



COURSE OVERVIEW RE0921 KPI in Maintenance & Reliability Management

Course Title

KPI in Maintenance & Reliability Management

Course Date/Venue

September 08-12, 2024/Boardroom, Warwick Hotel Doha, Doha, Qatar

Course Reference

RE0921

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs



Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.



This course is designed to provide participants with a detailed and up-to-date overview of KPI in Maintenance & Reliability Management. It covers the maintenance and reliability best practices in the industry; the asset management and its importance; the purpose and role of KPIs in business performance management; the KPIs with corporate strategy and the types of KPIs in maintenance and reliability; the specific KPIs for the petroleum industry and the critical touchpoints for KPI tracking; the asset life cycle, data collection and management; and the tools and systems for data management, data integrity and validation.



Further, the course will also discuss the smart targets for maintenance and reliability; benchmarking and customizing targets for different levels of the organization; the KPIs for maintenance strategies, resource and work management; the cost control, maintenance budgets, cost tracking, performance reporting and visualization; the principles of reliability engineering and their impact on maintenance strategies; the risks in maintenance and reliability; the risk mitigation strategies and associated KPIs; and the asset reliability KPIs condition monitoring and predictive maintenance.



During this interactive course, participants will learn the root cause analysis techniques and tracking improvements and performance after RCA implementation; the KPIs with corporate strategy, advanced data analytics for KPI enhancement and continuous improvement; the health, safety and environment (HSE) considerations in KPI selection; the organizational change when implementing new KPIs; the employee engagement and KPI ownership; the KPI review and evaluation techniques; the feedback loops and KPI refinement; the KPIs to reflect changes in technology and business processes; and avoiding common pitfalls in KPI tracking and implementation.

Course Objectives

Upon the successful completion of this course, each participant will be able to: -

- Apply and gain a comprehensive knowledge on KPI in maintenance and reliability management
- Carryout maintenance and reliability best practices in the industry and discuss asset management and its importance
- Discuss the purpose and role of KPIs in business performance management and align KPIs with corporate strategy
- Identify the types of KPIs in maintenance and reliability including the specific KPIs for the petroleum industry
- Identify critical touchpoints for KPI tracking and illustrate asset life cycle
- Carryout data collection and management, tools and systems for data management and data integrity and validation
- Set smart targets for maintenance and reliability, apply benchmarking and customize targets for different levels of the organization
- Employ KPIs for maintenance strategies, resource and work management, cost control, maintenance budgets and cost tracking, performance reporting and visualization
- Discuss the principles of reliability engineering and their impact on maintenance strategies
- Identify and evaluate risks in maintenance and reliability and apply risk mitigation strategies and associated KPIs
- Apply asset reliability KPIs condition monitoring and predictive maintenance
- Carryout root cause analysis techniques as well as track improvements and performance after RCA implementation
- Integrate KPIs with corporate strategy and apply advanced data analytics for KPI enhancement and continuous improvement
- Discuss health, safety and environment (HSE) considerations in KPI selection and sustainability KPIs and their relevance to the company



- Manage organizational change when implementing new KPIs and assess employee engagement and KPI ownership
- Implement KPI review and evaluation techniques including feedback loops and KPI refinement
- Update KPIs to reflect changes in technology and business processes and avoid common pitfalls in KPI tracking and implementation

Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.

Who Should Attend

This course provides an overview of all significant aspects and considerations of KPI in maintenance and reliability management for maintenance, engineering and operations personnel involved in improving reliability, availability, condition monitoring and maintainability of process equipment and systems.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Fee

US\$ 6,000 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day




Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations


Certificates are accredited by the following international accreditation organizations:-

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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology’s courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units (CEUs)** in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant’s involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant’s CEU and PDH Transcript of Records upon request.

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.



Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Mr. Craig Nilsen, CMRP, CRCMP, is a Senior Maintenance & Reliability Engineer with over 25 years of extensive experience within the Oil & Gas, Refinery and Petrochemical industries. His wide expertise includes Maintenance Planning & Scheduling, Maintenance Planning Process, Maintenance Shutdown & Turnaround, Maintenance Audit Best Practices, Maintenance & Reliability Management, Reliability Engineering, Maintenance & Reliability Best Practices, Reliability, Availability & Maintainability (RAM), Root Cause Analysis, Maintenance Process, Reliability-Centered Maintenance (RCM), Reliability Engineering Analysis (RE), Root Cause Analysis (RCA), Asset Integrity Management (AIM), Reactive & Proactive Maintenance, Maintenance Process, Work Task Prioritization, Condition Monitoring, Mechanical Engineering, Mechanical Manufacturing Engineering, Mechanical Engineering Design, Electro Technology, Maintenance Planning, Spare Parts Planning & Inventory Management, Computerized Maintenance Management Systems (CMMS), Process Plant Shutdown & Turnaround, Maintenance Optimization & Best Practices, Reliability Centered Maintenance Principles & Application, Efficient Shutdowns, Turnaround & Outages, Process Plant Shutdown, Turnaround & Troubleshooting, Shutdown & Turnaround Management, Optimizing Equipment Maintenance & Replacement Decisions, Maintenance Management & Cost Control, Preventive & Predictive Maintenance, Effective Reliability Maintenance & Superior Maintenance Strategies, Integrity & Asset Management, Total Plant Reliability Maintenance, Vibration Measurement, Spare Parts & Materials Management, Mechanical & Rotating Equipment Troubleshooting & Maintenance, Rotating Equipment Reliability Optimization, Laser Alignment, Thermography, Risk Assessment, Legal Liability, Construction Regulations, Machine Vibration Analysis, Bag Filters Operation & Troubleshooting, Blower & Fan, Pumps, Valves, Bearings & Lubrication, Mechanical Seals, Mechanical Equipment Maintenance, Gearboxes, Shaft Alignment, Rotating Equipment, Preventive & Predictive Maintenance, Spare Management and Network Analysis.

During his career life, Mr. Nilsen gained his practical and field experience through his various significant positions and dedication as the **Maintenance Engineer, Repair Shop Supervisor, Maintenance & Reliability Specialist, Maintenance Planner/Reliability Specialist, Senior Maintenance Planner/Condition Monitoring Specialist, Supply Chain Maintenance Planner, Technical Advisor, Senior Trainer/Lecturer and Fitter & Turner** for Algorax (Pty) Limited.

Mr. Nilsen has a **National Higher Diploma in Mechanical Engineering**. Further, he is a **Certified Instructor/Trainer, a Certified Maintenance and Reliability Professional (CMRP)** from the Society of Maintenance & Reliability Professionals (**SMRP**), a **Certified Reliability Centered Management Professional (CRCMP)** from the International Organization of RCM Professionals (**IORCMP**) and a **Qualified Fitter & Turner**. Moreover, he is an active member of the Society of Maintenance and Reliability Professionals (**SMRP**) and the South African Asset Management Association (**SAMA**). He has further delivered numerous trainings, courses, seminars, workshops and conference internationally.





Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Sunday, 08th of September 2024

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0900	Introduction to Maintenance & Reliability Defining Maintenance & Reliability within the Petroleum Sector • Best Practices in the Industry • Introduction to Asset Management & Its Importance
0900 – 0930	Fundamentals to KPIs Definition & Purpose of KPIs • Role of KPIs in Business Performance Management • Aligning KPIs with Corporate Strategy
0930 – 0945	Break
0945 – 1100	Types of KPIs in Maintenance & Reliability Leading Versus Lagging Indicators • Qualitative Versus Quantitative Indicators • Specific KPIs for the Petroleum Industry
1100 – 1215	Maintenance & Reliability Value Chain Overview of the Maintenance & Reliability Value Chain • Identifying Critical Touchpoints for KPI Tracking • Introduction to the Asset Life Cycle
1215 – 1230	Break
1230 – 1330	Data Collection & Management Importance of Accurate Data Collection • Tools & Systems for Data Management (CMMS, EAM, Etc.) • Data Integrity & Validation
1330 - 1420	Setting KPI Targets How to Set SMART Targets for Maintenance & Reliability • Benchmarking & Industry Standards • Customizing Targets for Different Levels of the Organization
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day One

Day 2: Monday, 09th of September 2024

0730 – 0830	KPIs for Maintenance Strategies Preventive Versus Predictive Maintenance • Reliability-Centered Maintenance (RCM) KPIs • Total Productive Maintenance (TPM) KPIs
0830 – 0930	Resource & Work Management KPIs Work Order Management Metrics • Resource Utilization & Efficiency • Spare Parts Inventory Management KPIs
0930 – 0945	Break
0945 – 1100	Cost Control & Financial KPIs Understanding Maintenance Budgets & Cost Tracking • Cost-Benefit Analysis of Maintenance Activities • Life Cycle Cost & Return on Assets
1100 – 1215	Performance Reporting & Visualization Creating Effective Performance Dashboards • Visualizing Data for Decision-Making • Reporting Techniques & Frequency





1215 – 1230	Break
1230 – 1330	Case Study Analysis: Successful KPI Implementation Analysis of a Successful KPI Implementation in the Petroleum Industry • Group Discussion on Key Learning Points
1330 - 1420	Principles of Reliability Engineering Introduction to Reliability Engineering in the Petroleum Industry • Reliability KPIs & their Impact on Maintenance Strategies
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Two

Day 3: Tuesday, 10th of September 2024

0730 – 0830	Risk Management & KPIs Identifying & Evaluating Risks in Maintenance & Reliability • Risk Mitigation Strategies & Associated KPIs
0830 – 0930	Asset Reliability KPIs Mean Time Between Failures (MTBF) & Other Reliability Metrics • Asset Utilization & Availability Metrics • Performance Degradation & Life Expectancy Modeling
0930 – 0945	Break
0945 – 1100	Condition Monitoring & Predictive Maintenance KPIs Vibration Analysis, Thermography, Oil Analysis, etc. • Setting KPIs for Predictive Maintenance Efficiency • Integrating Condition Monitoring Data with KPI Tracking
1100 – 1215	Root Cause Analysis (RCA) & KPIs RCA Techniques & their Impact on Maintenance KPIs • Tracking Improvements & Performance after RCA Implementation
1215 – 1230	Break
1230 – 1330	Reliability-Centered Maintenance (RCM) Case Studies Detailed Case Studies of RCM Implementation in the Petroleum Industry • Group Discussion on Lessons Learned & Potential Improvements
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Three

Day 4: Wednesday, 11th of September 2024

0730 – 0830	Integration of KPIs with Corporate Strategy Ensuring Alignment of Maintenance & Reliability KPIs with Company Goals • Role of Leadership in KPI Integration
0830 – 0930	Advanced Data Analytics for KPI Enhancement Introduction to Big Data & Analytics in Maintenance • Predictive Analytics & Machine Learning for Performance Improvement
0930 – 0945	Break
0945 – 1100	Continuous Improvement & KPIs Kaizen & Continuous Improvement in the Context of KPIs • Plan-Do-Check-Act (PDCA) Cycle for KPI Management
1100 – 1215	Sustainability & HSE KPIs Health, Safety, & Environment (HSE) Considerations in KPI Selection • Sustainability KPIs & their Relevance to Your Company





1215 – 1230	Break
1230 – 1420	Change Management & KPIs Managing Organizational Change when Implementing New KPIs • Employee Engagement & KPI Ownership
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day four

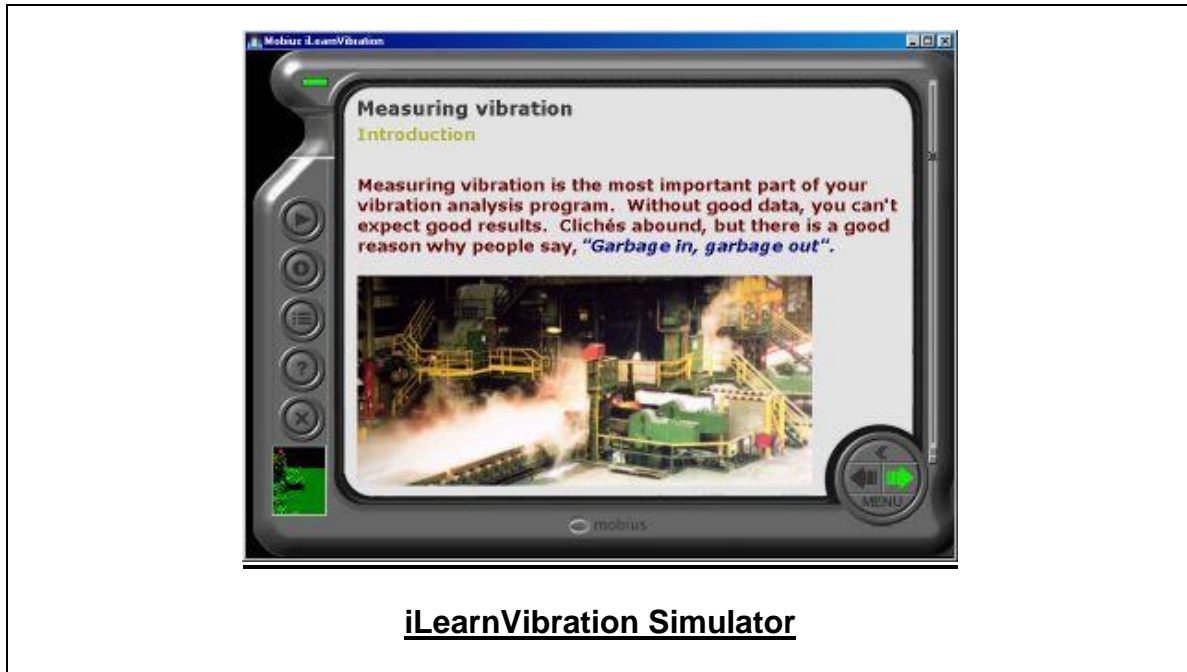
Day 5: Thursday, 12th of September 2024

0730 – 0930	Workshop: Developing a KPI Improvement Plan Participants Develop an Improvement Plan for a Specific KPI • Group Presentations & Feedback Session
0930 – 0945	Break
0945 – 1100	KPI Review & Evaluation Techniques Periodic Review Processes for KPI Effectiveness • Evaluation Techniques to Measure KPI Impact
1100 – 1215	Feedback Loops & KPI Refinement Establishing Feedback Mechanisms for Continuous KPI Refinement • Case Study: How Feedback Improved a KPI System
1215 – 1230	Break
1230 – 1300	Maintaining KPI Relevance Over Time Updating KPIs to Reflect Changes in Technology & Business Processes • Case Studies of KPI Evolution in Response to Industry Trends
1300 – 1345	KPI Best Practices Roundup Summary of Best Practices in KPI Management • Avoiding Common Pitfalls in KPI Tracking & Implementation
1345 – 1400	Course Conclusion Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course



Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the state-of-the-art simulator “iLearnVibration”.



iLearnVibration Simulator

Course Coordinator

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