

# Applied Maintenance and Reliability Analysis for Industrial Equipment and Plant Operations

Venue • Location to be Announced

| Date scheduled based on request |



## Applications of the Most Advanced and Effective Maintenance Strategies and the Most Utilized Methods in the Reliability Toolkit

In today's highly competitive and cost conscious environment, companies are making it critical to embrace power in equipment reliability and maintenance effectiveness as a means for driving higher levels of equipment availability, optimize plant efficiency and reduce maintenance cost.

### ARE YOU OPTIMIZING MAINTENANCE DECISIONS TO MAXIMIZE ASSET PERFORMANCE?

#### THIS FOUR DAYS INAUGURAL MAINTENANCE AND RELIABILITY BASED SEMINAR IS FOCUSES ON:

- Statistical methods to achieve high reliability and availability and optimize maintenance through **strategic application of scientific quantitative techniques**.
- Presenting a risk based inspection methodology for **identifying and quantifying** the risk that would result as a consequence of unexpected failure.
- Delivering **proven strategies** to successfully evaluate and operate **reliability driven maintenance programs in complex facilities**.
- Demonstrating how **optimization techniques** are applied to model and analyze maintenance data and facilitate maintenance decisions.
- **Benchmarking** your traditional maintenance programs against **the latest strategies** in reliability and maintenance.
- Demonstrating how the cost associated with productive system equipment failures and downtime applies to the overall cost of unreliability and how this **impacts profitability**.

AVAILABLE AS ONSITE COURSE





## WORKSHOP INFO.

### Is your company ready to?

### Adapt | Implement | Improve

Today's plant managers face increasing pressure from employers, customers and regulators to maintain cost-efficient operations that are less prone to failure and that are safe and efficient. An understanding of reliability methods and maintenance planning can help accomplish these conflicting goals.

Without adequate reliability and maintenance planning, even the most efficient and seemingly cost-effective equipment designs can incur enormous expenses due to repeated or catastrophic failure and subsequent search for cause.

This four day, comprehensive, hands-on seminar, designed for both the new and seasoned practitioner, provides you with all the tools you need to help initiate your maintenance and reliability analysis. Learn about the development and use of world class reliability and maintenance engineering techniques and applications for improving plant equipment availability in your company.

This course provides a comprehensive review of the various aspects of operational reliability and maintenance efficiency and effectiveness in **refineries, utility, oil & gas, mining, communication, and petrochemical** plants. Principal emphasis is placed on the primary means of achieving plant reliability, which is the prevention of critical equipment failures, particularly, any which could cause significant consequences.

It builds on a **focused and practical coverage** of reliability engineering methods and selection and provides structured procedures and applicable calculation formula and methods for the equipment reliability. It also underscores the importance of interactions and cooperation between the three key functions of reliability engineering, operation and maintenance in achieving the optimum operational reliability and availability level in the plant. It enforces this key issue with practical examples of significant failures resulting from lack of understanding of the roles, responsibilities and interfaces between these functions.

With an accessible blend of mathematical rigor **and simplicity**, this course is the ideal workshop for novice and expert engineers seeking to increase performance and longevity of their company's assets, for the analysis and verification of equipment reliability and for maintenance planning.

## Course Objectives

The key general objectives of this course are as follows:

- Provide assistance to participants in developing understanding and applying the various aspects of reliability engineering techniques to ensure operation efficiency in a responsible and cost-effective manner.
- Provide the means for enhancing the knowledge and skills of the participants in reliability evaluation and analysis; and the selection of critical assets for risk assessment.
- Provides participants with the latest practical, effective methods and engineering tools required to perform reliability and maintenance analyses.
- Provide comprehensive details of the fundamentals and specific techniques underlying the assessment of equipment reliability, detection and diagnosis of faults, and best practices for cost-effective reliability improvement.
- Gain an appreciation of the importance of reliability to equipment or system success. They will develop an understanding of the practices that are appropriate to apply for different operational situations as well as the basis of implementing the practices cost effectively.
- Develop and enhance their understanding of the tools and techniques for developing optimistic reliability and maintenance models of complex systems while utilizing inspection or failure data and information to estimate the parameters of such models.
- Develop knowledge of how to apply a more effective maintenance program when their company does not have enough time, resources or money to analyze all company's asset.
- Systematically apply a maintenance task analysis to achieve rapid results when implementing an equipment reliability strategy.

### Training Methodology

This course combines sound maintenance and reliability engineering concepts, principles, methods, the best industry practices and practical solutions. It offers comprehensive coverage of basic statistical and various methods of analysis. It presents both parametric and non-parametric statistical methods to allow selection of the most useful methods for analyzing a given set of data.

It places all models in context and demonstrates the mathematical principles and trade-offs between accuracy and experience. Actual industry case studies as well as organization's experience will be reviewed in depth to reinforce every topic.

The course also comprise of lectures, and interactive exercises to maximize participant's benefits. Additionally, an optional "Question and Answer" period is included to provide participant with opportunity to get expert answers on their specific questions.



## Applied Maintenance and Reliability Analysis for Industrial Equipment and Plant Operations.

### Who should participate in this training?

This course is particularly valuable for process, utility, refinery and petrochemical plant technical managers, reliability engineers, inspectors, maintenance personnel, as well as for project and consulting engineers and engineering and technical personnel involved in plant maintenance and reliability.

### Organizational Impact

- The company will be able to achieve measurable improvement in operational reliability, maintenance efficiency and effectiveness by identifying, adopting and implementing new reliability and maintenance methods recommended by delegates.
- The company will be able to use risk assessment methodologies to quantify and prioritize risks, and to allocate resources for optimum benefits.
- The organization will be able to enhance its ability to utilize risk-based inspection and maintenance resulting in lower life cycle costs while complying with codes and standards, and other regulatory requirements.
- The company is able to enhance plant profitability by adopting and applying worldwide maintenance and reliability techniques and methods.
- The company will be able to reduce cost of their maintenance activities by taking a pre-emptive approach.

### Competencies Emphasized

- Reliability and maintenance analysis of equipment and systems in accordance with the latest world class techniques and approaches to develop an holistic maintenance program.
- Statistical methods and selection criteria for specific reliability analysis.
- The identification and assessment of equipment degradation mechanisms and the failures they may cause.
- Hazard identification, risk analysis and effective maintenance management.
- Application of risk-based methodologies in inspection and maintenance.
- Utilizing reliability centered maintenance to optimize maintenance decisions.

**Production Supervisors:** Shall be exposed to new tools for understanding how reliability applications and effective maintenance can improve availability of their equipment. They will learn how to influence improvement in availability, how they can assist in reducing process failures.

**Maintenance Engineers:** will be able to identify and apply new engineering modeling techniques for maintenance optimization and predicting reliability of process based on how equipment is operated and maintained for justifying equipment reliability.

**Managers:** will find the business aspect of reliability applications helpful for measuring improvement in process, equipment operation, and to reduce cost of unreliability associated with equipment availability.

**Maintenance Planning Personnel:** They will find reliability tools and techniques helpful for understanding failure data in their CMMS systems, and how failure data is used to justify making equipment more reliable as a business decision.

**Process Engineers:** They will learn how to influence improvements in availability, how they can assist in reducing process failures, and learn how they can calculate the cost of unreliability for making business decisions to attack problems of unreliability.

### Prerequisite

1. Two or more years of industrial experience.
2. Basic understanding of probability and statistics.
3. Lebentech PSREA-401 or PSMR-402
4. Basic knowledge of engineering maintenance strategies.
5. Basic knowledge of the methods for solving simultaneous equations.





## LEARNING OBJECTIVES

### Personal impact after completion of training:

- Participants will enhance their knowledge and expertise in power system reliability and maintenance strategy, and will be equipped with structured procedures and effective guidelines to perform risk based maintenance and power system reliability calculations.
- Participant will gain a sound working knowledge of the interdependence of risk, risk based inspection, and maintenance on the integrity, and cost-effectiveness of system or equipment availability.
- Participant will extend his or her knowledge of reliability engineering to water utility network, water distribution system, risk analysis, statistical methods applications in reliability and maintenance, and optimization methods applied to support maintenance decisions.
- Participants will enhance their ability and skills in maintenance and reliability analysis, failure detection and analysis, estimating failure consequences, and fitness for service assessment.
- Participants will enhance their core competencies and productivity thereby improves their particular strengths and performance levels as well as making additional value added contributions to their organizations.
- Participant will gain a working knowledge of the techniques of reliability engineering and the ability to apply them effectively in improving the maintenance, maintainability, and reliability of plant equipment.
- Participants will enhance their understanding of the general principles and practice of reliability centered maintenance and of condition monitoring, how to interpret the measurements and symptoms, and how to diagnose associated faults.
- Participant will be able to explain where and when they should invest company's resources to maximize the potential of CBM tools as well as developing a solid plan for action for strategy implementation.

## From Reliability Fundamentals Improved Equipment Performance and Strategic Maintenance Optimization!

Expand your knowledge with this essential seminar specially created for your technical development.



### Plant Reliability



### Operational Availability



### Equipment Maintenance

**Improve Productivity [20% - 25%], Reduce Risk, Vulnerability, & Maintenance Cost [25% - 30%]**

## Seminar Content \* Course Code – LIS 403

### DAY 1 - Schedule based on seminar date

8:30 - Registration & Morning Coffee

9:00 - Chairman's Opening Remarks

9:15 AM - 10:45 AM - Module 1

#### Reliability Concepts and Applications

- Reliability Engineering Concepts
- Basic Definitions and Reliability Metrics
- Key Manufacturing Reliability Measures
- Need for Reliability in Plant Operations
- Reliability Application in Productive System
- How does Reliability Improves Profitability
- Elements of Operational Reliability Analysis
- Evaluating Cost Associated with Unreliability
- Cost Benefit of Investing in Plant Reliability
- Developing Good Plant Reliability Specifications
- Selected Reliability Improvement Process Steps

10:50 AM - 12:20 PM - Module 2

#### Practical Approach to Engineering Maintenance

- The Need for Effective Equipment Maintenance
- Selected Generic Equipment Reliability Model
- Establishing Maintenance as a Business Process
- Developing Maintenance Policies and Strategies
- Fundamental Preventive Maintenance Concepts
- Framework of The Maintenance Cycle Model
- Assessing Equipment or Component Criticality
- Fundamentals of Total Productive Maintenance
- Overall Equipment Effectiveness Model Applications
- Selected Method for Analyzing Equipment Downtime
- Spare Part Quantity Determination Model Application
- Maintenance Optimization Strategies and Process
- Determine Reliability Under Preventive Maintenance
- KPI Selection for Reliability Based Maintenance
- Introduction to Risk Based Maintenance Methodology

12:20 PM - 1:20 PM - Network Lunch



1:30 PM - 3:05 PM - Module 3

#### Fundamentals of Risk Based Inspection

- Introduction to RBI Methodology
- RBI Methodology Application
- Utilizing Probability Analysis in RBI
- Risk Based inspection Level of Analysis
- Consequence of Failure Assessment in RBI
- Practical Illustration of Consequence of Failure
- Inspection Planning Methodology
- Use of Inspection Monitoring
- Data Evaluation and Analysis
- Establishment of an Inspection Program
- Applying Risk Management Process
- Selection of Risk Based Mitigation Strategy
- Risk Based Inspection Acceptance Methodology
- Key Benefits and Deliverables of Risk Based Inspection

3:05 PM - Tea And Networking

3:30 PM - 5:00 PM - Module 4

#### Reliability Analysis of Water Utility System

- Need for Reliability Assessment of WDN
- Water Utility Reliability Concepts
- Reliability Indexes and Approaches
- Rehabilitation of Water Distribution System
- Methodologies to support Rehabilitation Planning
- Basis of Network Hydraulic Analysis
- Evaluation Network Reliability
- Application of Simulation and Analytical Techniques
- Security Analysis for Water Utility
- Water Utility Risk Assessment
- Corrosion Risk Assessment Model

5:50 PM - Chairman's Closing Remarks

## Seminar Content \* Course Code – LIS 403

### DAY 2 - Schedule based on seminar date

**8:30 AM - Registration And Morning Coffee**

**9:00 AM - Chairman's Opening Remarks**

**9:15 AM - 12:15 AM - Module 5**

### Reliability Analysis of System Network Models

#### Session 1 - Fundamental System Reliability Models

- Series Network Reliability Model
- Parallel Network Reliability Model
- Models with Standby Redundancy
- K-out-of-N Configurations Network
- Interactive Exercise and Case Study

#### Session 2 – Complex Network Modeling & Analysis

- Fundamentals of Complex Network Analysis
- Modeling and Evaluation of Complex Network
- Conditional Probability Approach
- Application of Bayes' Theorem for Analysis
- Utilizing Tie Set and Cut Set Method of Analysis
- Simple Application of Network Cost Modeling
- Evaluating Reliability of Telecommunication Network

**11:15 AM - 11:30 AM - Coffee and Networking**

#### Session 3 – System Availability Assessment Methods

- Introduction to Availability
- Availability Classification
- Availability of Repairable System
- Determining System Availability
- Impact of R&M on Operational Availability
- Factors that Affects Equipment Availability
- Interactive Exercise and Case Study Application

**12:15 PM - 1:15 PM - Networking Lunch**

**1:20 PM - 3:20 PM - Module 6**

### Fundamentals of Data Collection and Analysis

#### Session 1 – Basic Data Collection Methods

- Function of DCS
- Reliability Data Collection
- Reliability Event Data
- Operation of a DCCAS
- Empirical Method of Analysis
- Methods of Data Collection

#### Session 2 – Reliability Analysis of Repairable System

- Interpreting Common Patterns of Failure
- Methods of Analyzing Repairable Systems
- Non-parametric Reliability Analysis Methods
  - Application of Renewal Method
  - Application of NHPP with Power Intensity
  - Non-Homogeneous Poisson Process
- Parametric Analysis Reliability Application
- Use of Software Application to Perform Analysis
- Interactive Exercise and Case Study Application

#### Session 3 – RCFA Methods for Plant Equipment

- Definitions of Root Cause Analysis
- Common Root Cause Analysis Methods
- Criteria for Selecting RCA Methods
- Applying RCA to Improve Reliability
- Principle of Root Cause Analysis
- Key to Successful Deployment of RCA

**3:20 PM - 3:30 PM - Coffee and Networking**

**3:35 PM - 5:35 PM - Module 7**

### RCM Method for Designing Maintenance Plan

- Integrating of RCM and Production
- RCM Technology and Concepts
- Identifying Candidates for RCM Analysis
- Reliability Centered Maintenance Process
- Methods for Selecting Equipment for RCM Analysis
  - FMECA Techniques
  - PSA Model Application
  - Risk Analysis Techniques
- RCM Model Analysis & Failure Management Process
- Typical RCM Implementation Approaches
- Auditing Reliability Centered Maintenance Analysis
- Reliability Centered Maintenance Case Study Application

**5:50 PM - Chairman's Closing Remarks**

## Seminar Content \* Course Code – LIS 403

### Day 3 – Schedule based on seminar date

**8:30 - Registration & Morning Coffee**

**9:00 - Chairman's Opening Remarks**

**9:15 AM - 10:45 AM - Module 8**

### Quantitative Methods for Evaluating Maintenance Data

**9:15 AM - 10:45 AM**

#### Session 1 – Statistical Techniques

- Identifying Failure Distribution
- Application of the Histogram
- Reliability Analysis Case Study
- Determining Reliability from Output Data
- Statistical Solutions for Maintenance Problems
- Age Replacement Example Application

**10:50 AM - 12:30 PM**

#### Session 2 – Weibull Application in Reliability

- Use of Weibull Application in Reliability
- Effect of the shape Parameter
- The Weibull Distribution
- Understanding Weibull Distribution
- Software Application for Weibull Analysis
- Weibull Analysis Interactive Exercise
- Case Study Incorporating Weibull Analysis

**12:30 PM - 1:30 PM - Network Lunch**



**1:30 PM - 3:45 PM**

#### Session 3 – Operation Analysis and Maintenance

- Probability Models for Breakdown
- Queuing Applications in Maintenance
- Optimization Methods in Maintenance
  - MDP and Solutions in Maintenance
  - DP Appliance in Maintenance
- Dynamic Programming Interactive Exercise

**3:50 PM - 4:15 PM - Tea And Networking**



**4:20 PM - 5:30 PM**

#### Session 4 – Reliability Growth Application in Maintenance

- Overview of Reliability Growth
- Reliability Growth Analysis Procedure
- Reliability Growth Parameter Estimation
- Reliability Growth Software Application
- Predicting Failure from Maintenance Record
- Determining Optimum PM Schedule
- Discuss Case Study Illustrating RG Application

**5:50 - Chairman's Closing Remarks**

## Seminar Content \* Course Code – LIS 403

### Day 4 – Schedule based on seminar date

1:00 AM - 3:00 PM - Module 11

#### 8:30 - Registration & Morning Coffee

#### 9:00 - Chairman's opening remarks

#### 9:15 AM - 10:10 AM - Module 9

#### Reliability Assessment Using Fault Tree Analysis

- Common Use of FTA Application
- Role of FTA in Decision Making
- Fundamental Approach to FTA
- Constructing FTA Diagrams
- Probability Evaluation of FTA
- Success Tree Analysis
- Interactive FTA Exercise

#### 10:15 PM - 12:00 PM - Module 10

#### Mining Equipment Reliability Analysis

- Reliability Modeling of LHD
- Mining Equipment Maintenance
- Typical Mining Equipment Errors
- Human Error Analysis Method
- Open – Pit System Reliability Analysis
- Dump Truck Tire Reliability Assessment
- Reliability Analysis Using Bayesian Statistics
- Cost Estimation Models for Mining Equipment
- Maintainability Measures for Mining Equipment
- Factors Impacting Mining Equipment Reliability
- Methods for Performing Mining Safety Analysis
- Mathematical Models for Performing Maintenance

#### 12:00 PM - 1:00 PM - Networking Lunch



#### Equipment Condition Monitoring Techniques

- Introduction CBM Techniques
- Selecting CBM Techniques for Equipment
- CBM using the P-F Interval Threshold
- Basic Methods of Condition Monitoring
  - Infrared Thermography
  - Vibration Monitoring
  - Performance Monitoring
  - Fundamentals of Oil Analysis
  - Ultrasonic Method of Monitoring
- Risk Based Approach to CBM
- Optimizing Condition Based Maintenance

#### 3:00 PM - 5:00 PM - Module 12

#### Power System Reliability Analysis

- Overview of Power System Reliability
- Introduction and Concepts
- Reliability Related Decisions
- Overview of Power Generation Reliability
- Distribution System Reliability
- Historical vs. Predictive Reliability
- Measuring Service Performance
- Predictive Reliability Evaluation
- FMEA Power System Application
- Application of aging failure models in PS Reliability Evaluation
- Factors that affects Customer Supply Reliability
- Distribution System Reliability Program
- Sub-Station Reliability Evaluation
- Reliability Modeling of Components
- Assessing the Current Reliability of your PS
- Expand Application of Technology by Improving Reliability

LebenTech's RMQ courses are extensively researched and structured to provide intensive and intimate professional development applicable to your organization.

#### 5:05 PM - 5:35 PM - Presentation of Certificate



#### 5:50 PM - Chairman's Closing Remarks

## DETAILS OF YOUR COURSE PRESENTER

### Lennox Bennett



Mr. Lennox Bennett is the founder and lead Reliability consultant of LebenTech Innovative Solutions Inc. He has more than 20 years of experience providing engineering services. His extensive experience includes application of reliability and maintenance analysis within the appliance, broadcast and wireless communication, beverage manufacturing, telecommunication, printing, utility, bauxite mining and process industries. Lennox has detailed knowledge of reliability engineering and application of these concepts to real world situations.

He is an expert in developing reliability studies of equipment used in various industries for different operations. Lennox is uniquely qualified to deliver expert training in event and fault tree analysis, RCM Analysis, reliability modeling, engineering risk analysis, Failure Mode Effect and Criticality Analysis, maintenance optimization, and Hazard and Operability (HAZOP) studies.

Lennox has also utilized his deep experience in developing appropriate models of operational and plant processes to save companies great amounts of time and money. In this training he demonstrates how you and your team can make value based reliability improvement decisions, effectively utilize your resources, work expertly in the least time necessary, and continually improve your operation's productivity, efficiency and effectiveness. Mr. Bennett holds a MSc. in Industrial Engineering from California Polytechnic State University and is a BSc. in Manufacturing Engineering, from the University of Miami.

---

## TESTIMONIAL FROM SIMILAR PAST EVENTS

**Lecturer** University of Technology Jamaica – Commented that the training material is very relevant to students and Lennox is very knowledgeable of subject and has excellent presentation skills.

**Manager** National Water Commission - Lennox is very knowledgeable in reliability and maintenance. Training will help us to better analyze current failures and in the selection of maintenance strategies.

**Engineer** Jamaica Public Service - The details provided on power system reliability could not be explained better for me to gain a better command of the subject. The training enables me to have a good understanding of reliability assessment methods.

**Maintenance Engineer** JAMACO – The training helps me realize the limitations of my knowledge with respect to world class equipment maintenance strategies. I have taken away new and extensive information to share with my team.

**Student** University of Technology Jamaica - The training will help students become more marketable in the work environment and will impact their employment prospects.

**Reliability Engineer** Desnoes & Geddes Limited (Red Stripe) - The training provides the opportunity to get clarification on reliability concepts I misunderstand. I will definitely recommended to other team members.

# Applied Maintenance and Reliability Analysis for Industrial Equipment and Plant Operations.

Workshop • Date scheduled based on request

## PRICES AND OFFERS

Early Bird Discount:

I am registering 3 months before to save US \$500 off the seminar price

Seminar Information	Normal Price
<input type="checkbox"/> 4 Days Seminar	US \$2995
<input type="checkbox"/> Register on or 2 months before	US \$2595
<input type="checkbox"/> Register on or 1 month before	US \$2695

## DELEGATE DETAILS

Please photocopy for additional delegates and or delegate with different address

DELEGATE 1  Mr  Mrs  Ms  Dr  Other

Name: \_\_\_\_\_

Email: \_\_\_\_\_ Telephone: \_\_\_\_\_

Job Title: \_\_\_\_\_ Department: \_\_\_\_\_

Organization \_\_\_\_\_ Nature of Business: \_\_\_\_\_

Address: \_\_\_\_\_

Postcode: \_\_\_\_\_ Country: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Dept. Head: \_\_\_\_\_ Title: \_\_\_\_\_

Name of person completing form if different from delegate

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

I agree to LebenTech's payment terms

No. of employees:  1-3  3-5  5-10  10-15

Please indicate if you have already registered by  Phone  Fax  Email  Web.

**Please note:** If you have not received an acknowledgement before the conference, please call us to confirm your booking.

## PAYMENT METHODS

**By Check/Bank Draft:** made payable to LebenTech

**By Direct Transfer:** Please quote with remittance advice

Routing No.: 063000047 Account No.: 898037910362

All bank charges to be borne by payer. Please ensure that LebenTech receives the full invoiced amount.

**By Credit Card**

Please debit my credit card:  Visa  MasterCard  Amex

Card No.

Expiration Date:

Cardholder's Name \_\_\_\_\_ Signature \_\_\_\_\_

Card billing address \_\_\_\_\_

Country \_\_\_\_\_ Postcode \_\_\_\_\_

## PAYMENT TERMS

Payment is required within 5 working days on receipt of invoice. If a booking is received 10 working days before the seminar, a credit card number will be taken to confirm your place. Likewise if full payment has not been received before the conference date.

## 5 WAYS TO REGISTER

**Phone** 954-796-7107  
**Fax** 954-323-4784  
**Post** P.O Box 670832  
Coral Springs, FL 33067  
**Online** www.lebentech.com  
**Email** info@lebentech.com

## TEAM DISCOUNT

LebenTech recognizes the value of learning in teams. Group bookings at the same time from the same company receive a discount:

• 2 or more 7% • 3 or more 10% • 5 or more 15%  
This offer is exclusive of the early bird discount. Call us for a special discount rate for teams of 10 and above (Not applicable to workshop only bookings).

## VENUE & ACCOMMODATION

**VENUE: To be Announced**



Accommodation: Hotel accommodation and travel costs are not included in the registration fee. A reduced corporate room rate will be arranged at the hotel for attendees at this seminar. We will provide hotel contact information, so you can take advantage of this special rate. Kindly mention you are attending the Applied Maintenance and Reliability Analysis for industrial Equipment and Plant Operations Seminar to obtain the special room rate.

## SEMINAR DOCUMENTATION & AUDIO CD

I am registering as a delegate, please send me an extra set of Seminar Documentation with Audio CD with a US \$50 discount: US \$300

I cannot attend the event, please send me the Seminar Documentation and Audio CD at US \$350

I cannot attend the event, please send me the Seminar Documentation only at US \$290 (Plus shipping and handling Jamaica US \$6, Trinidad US \$12 & other countries US \$30.)

(N.B. Advance orders will determine whether or not this conference will be recorded - Please enclose payment with your order.) Your order is risk free! If not satisfied simply return the product within 15 days for a full refund.

## TERMS AND CONDITIONS

**CANCELLATION, POSTPONEMENT AND SUBSTITUTION POLICY** - You may substitute delegates at any time. For cancellations received in writing more than seven (7) days prior to the Seminar, you will receive a 100% credit minus US\$100 service charge. For cancellations received less than seven (7) days prior to the event, no credit will be issued. In the event that LebenTech cancels an event, delegate payment at the date of cancellation will be credited to company. In the event that LebenTech postpones an event, delegate payments at the postponement date will be credited towards the rescheduled date. If the delegate is unable to attend the rescheduled event, the delegate will receive a 100% credit representing payments made towards a future LebenTech event. This credit will be available for cancellation or postponement. LebenTech is not responsible for any loss or damage as a result of a substitution, alteration, cancellation or postponement of an event. LebenTech shall not assume no liability whatsoever if this event is altered, rescheduled, postponed or cancelled due to a fortuitous event, unforeseen occurrence or any other event that renders performance of this seminar inadvisable, illegal, impracticable or impossible. For purposes of this clause, a fortuitous event shall include, but shall not be limited to: an Act of God; governmental restrictions and/or regulations, war or apparent act of war, terrorism or apparent act of terrorism, disaster; civil disorder, disturbance, and or riots, curtailment, suspension, and/or restriction on transportation facilities/means of transportation, or any other emergency.

**PROGRAM CHANGES** - Please note that speakers and topics were confirmed at the time of publishing, however, circumstances beyond the control of the organizers may necessitate substitution, alteration or cancellation of the speakers and/or topics. As such, LebenTech reserves the right to alter or modify the advertised speakers and/or topics if necessary. Any substitution or alteration will be updated on our web page as soon as possible.

**WORKSHOP CHANGES** - Please note that the Seminar is subject to limited availability. Seminars may be conducted as closed forums and as such LebenTech reserves the right to decline individual registration as necessary.

**YOUR DETAILS** - Please contact our help center (call 954-796-7107 or send an email to info@lebentech.com) and inform them of any incorrect details which will be amended accordingly.

**DATA PROTECTION** - Personal data is gathered in accordance with the Data Protection Act 1964. Your details may be passed to other companies who wish to communicate with you, related to our business activities. If you do not wish to receive these offers, please tick the box below.

Please do not pass my information to any third party.  
LebenTech Innovative Solutions, Inc.  
Company Registration No. 3, 243, 035

# **LEBENTECH<sup>®</sup> INNOVATIVE SOLUTIONS INC.**

## Looking for Affordable Consultants?

LebenTech is an engineering consulting service company providing reliability, maintenance, and manufacturing engineering solutions, product and process support, through application of strategic research, associated technologies, mathematical modeling, scientific methods and extensive engineering analysis. We offer support for your team in the following capacity:

### **ENGINEERING CONSULTING SERVICES**

**Trust | Integrity | Commitment | Excellence**

- ◆ Engineering Design.
- ◆ Maintenance Analysis.
- ◆ Reliability Engineering.
- ◆ Manufacturing Engineering.
- ◆ RMQ Training.
- ◆ Reliability Testing.
- ◆ Quality Engineering.
- ◆ Operation Research.
- ◆ FRACAS.
- ◆ RCM Analysis.
- ◆ Safety Analysis.
- ◆ Product Validation.

## **CONSULTING WITH RESULTS**

P.O. Box 670832 | Coral Springs | FL 33067 | 954 – 796 – 7107 | [info@lebentech.com](mailto:info@lebentech.com) | [www.lebentech.com](http://www.lebentech.com)

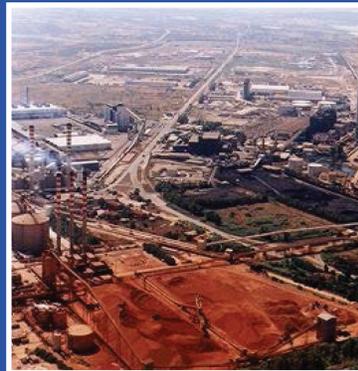


**Given technological capabilities and uncertainty** we recommend evaluation methods that decision makers can apply to make informed judgments of the business risk associated with the implementation of a particular reliability and equipment maintenance strategy.

## Fundamental Engineering Techniques you can utilize to Transition from Reactive and Preventive to Predictive and Cost-effective Maintenance for Reliable Plant Operations.

In this seminar we are presenting an integrated approach to maintenance analysis and reliability evaluation. **Applied Maintenance and Reliability Analysis for Industrial Equipment and Plant Operations** provides comprehensive coverage of the most developed concepts of reliability and maintenance applications, essential models, and various methods of analysis. It incorporates numerous illustrative examples from the utility, bauxite, process and petrochemical industries and problems in each module. The first four modules sequentially provides an introduction to reliability and maintenance application in plant operations as well as the fundamental concepts of risk based inspection and methods for evaluating the reliability of water utility system.

This is followed by detailed treatment of reliability and availability analysis of system network models and commonly used methods for collecting and analyzing reliability data. Special emphasis is given to the reliability evaluation of telecommunication system network. The next module provides an exclusive discussion on reliability centered maintenance for optimizing maintenance decisions. This is followed by two modules of which one is focused on quantitative methods for evaluating maintenance data and reliability analysis of mining operations. The course concludes with a module on equipment condition monitoring techniques and power system reliability analysis. Most modules are supported with a corresponding case study application which serves to reinforce information learned.



LebenTech<sup>®</sup> Innovative Solutions, Inc.



Copyright © 2013, All intellectual property rights in all materials produced or distributed in connection with this event is expressly reserved with LebenTech Innovative Solutions, Inc. and any unauthorized duplication, publication and distribution is prohibited.