

Maintenance Cost Reduction

The Best Strategies During COVID-19

Online Workshop

24-25-26 May, 2021

Course Facilitator

Prof Len Gelman



Prof. Len Gelman (UK) holds PhD and Dr. of Sciences (habilitation) degrees. He is training and consulting to industry in all parts of the world. He is the author of over 200 publications (including 17 patents, 4 books and 2 book chapters) in the areas of maintenance, condition monitoring of complex mechanical systems and root cause analysis. Prof. Gelman has 35 years of real-life industrial experience in maintenance cost reduction, including in oil and gas industry.

He has developed and delivered training programmes worldwide for both offshore and onshore facilities, including maintenance planning and scheduling, maintenance cost reduction, machinery failure analysis and prevention, reliability centered maintenance, condition monitoring of machinery, risk assessment for production and operations and problem solving and decision making.

Prof. Gelman is a Fellow of the British Institute of Non-Destructive Testing (BINDT), International Association of Engineers and UK Institution of Diagnostic Engineers, the Past Immediate President of the International Institute of Acoustics and Vibration, Honorary Editor of the International Journal of Condition Monitoring and the Chairman of the International Society for Condition Monitoring.

He was Editor-in-Chief of the book series "Condition monitoring"; He is Chair of the 2007 World Congress on Engineering Asset Management, Honorary Co-Chair of the 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016 and 2017 World Congresses of Engineering and Chair of the 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015 and 2016 International Condition Monitoring and Maintenance Conferences. He is the General Chair of the First World Congress on Condition Monitoring, 2017.

Why is it important?

Gain in-depth knowledge of maintenance cost reduction and Learn how to radically reduce maintenance costs via advanced maintenance cost reduction techniques/solutions.

Course Outline

- The course will start with systematic and structured analysis of the main maintenance types and the main maintenance costs
- Cost-benefit analysis and life cycle cost techniques will be discussed in details
- The methodology of maintenance type selection will be undertaken that play essential role in maintenance cost reduction.
- Optimal job frequencies of preventive/predictive maintenance will be determined that play an important role in maintenance cost reduction
- The advanced techniques: failure mode and effect analysis (FMEA) and failure mode, effect and criticality analysis (FMECA) for maintenance cost reduction will be discussed in details.

Course Format

The course will be presented in an interactive format with ample details from the trainer. The trainer will use comprehensive Power Point slides, hand-outs and industrial case study material, including videos and practical exercises.

Who should attend?

This highly interactive training course will benefit anyone responsible for maintenance, who wishes to perform cost-effective plant maintenance. This includes:

- Plant Directors
- Senior Plant Managers
- Maintenance Supervisors/Coordinators
- Operations Managers and Supervisors
- Materials and Storeroom Managers (involved in plant maintenance)

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Day One: Monday 24 May, 2021

Session 1: Ensuring that Maintenance Contributes to Plant's Profit by Reducing Maintenance Costs and Reducing Plant Downtime

- Introduction
- Maintenance: Definitions and the Main Concepts
- Build Systematic Maintenance Tactics for Your Plant
- Maintenance Budget: Identifying the Main Maintenance Costs
- Cost Benefit Analysis
- Opportunity Maintenance for Essential Reduction of Plant Downtime and Maintenance Costs
- Cost reduction via Operation Involvement in Routine Maintenance
- The Main Maintenance Best Practice Planning Principles that Reduce Maintenance Costs
- Wrench Time Reduction as the Main Leverage of Maintenance Cost Reduction
- Life Cycle Cost Technique for Maintenance Cost Reduction via Optimal Asset Purchase and Disposal

Session 2: Optimal Selection of Maintenance Type for an Asset that Makes Cost-Effective Maintenance

- Asset Functions: Primary and Secondary
- Asset Failures: Potential and Functional
- The Instantaneous Hazard (Failure) Rates
- Cost Reduction by Optimal Selection of Job Frequencies for Predictive Maintenance Using the P-F Interval
- Cost Reduction by Optimal Selection of Job Frequencies for Preventive Maintenance Using the MTBF
- Optimal Selection of Job Frequencies for Predictive and Preventive Maintenance: Industrial Case Studies
- Hidden and Evident Failures
- Analysing Asset Failure Consequences for Maintenance Type Selection
- Determining Asset Criticality is a Key Factor in Maintenance Cost Reduction
- The Key Maintenance Metrics
- Determining When to Prevent Failure and When to Allow Failure to Occur; Optimal Selection of:
 - ✓ Predictive Maintenance
 - ✓ Preventive Maintenance
 - ✓ Failure Finding Maintenance
 - ✓ Maintenance by Re-Design/Redundancy
 - ✓ Breakdown Maintenance
- Logic Diagram for Optimal Maintenance Type Selection
- The Comprehensive List of the Main Key Maintenance Performance Indicators that Determine Cost Effectiveness of Maintenance

Day Two: Tuesday, 25 May, 2021

Session 1: Implementing New Generation Risk Based Maintenance to Minimize Maintenance Costs

- Assessing Risks: Introduction
- Risk Based Maintenance: Estimating Risks of Asset Failure and Prioritizing Maintenance Based on Risks of Asset Failures
- Risk Based Maintenance: Industrial Case Study
- Outsource Maintenance to Reduce Maintenance Costs
- Maintenance Cost Reduction by Effective Spare Part Management
- Failure Mode and Effect Analysis (FMEA) for Maintenance Cost Reduction
- FMEA: Industrial Case Studies and Practical Group Exercises
- Maintenance Cost Reduction by Effective Management of Maintenance Backlog

Session 2: The Main Techniques for Maintenance Cost Reduction During Plant Shutdowns

- When Shutdown Should Start? Shutdown Stages:
 - ✓ Pre-Shutdown Stage
 - ✓ Shutdown Stage
 - ✓ Post-Shutdown Stage
- Effective Shutdown Preparation by Condition Monitoring, HAZOP and Event Tree Analysis for Avoiding Unknown Defects and Minimizing Shutdown Costs
- Estimation of Shutdown Duration Using Cost-Benefit Analysis
- Critical Path Analysis for Estimation of Shutdown Duration

Session 3: Top Factors Ensuring that Shutdown Happens Efficiently, Without Essential Delays and Unexpected Costs and According to What Was Planned

- Shutdown: External Risks
- Determining True Shutdown Jobs
- Key Performance Indicator for Plant Shutdown that Estimate Cost Effectiveness of Shutdowns

Day Three: Wednesday, 26 May, 2021

Session 1: Planning Proactive Maintenance via Root Cause Analysis and Failure Assessment to Essentially Cut Unnecessary Maintenance Costs

- Root Cause Analysis of Fault/Failures for the Proactive Maintenance; an Approach of Six Root Factors
- The Generic "Eight Disciplines Problem Solving" Technique for Root Cause Analysis Planning for Work Orders
- Fishbone (Ishikawa) Diagram for Root Cause Analysis
- Root Causes of Assets Failures: Description
- Planning Industrial Root Cause Analysis for Work Orders: Industrial Case Studies
- Planning Failure Assessment for Work Orders: 9 Classical Steps
- Planning Failure Assessment for Maintenance: Industrial Case Studies

Session 2: The People Matter: Developing Sustainable Planning by your Team to Meet Future Needs of the Proactive Maintenance

- Human Errors in the Proactive Maintenance
- Maintenance Cost Reduction by Reduction of Human Errors
- Review: Learning Outcomes
- Closing Comments



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If you like further information about the event or information about how to book, please contact Ali, Sales Manager, ANY Global

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