Industrial Reliability and Maintenance Management Course

Click above link to download all 3 days (235 Slides), below is Day 3 sample.

This is a sample of the PowerPoint on Industrial Reliability and Maintenance Management, available at ...

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Bill Masters Reliability and Maintenance Management

Travel 'the Journey' to Reliability and Maintenance Management Mastery

Part 3 – Maintenance Management: Maximum Life Cycle Profit

Presented by Mike Sondalini

Welcome to Part 3 of the presentation. This series of slides is meant to challenge you, and maybe even change the way you think about how business should be done.

Bill sees a better way to manage business risk…

Professor Miles, you rightly advised that the work done so far on the plan has provided only strategy and methods to maintain our plant and equipment to high reliability. It also bothers me, after seeing your research summary, that the process of developing the reliability improvement plan does not consider what is in the best long-term interest of the business.

You agree with my major concern over current maintenance management thinking and strategy - it looks at reducing risk to production, but does not consider risk to the business over its lifetime?

I imagine people thought that 'what is good for production is good for the business'.

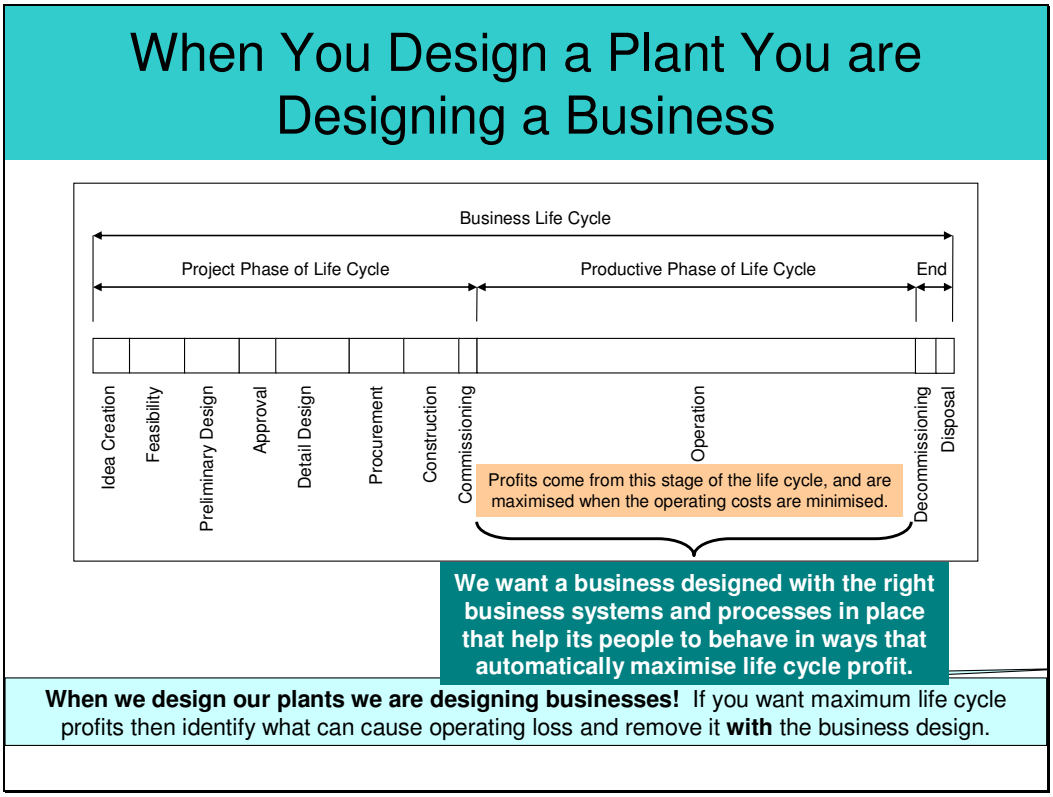
If you want to be sure that your strategic plan is optimal for the long-term well-being of your business, you must take a life-cycle profit perspective in developing the strategy and practices.

That is what I wanted to find out Professor. Do you know of such a method?

There is one I recently helped to develop. It is called 'Design and Operating Cost Totally Optimized Risk'. Thank goodness the acronym is DOCTOR, otherwise it would be a mouthful to say.

Do you know where I can find-out more about it?

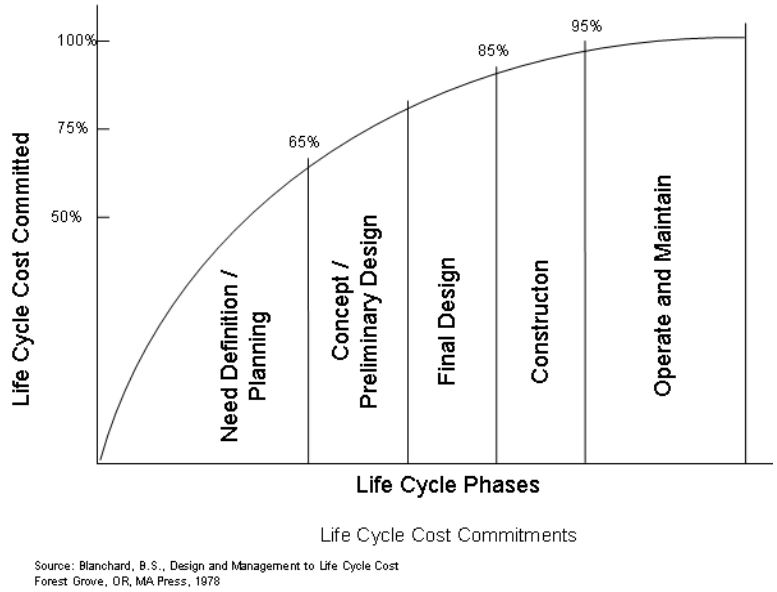
Go to the website of the owner and see what is written there. You are bright and can work-out what to do with the information you read. The address is www.lifetime-relability.com



The plant and equipment used in an enterprise have a life cycle. It starts with the recognition of an opportunity, then progresses to feasibility and approval. If the idea is found worthwhile a full design is developed, plant and machinery are purchased, installed and put into operation. The vast majority of the life cycle is its operation and this continues until the plant and equipment are eventually decommissioned and disposed of.

A business is started in the expectation that the investment made to get into operation will return a profit within a specified time. The profit is only generated during the operating phase of the life cycle. The more profitable the operation the sooner the investment is returned and the sooner an unencumbered income stream is created. If we want to maximize operating profit we must keep the operation performing at the throughput approved when the investment decision was made while having costs no greater than those expected. One of those costs is the repairs and maintenance of the plant and equipment.

When Operating Costs are Committed



Once a plant is designed and built there is very little that can be done to reduce operating costs, because they are substantially fixed by the plant's design. If you want low operating costs, this chart makes it clear that they are designed into the plant and equipment during feasibility, design and construction. It's your choice!

This Figure shows when plant operating costs are committed. It indicates that up to 95% of operating costs are predicated, or set in place, during the capital phase. By the time a plant goes into operation there is little that the people operating and maintaining the plant can do to change operating costs. During the operating phase of the life cycle the focus is to minimize operating costs to the very lowest levels achievable with their plant and equipment.

The Maintenance Planner contributes to this least-cost-of-operation goal by making sure people and resources are minimized and used wisely for the greatest benefit of the enterprise. Hence why the primary purpose "to gain greater work utilization from the rest of the maintenance mechanics" is so important.

The Design Process Limits Reliability

The Standard Design Process	
• Concept	• Approval
• Specification	• Full design
• Preliminary design	• Design review
• Costing	• Design approval
• Justification	• Production

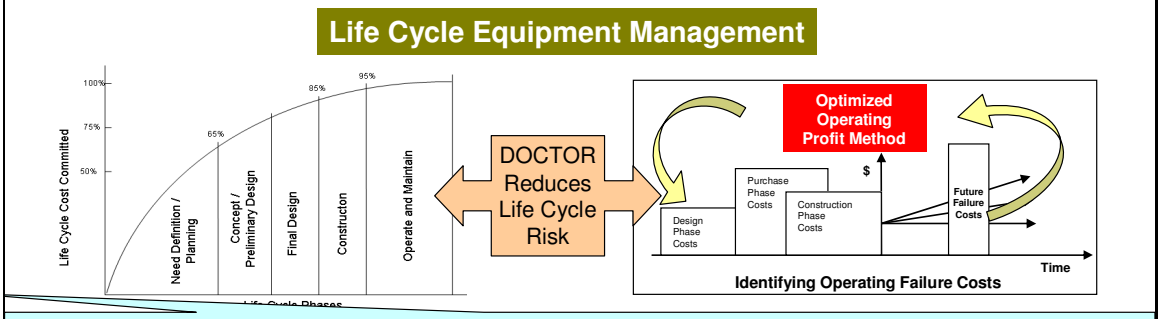
- Limited by budget
- Choices limited by time constraints
- Designers are limited by knowledge and experience
- Use of 'old' solutions prevail even if unappropriated for service
- No concept of future cost of ownership – i.e. its lifetime operation and maintenance
- Assumptions made as to operating practices
- Design assumptions not known by operators

AND … where is the analysis of operating and business RISK!???

Design and Operating Cost Totally Optimised Risk (DOCTOR)

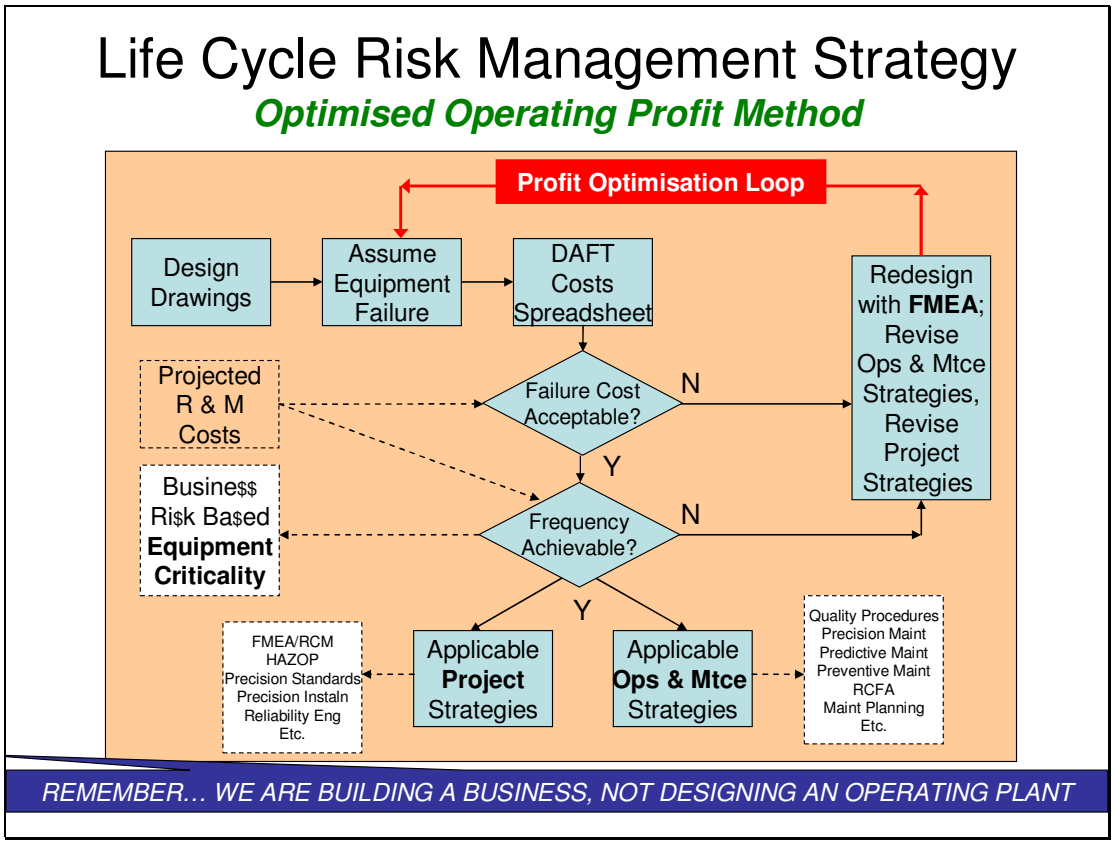
A straightforward spreadsheet methodology replacing RCM and FMEA with risk-based financial analysis of defect and failure true cost consequences to a business

- Review the handout, *'Help from the DOCTOR'*



You can get phenomenal life-cycle cost savings during design if the designers reduce the operating risks to the business by matching the business risk control practices to the business risk.

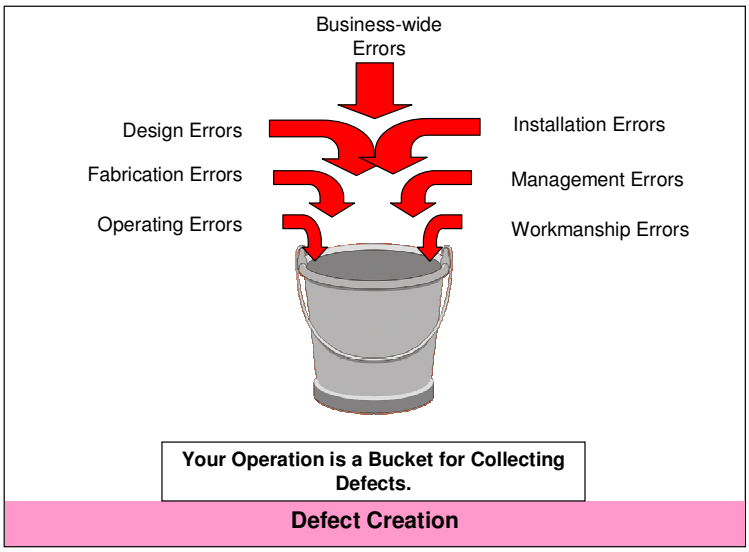
The process first entails taking each separate item of equipment in a project design and assuming its working parts will fail in the most catastrophic way possible. The costs resulting from such a failure are then compiled. Secondly, the item is assumed to fail in its more likely ways and the consequential costs calculated. The cost of repairing the failure is the DAFT Cost based on the real costs of current practices in the organisation using the equipment. The final costs are used to review the design choice and to compare it against other choices and their costs.



The Diagram shows a means of selecting appropriate project, maintenance and operating strategies matched to the size of risk carried by a business. The methodology is known as the 'Optimised Operating Profit Method'. It uses the more than 60 Defect And Failure True (DAFT) Costs that could happen from a failure, to determine the true cost of business risk and then matches risk control practices to the risk a company is willing to carry.

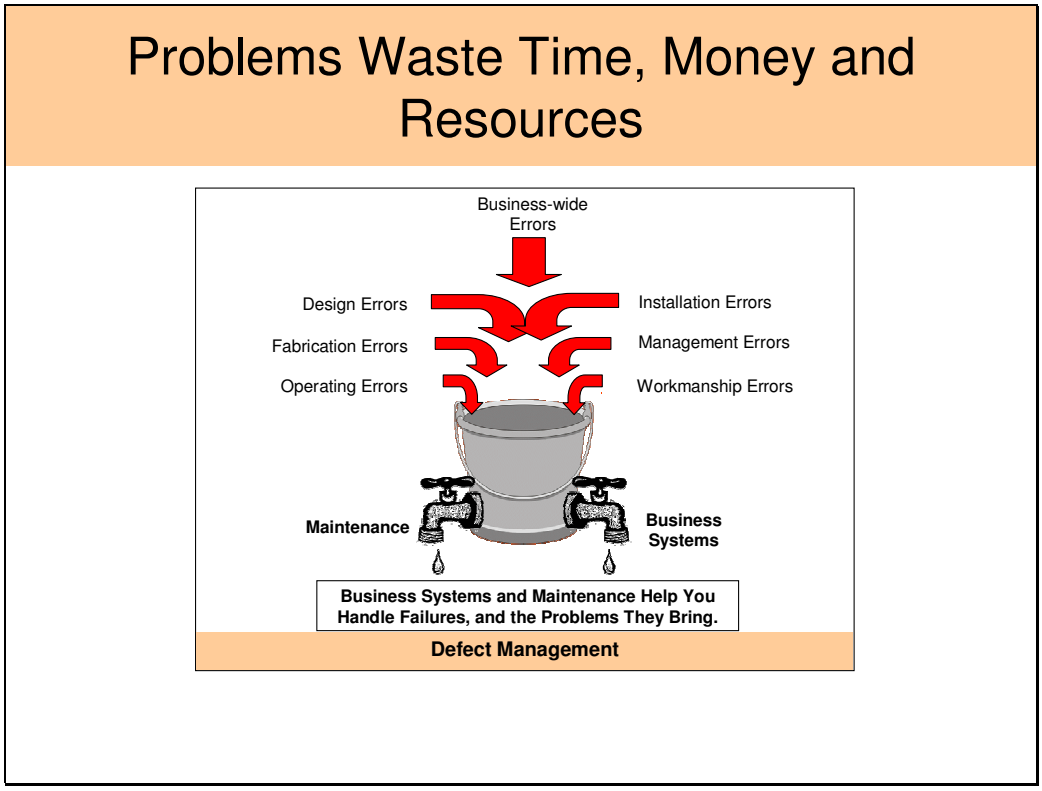
The plant design, the operating practices and the maintenance strategies are continually reviewed and improved until the DAFT Costs in the spreadsheet are acceptable because they are controlled by a suitable mix of good design choices, good operating practices and good maintenance practices.

Why You Need Defect Elimination and Failure Prevention



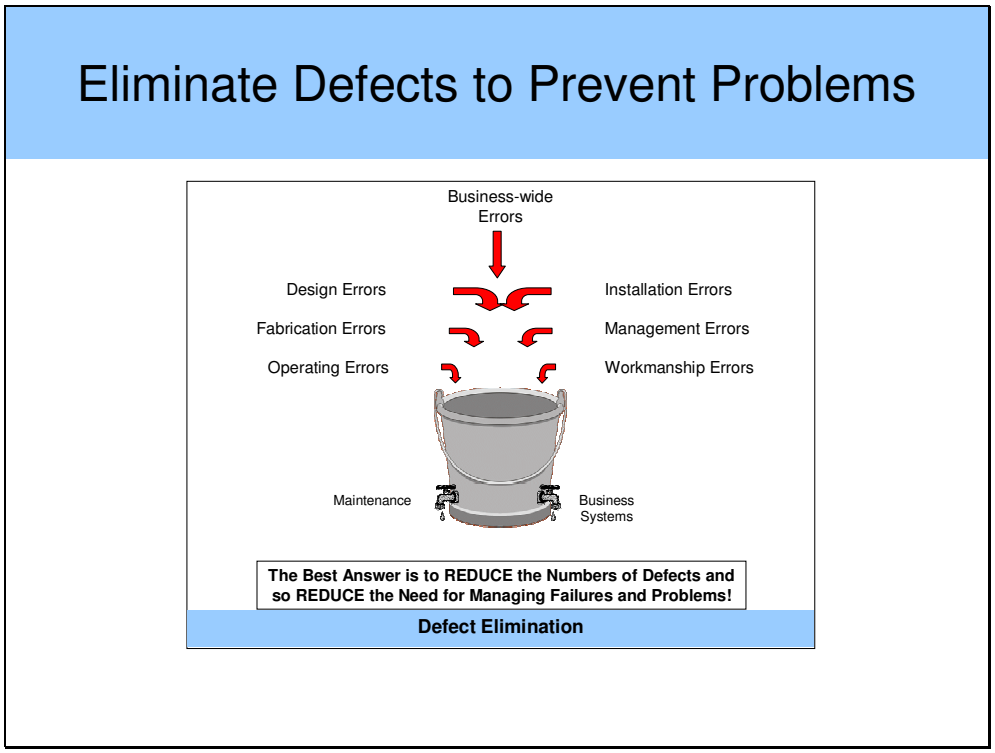
When you look at the time spent by managers, much of it is involved in solving problems. These problems are necessary to be solved. But the important question to be asked is “Why have the problems arisen?” What started the chain of events that now needs management time to fix? This diagram tells us that at sometime in the past ‘defects’ were created and they sit in the operation until their effect becomes so severe it must be addressed.

This is a version of the DuPont Defect and Failure Creation Model. It shows that a business collects other people’s and business’ errors, defects and failures. These then cause further problems to build-up in the organisation. The problems can become so numerous that they take extraordinary amounts of resources and time away from running the business.



In response to the many problems, a business installs systems to handle them. These become the 'way we do things around here' and are seen as normal behaviour. In reality the business systems are correcting errors, defects and failures that should never have happened.

Managers typically set-up new systems and procedures to handle complexities created by problems. One such system is maintenance. When new equipment arrives the maintenance budget is increased to allow for additional repairs and maintenance. These being accepted as 'normal', and so the maintenance costs multiply. Little do people query the 'defects' from the manufacturer that unwittingly entered their business.



The right approach is to stop all defects entering your business. This is known as defect elimination and failure prevention. The result for your business is far fewer problems to handle, with much smaller business systems. Once you have a 'failure busters' organisation there will be more time and money to spend improving the business, and not lost solving problems that should never have happened.

Would it not be better to stop the problems from entering the business in the first place? This is what defect elimination and failure prevention is all about.

It becomes necessary to develop dozens of procedures, guidelines and best practices to control the creation of defects and train people in the right way to prevent problems.

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