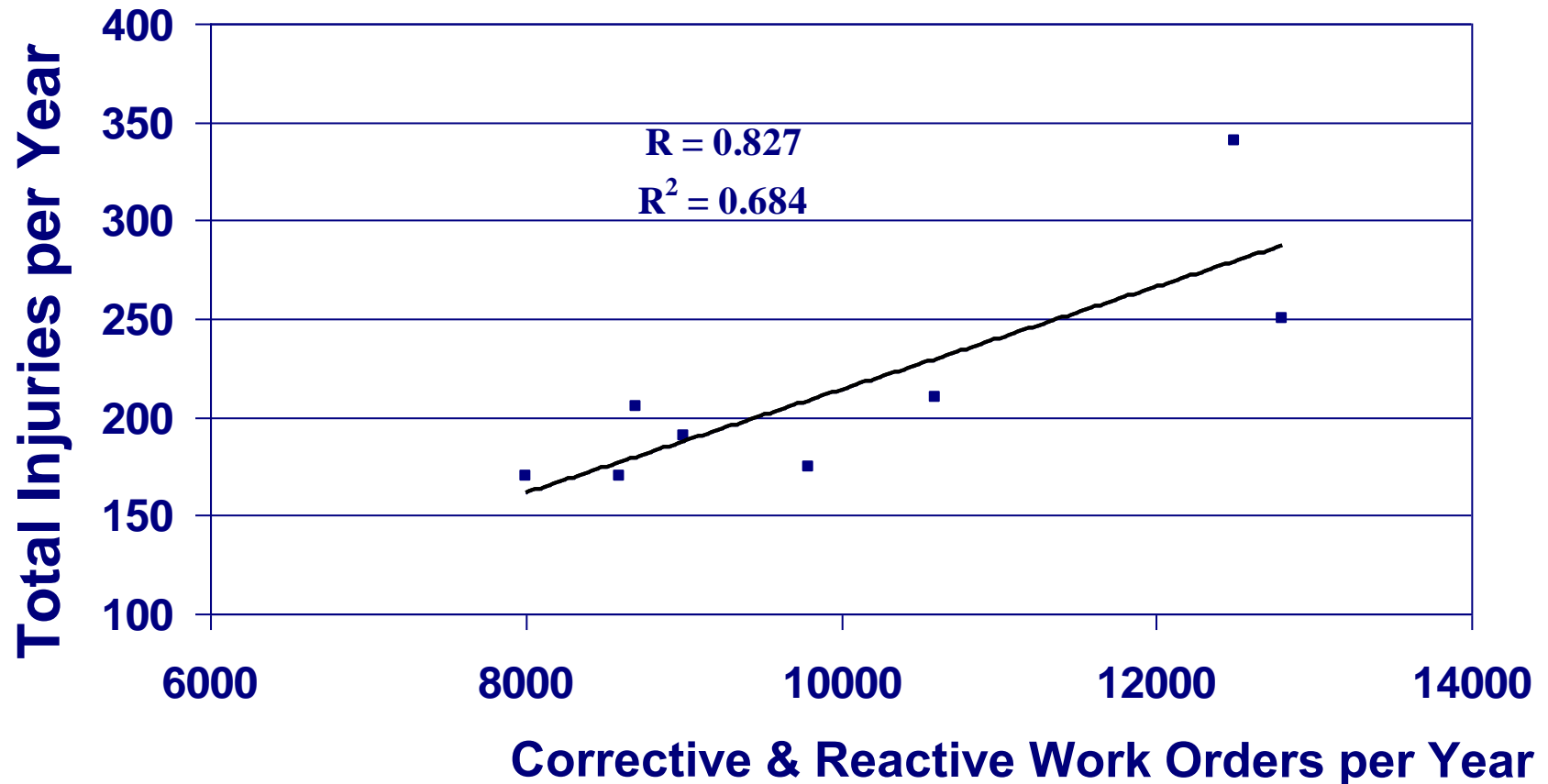
# **The business case - HSE**

# Injury rate v. AU/OEE over time



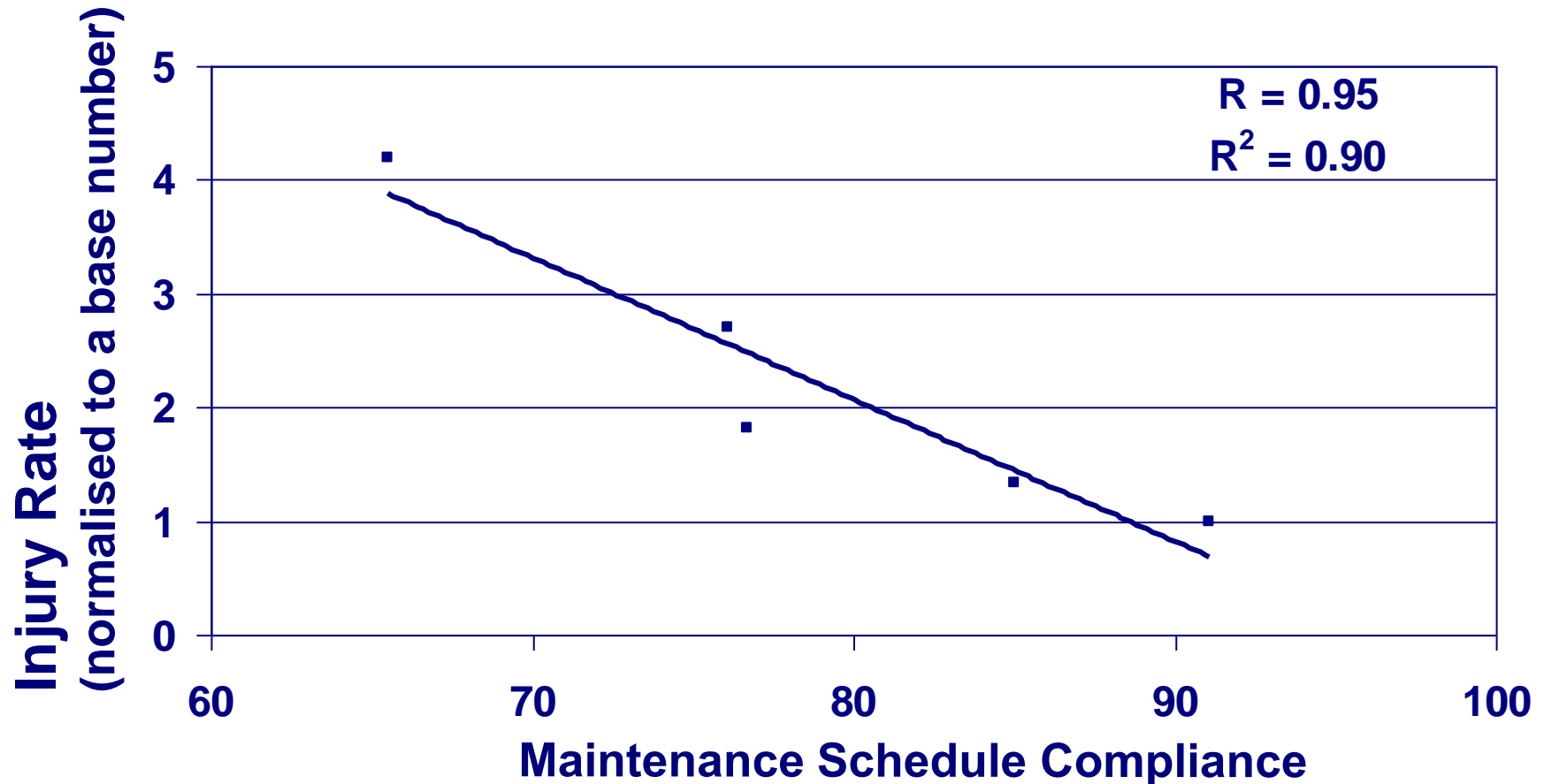
Source: Large Industrial Manufacturer-A

# Correlation of Corrective & Reactive Work Orders with Injury Rate



Source: Large Chemical Plant - A

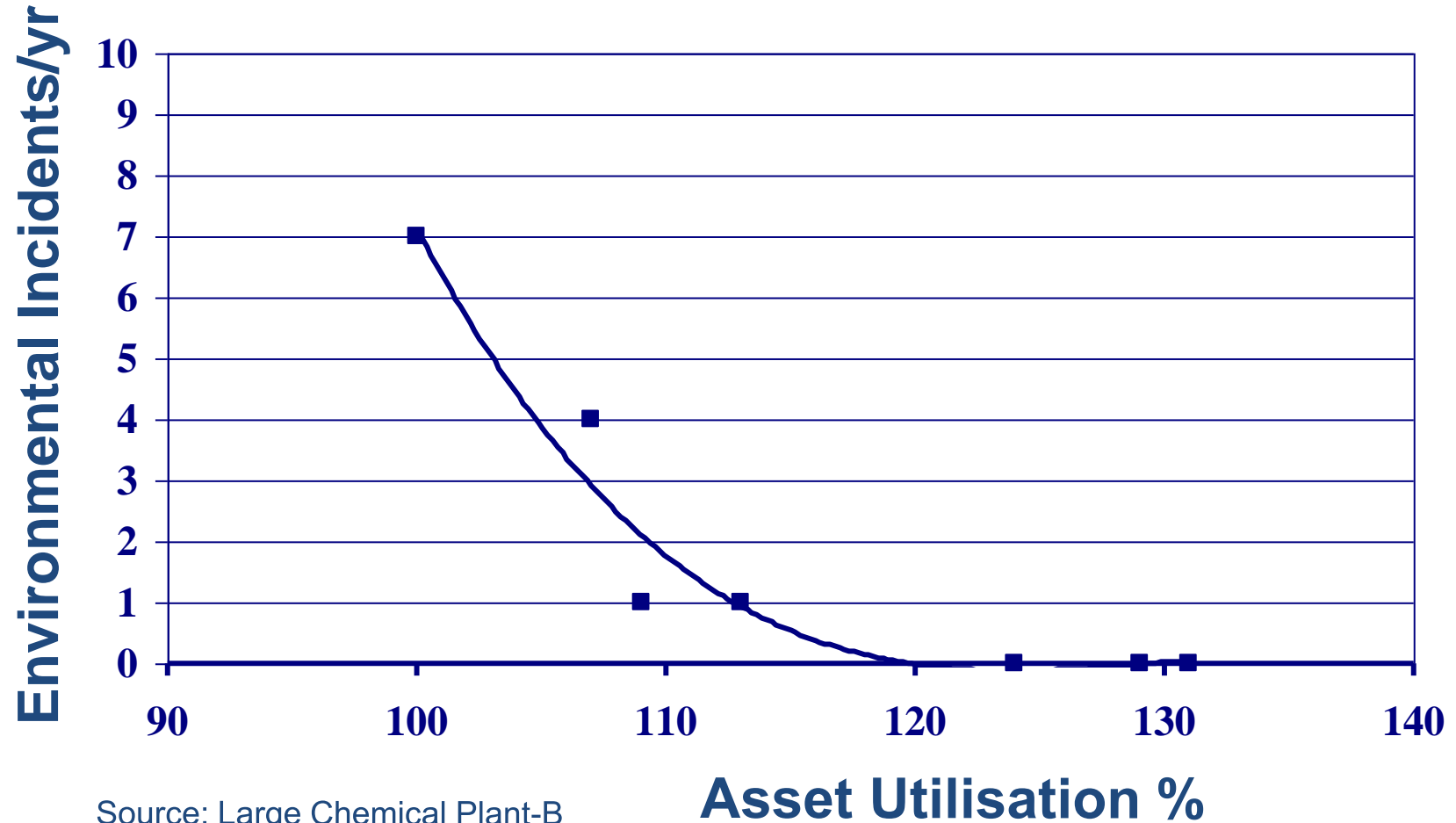
# The more disciplined your maintenance the fewer injuries you have



Source: Large Industrial Manufacturer- B

# A Reliable Plant is Environmentally Sound

Asset Utilisation vs. Environmental Incidents - Plant B



Source: Large Chemical Plant-B

**Asset Utilisation %**  
(normalised data)

- DuPont reported that the most likely person to be injured is:
  - a maintenance technician,
  - with less than two years experience,
  - doing reactive work
- Exxon-Mobil reported that accidents are five (5) times more likely in maintenance when doing breakdown work than when doing planned and scheduled work\*\*

**“A reliable plant, is a safe  
plant, is a cost effective plant!”**

# Some implications

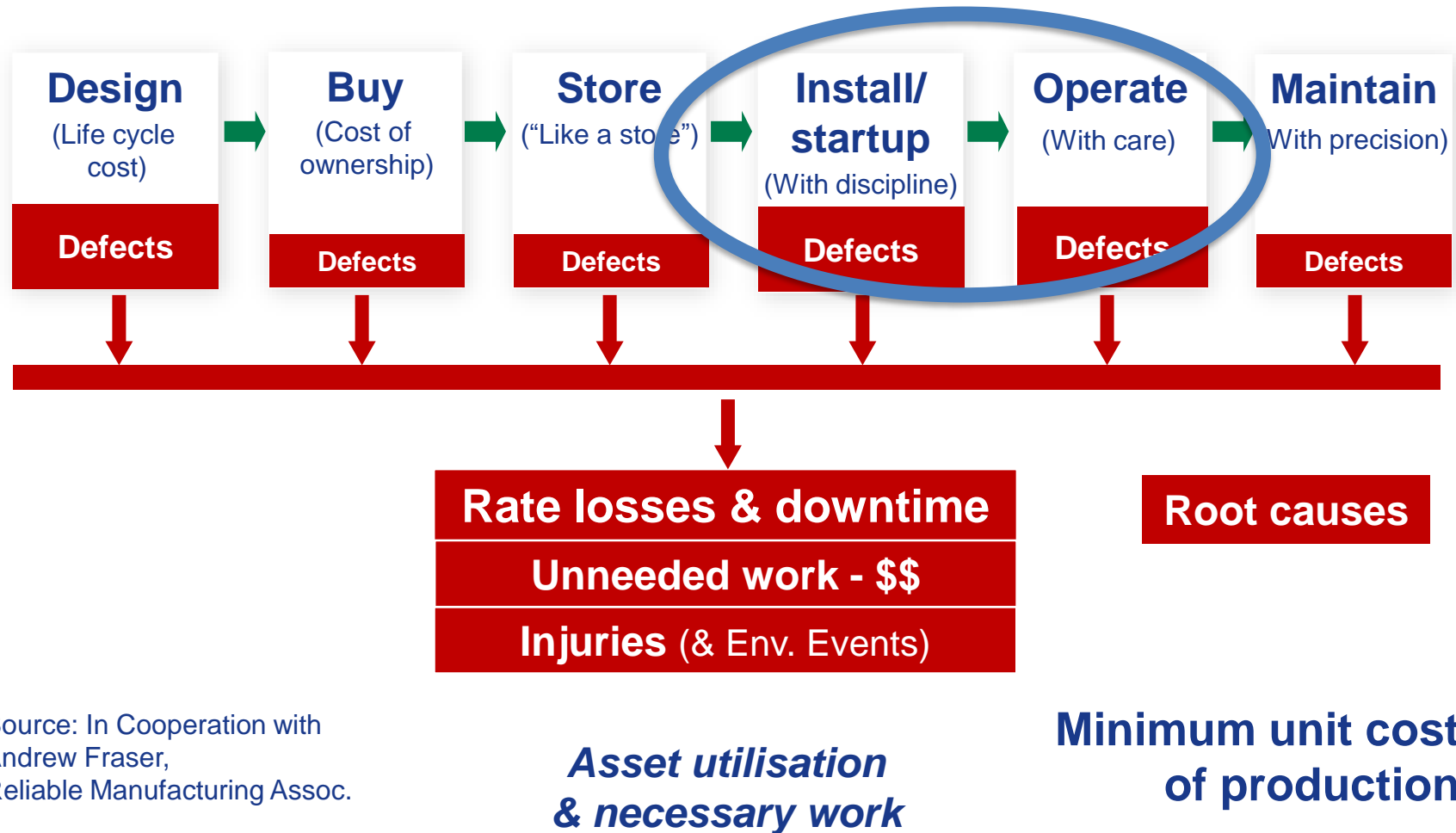
- If safe behavior is a requirement, for which you have **specific standards**, then...
- Best practices for reliability are requirements, for which you have **specific standards**.
- *If you believe in Zero Incidents/Injuries, you must believe in Zero Failures/Unplanned Downtime.....*

**Failures induce greater risk of injury!**



# **Achieving high reliability performance**

# The reliability process



Source: In Cooperation with  
Andrew Fraser,  
Reliable Manufacturing Assoc.

**Minimum unit cost  
of production**

# Learning's from safety

Percent of all  
Accidents

0.2%

1

Serious or Major Injury

1.6%

10

Minor Injury

4.7%

30

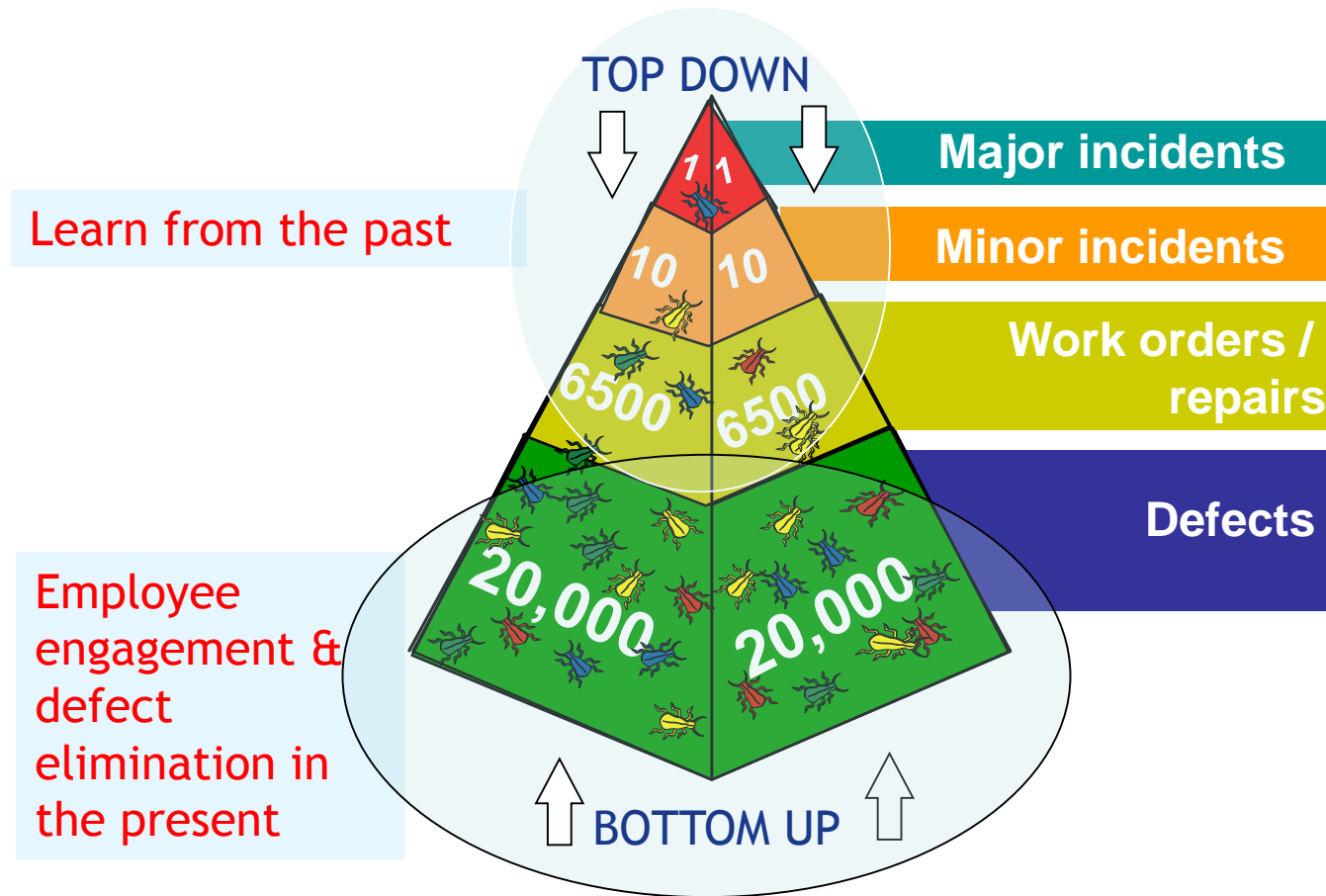
Property Damage Incidents

93.6%

600

Incidents with no visible  
injury or damage  
(near accidents, close calls, HIPO's,  
unsafe acts or behaviors)

# Top down/bottom up strategy



***Nothing*** really changes until  
those in the frontline do things  
differently!

*Make reliability **a core value** in your organization so you can:*

**Win in the Global Market!**

# Thank you for listening

## Any Questions?



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Over 35 years experience in manufacturing:

- Plant support engineer – UK
- Project engineering – UK
- Maintenance management – UK
- Production management – UK
- Engineering management – Australia
- Internal change agent for reliability – Australia/International
- Managing Director Reliable Manufacturing since 1999

