

World-Class Engineering Asset Management Training Course

PowerPoint Presentation Content of Enterprise Asset Management Guidelines,
Best Practice Strategies, Frameworks and Techniques

Course Content

World-Class Engineering Asset Management Training Course Day 1 Content

Course Introduction

- Discovering the 'Hidden Factory'
- Value Stream Concept
- Enterprise Asset Management System
- Concepts in Enterprise Asset Management

MACHINE DESIGN SETS THE LIMITS

- Understand How Machines are Designed
- Everyone has an Important Part to Play
- Common Wrongs Humans Do To Machine

THE HUMAN FACTOR IS THE GREATEST ENEMY

- The 'Human Element' in Asset Management
- Reliability of Human Dependant Processes
- Work (activities and practices) is a Series Process
- The Reliability of Systems
- Reliability of Series Work Processes
- Improving Series Process Reliability
- Reliability of Parallel Work Process

DEFECT AND FAILURE TRUE COST

- The Truth is Hidden Under the Surface
- Where Profit is Lost in Business Processes
- The Purpose of Business
- Maintenance is an Economic Decision
- Impact of Defects and Failures
- Defect and Failure True (DAFT) Costs go Company-wide
- Failure Costs Surge thru the Company
- Separate the True Downtime Costs so you can see them for what they are
- Calculating the True Downtime Costs

THE PHYSICS OF FAILURE

- The Physics Behind Equipment Failures
- Over-stressed Parts - Overload
- Over-stressed Parts - Fatigue
- Using Physics of Failure to Build Reliability
- Operator and Maintainer Error

THE LIFE CYCLE OF MACHINERY

- Plant and Equipment Life Cycle
- When Operating Costs are Committed
- What Makes a Productive Equipment Life?
- Design-in a Low Cost Operating Life
- Maximising Life Cycle Profits

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EQUIPMENT RELIABILITY

- Measuring the Likelihood of Failure
- Reliability of Parts and Components
- Equipment Reliability Strategies
- The Reliability of Parts and of Systems of Parts (i.e. Machines)
- Failure Prediction – Weibull Reliability of Parts and Components
- Reliability Mathematics
- Measuring Reliability for Components – Weibull Plot
- Measuring the Reliability of Systems - Crow/AMSAA

CONTROLLING EQUIPMENT FAILURE

- The Degradation Cycle
- Failure Mode Effects Analysis (FMEA) Fundamentals
- Defects Cause Failure
- The Best are Proactive – They Do Defect Elimination and Failure Prevention
- The Problems start with Variation
- “A Problem happens whenever there is Deviation from the Current Standard.”
- Controlling Process Variation
- Benefits of Failure Elimination

RISK MANAGEMENT, RISK PREVENTION and RISK REDUCTION

- What is a High Potential Incident?
- How the Swiss Cheese Slices Lined Up for the Titanic
- Understanding and Measuring Risk
- Similarity between Safety Incidents and Equipment Failures
- Risk Management Process
- The Application of Risk Based Principles to Maintenance
- Identify Your Equipment Risks and Priority Equipment
- Equipment Criticality
- Match Maintenance Strategy to Equipment Criticality

MAINTENANCE IS A RISK REDUCTION FUNCTION

- Choosing of Maintenance Type
- Life Cycle Risk Management Strategy Model
- Improve Safety and Reliability by Removing Risk
- Maintenance Strategies for Risk Reduction
- Match Maintenance Strategies to Risk
- Reliability does not cost money - Lack of reliability is what costs money

IMPORTANCE OF STANDARDS FOR MACHINES AND WORK

- Set Reliability Standards and Start Standardising Practices
- Design Organisational Systems and Structures that Support Reliability
- Multifunction Teams Promote Better Equipment Performance

KEY PERFORMANCE INDICATORS

- Measuring Equipment Performance
- Measuring KPIs and Outcomes

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World-Class Engineering Asset Management Training Course Day 2 Content

BUILD-IN PLANT AND EQUIPMENT WELLNESS AT DESIGN

- Plant and Equipment Life Cycle
- Ask for Maximum Life Cycle Profit
- Solving Bad Equipment Life Cycle Costs
- Calculate Failure Costs During Design
- Design and Operating Costs Total Optimisation Review (DOCTOR)

MANAGE PLANT and EQUIPMENT LIFE CYCLE RISK

- Life Cycle Risk Management Strategy
- Equipment Refurbishment Decisions and the Cost Drivers
- Effects of Production Process Variability
- Apply Basic Statistical Control and Visual Management
- When Process Variability is Out-of-Control
- Process Quality Control Starts by Setting Outcome Limits
- Problems are Variations Caused by Defects
- Move to 'Preventive' Quality Control

CONTROLLING the RELIABILITY of HUMAN DEPENDENT PROCESSES

- Activity 5 - Human Error Rates
- Reliability of Human Dependent Processes
- Accuracy Controlled Expert
- Accuracy Controlled SOPs Prevent Variation
- Including 3T Failure Prevention in SOPs
- Accuracy Controlled Enterprise (ACE) Standard Operating Procedures
- Failure Preventing Job Procedures - 3Ts Builds Accuracy Control into SOPs
- Waste is Eliminated in this Process
- Standardize Human Dependent Processes with Accuracy Controlled Procedures

SYSTEM-WIDE THINKING

- Effect of System Failures Across Life Cycle
- Variability and Risk Across the Life Cycle
- Think 'System Wide' Solutions
- World Class Practices at Every Step
- World Class Practice In Every Step Requires a Quality Management System
- Stop Equipment Failures in the same way that you stop Safety Incidents

RISK REDUCTION, RISK MANAGEMENT, RISK CONTROL, RISK MITIGATION, RISK PREVENTION

- What Risks Are Out There?
- Risk Reduction vs Safety Management
- Which Risk Reduction Methods are Best?
- Combining Strategies for Reliability Improvement
- Using Condition Monitoring to Optimise Availability

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THE PRECISION DOMAIN

- Precision Maintenance of Machinery is ...
- Precision is a Serious Opportunity
- Precision Domain - A Powerful Business Case
- Precision Maintenance and CBM used Together Effectively Reduce Failure

PEOPLE ARE ALL THAT MATTERS

- A Champion Team
- Hierarchy of Performance Indicators
- Benchmarking for Direction
- Benchmarking for Performance
- Tale of Two Types of Organisation
- Characteristics of Top Reliability Performers
- Cultural Characteristics
- The Pacesetter's Business Model
- Create an Equipment Performance Vision
- Develop A Route Map to Follow
- Keeping People Focused on Reliability
- Creating Reliability Across the Life Cycle

CASE STUDY No 1 - POWERTRANS

- The PowerTrans Approach
- Asset Operation Sets Strategy
- Organisation Structure
- Start with a Corporate Asset Management Policy
- Set the Maintenance Objectives
- Cascaded Performance Measures
- Challenge Organisational Structure and Culture to Seek 'Passion and Spirit'
- Overview of PowerTrans Process

CASE STUDY 2 - DuPont Chemicals EXPERIENCE

- Benchmark to Recognise Where You Are
- Business Competitiveness Needs ...
- Organizations Need to Focus on What Delivers Excellence
- Plant Uptime Became The Driver
- Set Important Business Success Indicators
- Develop a Plan of How to Get There
- Integrated Business Systems
- Systems Thinking is Needed for Uptime
- Tools on the Journey to Reliability
- Prerequisites for Success
- Defect and Failure Elimination
- Problems from the Workplace
- Work On the 'Human Element' Factor
- Apply a Change Management Process
- DuPont Asset Management Overview

IMPORTANCE OF SETTING STANDARDS and STANDARDISING

- Standards and Standardisation
- Asset Management in a Nutshell

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World-Class Engineering Asset Management Training Course Day 3 Content

PROVIDING PLANT WELLNESS

- Manage the Plant and Equipment Life Cycle
- Decommissioning and Disposal
- Plant and Equipment Operation
- Construction and Commissioning
- Procurement and Supply
- Detailed Design and Engineering
- Feasibility and Financial Approval
- Best Practices through the Life Cycle
- The Philosophies of Plant Wellness
- The Financial Steps to Plant Wellness

JUSTIFYING USE OF BEST PRACTICES IN ENTERPRISE ASSET MANAGEMENT

- Implications of DAFT Costs for Risk Management
- Acceptable Equipment Item Failure Domain
- Risk – Reduce Chance or Reduce Consequence?
- Justifying Use of Asset Management - When Losing Market Share
- Justifying Use of Asset Management - When Production Output is too Low
- Justifying Use of Asset Management - When Maximising Life Cycle Profit
- Financial Benefits of a Reliability Focus
- Good Asset Management Extends Equipment Productive Life

THE JOURNEY TO WORLD-CLASS ENTERPRISE ASSET MANAGEMENT

- Another View of EAM Excellence Journey
- Integrated System to Reliability and Plant Wellness
- The Standard Reliability Creation Model
- Reliability Principles to Fast-track Business Improvement
- Where to Focus for Quick Payback

A DIFFERENT MODEL FOR ENTERPRISES WHO WANT 'PLANT WELLNESS'

- The People of Plant Wellness
- The Culture of Plant Wellness
- The 'Wholeness' of Plant Wellness
- Where Next with Plant Wellness?
- Taking Plant Wellness into the Organization
- Asset Management Goals
- Developing Plant Wellness Mindset
- To Introduce Asset Life Cycle Risk Management (and get Plant Wellness)

MANAGING CHANGE MANAGEMENT

- Change Management Matrix
- A Mechanism to 'Push The Limit'
- Components of the 5 Step 'Change to Win' Cycle
- The First Wheel of 'Change to Win' Cycle - Management Preparation
- The Second Wheel of 'Change to Win' Cycle - Identify Current State
- The Third Wheel of 'Change to Win' Cycle - The Best Practices
- The Fourth Wheel of 'Change to Win' Cycle - Develop the Future State
- The Fifth Wheel of 'Change to Win' Cycle - Put SOPs into the Workplace
- Prototype to Learn and Prove Worth

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- For change to be successful and effective in the long term, it is ...
- Activity 9 – 'Asset Management Tool Kit'.
- Activity 10 –Asset Management Strategy Requirements

SAM's 'PLANT WELLNESS' PLAN

- Sam's Enterprise Asset Management Plan
- Champions Needed