Haward Technology Middle East

COURSE OVERVIEW RE0921-4D
KPI in Maintenance & Reliability Management

Course Title
KPI in Maintenance & Reliability Management

Course Date/Venue
November 18-21, 2024/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
RE0921-4D

Course Duration/Credits
Four days/2.4 CEUs/24 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, sample video clips of the instructor's actual lectures & practical sessions during the course 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 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:-

- **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 **2.4 CEUs** (Continuing Education Units) or **24 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.

- **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 Fee

US$ 4,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day

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:   **Monday, 18th of November 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 – 1300	***Data Collection & Management*** *Importance of Accurate Data Collection • Tools & Systems for Data Management (CMMS, EAM, Etc.) • Data Integrity & Validation*
1300 – 1330	***Setting KPI Targets*** *How to Set SMART Targets for Maintenance & Reliability • Benchmarking & Industry Standards • Customizing Targets for Different Levels of the Organization*
1330 - 1420	***KPIs for Maintenance Strategies*** *Preventive Versus Predictive Maintenance • Reliability-Centered Maintenance (RCM) KPIs • Total Productive Maintenance (TPM) KPIs*
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:   **Tuesday, 19th of November 2024**

0730 – 0830	***Resource & Work Management KPIs*** *Work Order Management Metrics • Resource Utilization & Efficiency • Spare Parts Inventory Management KPIs*
0830 – 0930	***Cost Control & Financial KPIs*** *Understanding Maintenance Budgets & Cost Tracking • Cost-Benefit Analysis of Maintenance Activities • Life Cycle Cost & Return on Assets*
0930 – 0945	*Break*

0945 – 1100	***Performance Reporting & Visualization*** *Creating Effective Performance Dashboards • Visualizing Data for Decision-Making • Reporting Techniques & Frequency*
1100 – 1215	***Case Study Analysis: Successful KPI Implementation*** *Analysis of a Successful KPI Implementation in the Petroleum Industry • Group Discussion on Key Learning Points*
1215 – 1230	*Break*
1230 – 1330	***Principles of Reliability Engineering*** *Introduction to Reliability Engineering in the Petroleum Industry • Reliability KPIs & their Impact on Maintenance Strategies*
1300 – 1300	***Risk Management & KPIs*** *Identifying & Evaluating Risks in Maintenance & Reliability • Risk Mitigation Strategies & Associated KPIs*
1300 - 1420	***Asset Reliability KPIs*** *Mean Time Between Failures (MTBF) & Other Reliability Metrics • Asset Utilization & Availability Metrics • Performance Degradation & Life Expectancy Modeling*
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:   ***Wednesday, 20th of November 2024***

0730 – 0830	***Condition Monitoring & Predictive Maintenance KPIs*** *Vibration Analysis, Thermography, Oil Analysis, etc. • Setting KPIs for Predictive Maintenance Efficiency • Integrating Condition Monitoring Data with KPI Tracking*
0830 – 0930	***Root Cause Analysis (RCA) & KPIs*** *RCA Techniques & their Impact on Maintenance KPIs • Tracking Improvements & Performance after RCA Implementation*
0930 – 0945	*Break*
0945 – 1100	***Reliability-Centered Maintenance (RCM) Case Studies*** *Detailed Case Studies of RCM Implementation in the Petroleum Industry • Group Discussion on Lessons Learned & Potential Improvements*
1100 – 1215	***Integration of KPIs with Corporate Strategy*** *Ensuring Alignment of Maintenance & Reliability KPIs with Company Goals • Role of Leadership in KPI Integration*
1215 – 1230	*Break*
1230 – 1330	***Advanced Data Analytics for KPI Enhancement*** *Introduction to Big Data & Analytics in Maintenance • Predictive Analytics & Machine Learning for Performance Improvement*
1300 - 1420	***Continuous Improvement & KPIs*** *Kaizen & Continuous Improvement in the Context of KPIs • Plan-Do-Check-Act (PDCA) Cycle for KPI Management*
1420 – 1430	***Sustainability & HSE KPIs*** *Health, Safety, & Environment (HSE) Considerations in KPI Selection • Sustainability KPIs & their Relevance to Your Company*
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**   **Thursday, 21ˢᵗ of November 2024**

0730 – 0930	**Change Management & KPIs** *Managing Organizational Change when Implementing New KPIs • Employee Engagement & KPI Ownership*
0930 – 0945	*Break*
0945 – 1030	**Workshop: Developing a KPI Improvement Plan** *Participants Develop an Improvement Plan for a Specific KPI • Group Presentations & Feedback Session*
1030 – 1115	**KPI Review & Evaluation Techniques** *Periodic Review Processes for KPI Effectiveness • Evaluation Techniques to Measure KPI Impact*
1115 - 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".
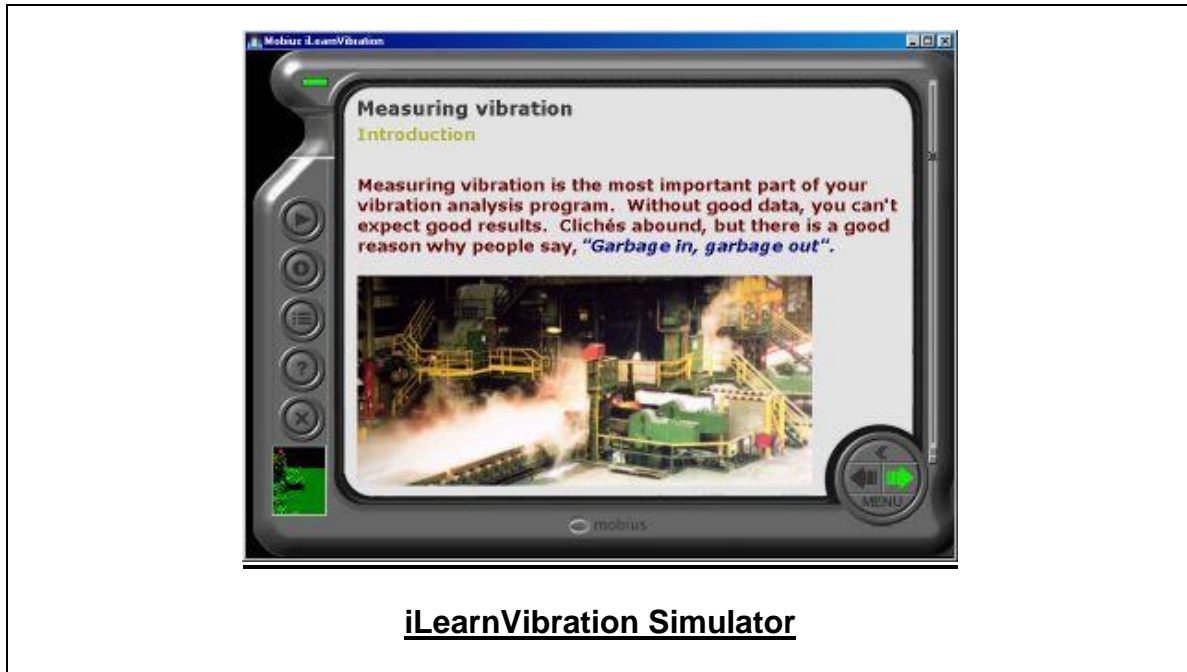
iLearnVibration Simulator

Course Coordinator

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