Haward Technology Middle East

COURSE OVERVIEW RE0011
Maintenance Auditing, Benchmarking and Performance Improvement

Course Title
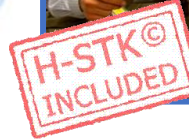Maintenance Auditing, Benchmarking and Performance Improvement

Course Date/Venue
Please refer to page 3

Course Reference
RE0011

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

3.0 CEUs (30 PDHs) AWARD

H-STK© INCLUDED

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 Maintenance Auditing, Benchmarking and Performance Improvement. It covers the fundamentals of maintenance management, asset life cycle management and key performance indicators (KPIs); the maintenance auditing, maintenance audits, types of audits and audit planning and preparation; the maintenance policies and strategies, maintenance standards and compliance and organizing the maintenance function; developing a maintenance audit framework; the maintenance audit process and assessment of maintenance programs; and the audit tools and techniques, gaps and non-conformities and audit reporting and presentation.

During this interactive course, participants will learn the maintenance benchmarking, key maintenance benchmarking metrics and benchmarking process; the sources of benchmarking data and global best practices in maintenance; the maintenance performance management, CMMS and data-driven decision making and continuous improvement in maintenance; overcoming resistance and developing action plans for improvement; the world-class maintenance models, risk-based maintenance and reliability engineering; and the sustainability and environmental considerations and leadership behaviors in maintenance.

RE1100-05-25/Rev.07|18 April 2025

Course Objectives

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

- Apply and gain an in-depth knowledge on maintenance auditing, benchmarking and performance improvement

- Discuss the fundamentals of maintenance management, asset life cycle management and key performance indicators (KPIs)

- Carryout maintenance auditing and discuss the benefits of maintenance audits, types of audits and audit planning and preparation

- Employ maintenance policies and strategies, maintenance standards and compliance and organizing the maintenance function

- Develop a maintenance audit framework and apply maintenance audit process and assessment of maintenance programs

- Apply audit tools and techniques, identify gaps and non-conformities and carryout audit reporting and presentation

- Carryout maintenance benchmarking, key maintenance benchmarking metrics and benchmarking process

- Identify the sources of benchmarking data and apply global best practices in maintenance

- Apply maintenance performance management, CMMS and data-driven decision making and continuous improvement in maintenance

- Implement change and overcome resistance, develop action plans for improvement and discuss world-class maintenance models

- Employ risk-based maintenance and reliability engineering and discuss sustainability and environmental considerations

- Discuss leadership behaviors in maintenance and build high-performing teams

- Explain industry 4.0 applications, predictive analytics and AI, IoT and smart sensors, digital twins and augmented reality

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 maintenance auditing, benchmarking and performance improvement for maintenance managers, superintendents, engineers and supervisors who realize the power of performance measurement to motivate, coordinate, and achieve the overall goals and objectives of their company, plant, or department. Line or staff, maintenance or production, mid-level or executive, every attendee will benefit from this imminently practical 'workshop' approach to establishing meaningful measures of maintenance performance.

Course Date/Venue

Session(s)	Date	Venue
1	May 12-16, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
2	July 13-17, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
3	November 23-27, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
4	December 22-26, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

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: -

- **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.

- **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.

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. Den Bazley, PE, BSc, is a **Senior Mechanical & Maintenance Engineer** with over **30 years** of industrial experience in **Oil**, **Gas**, **Refinery**, **Petrochemical**, **Power** and **Utilities** industries. His wide expertise includes **Pumps & Compressors** Maintenance & Troubleshooting, **Centrifugal Pump** Design, **Hydraulic Turbines**, Axial Flow **Compressor**, **Centrifugal Pump** Installation & Operation, **Centrifugal Pump** Maintenance & Troubleshooting, **Centrifugal & Positive Displacement Pump** Technology, **Pumps & Valves** Operation, **Bearings**, **Seals & Couplings**, **Compressors & Turbines** Maintenance & Troubleshooting, **Gas Turbine** Design & Maintenance, **Gas Turbine** Troubleshooting, **Pressure Vessel** Design, Fabrication & Testing, **Tank & Tank Farms**, **Heat Exchangers** Operation & Maintenance, **Boilers & Steam System** Management, Re-tubing & Tube Expanding Technology, Propylene **Compressor & Turbine**, **Valve** Installation & Repair, **Safety Relief Valve** Sizing & Troubleshooting, **Dry Gas Seal** Operation, **Mechanical Seal** Installation & Maintenance, Industrial Equipment & **Turbomachinery**, **Pumps**, **Compressors**, **Turbines & Motors**, **Boiler & Steam** System Management, Tune-Up, Heat Recovery & Optimization, **Bearing & Lubrication**, Installation & Failure Analysis, **Boiler** Operation & Maintenance, Process **Control Valves**, **Steam Turbine** Operation, **Bearing** Mounting/Dismounting, **Valve** Types, Troubleshooting & Repair Procedure, **Pressure Vessels & Heat Exchangers**, **Corrosion** Inspection, **PSV** Maintenance & Testing, **Pump** Maintenance, Machinery Troubleshooting, **Valves**, **Safety Relief Valves**, Strainers & Steam Traps, **Pipeline Rules of Thumb**, Analytical Prevention of Mechanical Failure, **Gear Boxes** Troubleshooting & Repair, **Piping & Pipeline** Design & Inspection, **Pigging** & Integrity Assessment, Process Piping Design, **Pipeline** Operation & Maintenance, **Welding & Fabrication**, **Brazing**, Fitness-for-Service (**FFS**), **Process Plant** Equipment, **Pressure Vessels**, Piping & Storage Facilities, Layout of **Piping Systems & Process Equipment**, **Pipe Work** Design & Fabrication, Mechanical Integrity & Reliability, Mechanical **Rotating Equipment & Turbomachinery**, **Motors & Variable Speed Drives**, Mechanical Engineering Design, **Process Plant Shutdown**, Turnaround & Troubleshooting, **Mechanical Alignment**, **Laser & Dial-Indicator** Techniques, **Material Cataloguing**, **Condition Based** Monitoring, **Maintenance** Management, **Reliability** Management, Reliability Centred Maintenance (**RCM**), Total Plant Maintenance (**TPM**) and Reliability-Availability-Maintainability (**RAM**), **Engineering Drawings, Codes & Standards**, **P&ID Reading, Interpretation & Developing**, **Maintenance & Reliability** Best Practices, **Maintenance** Auditing, **Benchmarking & Performance** Improvement, Excellence in **Maintenance & Reliability** Management, **Preventive & Predictive** Maintenance & Machinery Failure Analysis (**RCFA**), Total Plant Reliability Centered Maintenance (**RCM**), Rotating Equipment Reliability Optimization, Machinery Failure Analysis, Prevention & Troubleshooting, **Maintenance** Planning, Scheduling & Work Control and **Maintenance Planning & Cost** Estimation.

During his career life, Mr. Bazley has gained his practical and field experience through his various significant positions and dedication as the **General Manager**, **Branch Manager**, **Refinery Chairman**, **Engineering Manager**, **Maintenance Engineer**, **Construction Engineer**, **Project Engineer**, **Mechanical Engineer**, **Associate Engineer**, **Oil Process Engineer**, **Mechanical Services Superintendent**, **Quality Coordinator**, **Planning Coordinator**, **Consultant/Instructor**, **Lecturer/Trainer** and **Public Relations Officer** for numerous international companies like **ESSO**, **FFS Refinery**, Dorbyl Heavy Engineering (**VECOR**), Vandenbergh Foods (**Unilever**), **Engen Petroleum**, Royle Trust and **Pepsi-Cola**.

Mr. Bazley is a **Registered Professional Engineer** and has a **Bachelor** degree in **Mechanical Engineering**. Further, he is a **Certified Engineer** (Government Certificate of Competency GCC Mechanical Pretoria), a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership and Management** (**ILM**), an active member of the **Institute of Mechanical Engineers** (**IMechE**) and has delivered numerous trainings, courses, seminars and workshops internationally.

Course Fee

US$ 5,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

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

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.

Course Program

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

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	**PRE-TEST**
0830 – 0930	***Introduction to Maintenance Management*** *Objectives and Types of Maintenance • Preventive versus Corrective Strategies • Asset Life Cycle Management • Key Performance Indicators (KPIs)*
0930 – 0945	*Break*
0945 – 1030	***Fundamentals of Maintenance Auditing*** *Definition and Purpose • Benefits of Maintenance Audits • Types of Audits (Internal, External, Compliance) • Audit Planning and Preparation*
1030 – 1130	***Maintenance Policies & Strategies*** *Developing a Maintenance Strategy • Risk-Based and Reliability-Centered Approaches • Policy Alignment with Asset Criticality • Continuous Improvement Principles*
1130 – 1215	***Maintenance Standards & Compliance*** *Overview of ISO 55000/55001 • Regulatory and Industry-Specific Standards • Audit Checklists and Templates • Legal and Environmental Considerations*
1215 – 1230	*Break*
1230 – 1330	***Organizing the Maintenance Function*** *Roles and Responsibilities • Organizational Structures (Centralized versus Decentralized) • Workforce Planning and Training • Communication and Coordination*
1330 – 1420	***Developing a Maintenance Audit Framework*** *Audit Scope and Criteria • Establishing Audit Objectives • Data Collection Methods • Roles of Auditors and Audit Team*

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

0730 – 0830	**Maintenance Audit Process** *Audit Life Cycle (Preparation, Execution, Reporting) • Gathering and Analyzing Data • Interviewing Techniques • Field Inspections and Document Reviews*
0830 – 0930	**Assessment of Maintenance Programs** *Evaluating PM and CM Programs • Maintenance Backlog Analysis • Critical Asset Review • Downtime and MTTR/MTBF Evaluation*
0930 – 0945	*Break*
0945 – 1100	**Audit Tools & Techniques** *Root Cause Analysis (RCA) • Fishbone and Pareto Analysis • Failure Mode and Effects Analysis (FMEA) • 5-Whys and Statistical Tools*
1100 – 1215	**Identifying Gaps & Non-Conformities** *Root Cause of Inefficiencies • Best Practices vs Actual Practices • Prioritization of Findings • Risk Evaluation of Deficiencies*

1215 – 1230	*Break*
1230 – 1330	**Audit Reporting & Presentation** *Writing a Comprehensive Audit Report • Visualizing Findings and KPIs • Recommendations and Improvement Plans • Presenting to Management*
1330 – 1420	**Case Study & Workshop: Simulated Maintenance Audit** *Review of Maintenance Data • Identification of Issues • Root Cause Analysis in Groups • Presentation of Audit Results*
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

0730 – 0830	**Basics of Maintenance Benchmarking** *Definition and Significance • Internal vs External Benchmarking • Qualitative and Quantitative Benchmarks • Benchmarking Metrics*
0830 – 0930	**Key Maintenance Benchmarking Metrics** *Maintenance Cost as % of Asset Value • Maintenance Labor Productivity • Equipment Availability and Reliability • Maintenance Schedule Compliance*
0930 – 0945	*Break*
0945 – 1100	**Benchmarking Process** *Planning and Scoping • Data Collection and Validation • Performance Comparison • Identifying Performance Gaps*
1100 – 1215	**Sources of Benchmarking Data** *Industry Databases and Reports • Collaborative Benchmarking Groups • Surveys and Audits • In-House Data Systems (CMMS, ERP)*
1215 – 1230	*Break*
1230 – 1330	**Global Best Practices in Maintenance** *TPM (Total Productive Maintenance) • RCM (Reliability-Centered Maintenance) • Lean Maintenance • Condition-Based Monitoring*

1330 – 1420	**Workshop: Maintenance Benchmarking Analysis** *Comparing Benchmark Data • Root Cause Identification • Improvement Targets • Reporting and Action Planning*
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

0730 – 0830	**Maintenance Performance Management** *Purpose of Performance Measurement • Key Maintenance KPIs • Lagging versus Leading Indicators • Aligning Metrics with Goals*
0830 – 0930	**CMMS & Data-Driven Decision Making** *Role of Computerized Systems • Capturing and Analyzing Maintenance Data • Data Visualization and Dashboards • Integration with Performance Tools*
0930 – 0945	*Break*
0945 – 1100	**Continuous Improvement in Maintenance** *Plan-Do-Check-Act (PDCA) • Kaizen and Six Sigma in Maintenance • Problem-Solving Teams • Feedback and Learning Loops*
1100 – 1215	**Implementing Change & Overcoming Resistance** *Change Management Principles • Employee Involvement and Training • Stakeholder Communication • Monitoring Progress*
1215 – 1230	*Break*
1230 – 1330	**Developing Action Plans for Improvement** *Prioritizing Initiatives • Setting Measurable Targets • Resource Planning • Follow-up and Review*
1330 – 1420	**Workshop: Designing a Maintenance Improvement Plan** *Analyze Audit and Benchmark Findings • Define Objectives and Targets • Develop Actions and Timelines • Risk Management 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 Four*

Day 5

| 0730 – 0830	**World-Class Maintenance Models** *Characteristics of World-Class Organizations • Assessment Maturity Models • Strategic Maintenance Planning • Case Examples*
0830 – 0930	**Risk-Based Maintenance & Reliability Engineering** *Asset Criticality Ranking • Failure Probabilities and Consequences • Integration with Asset Management • Risk Mitigation Actions*
0930 – 0945	*Break*
0945 – 1100	**Sustainability & Environmental Considerations** *Energy-Efficient Maintenance Practices • Green Maintenance Strategies • Environmental Audits • Compliance with Environmental Laws*
1100 – 1215	**Leadership in Maintenance Excellence** *Leadership Behaviors in Maintenance • Building High-Performing Teams • Coaching and Mentoring Technicians • Culture of Accountability*
1215 – 1230	*Break*

1230 – 1300	**Digital Transformation in Maintenance** *Industry 4.0 Applications • Predictive Analytics and AI • IoT and Smart Sensors • Digital Twins and Augmented Reality*
1300 - 1330	**Final Project & Presentation** *Group Work on Full Maintenance Audit and Benchmark • Summary of Findings and Recommendations • Presentation to Mock Management Panel • Course Review and Feedback Session*
1330 – 1400	**Course Conclusion** *Using this Course Overview, the Instructor(s) will Brief Participants about 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 "MS Project" and "Mindview Software".

Mindview Software
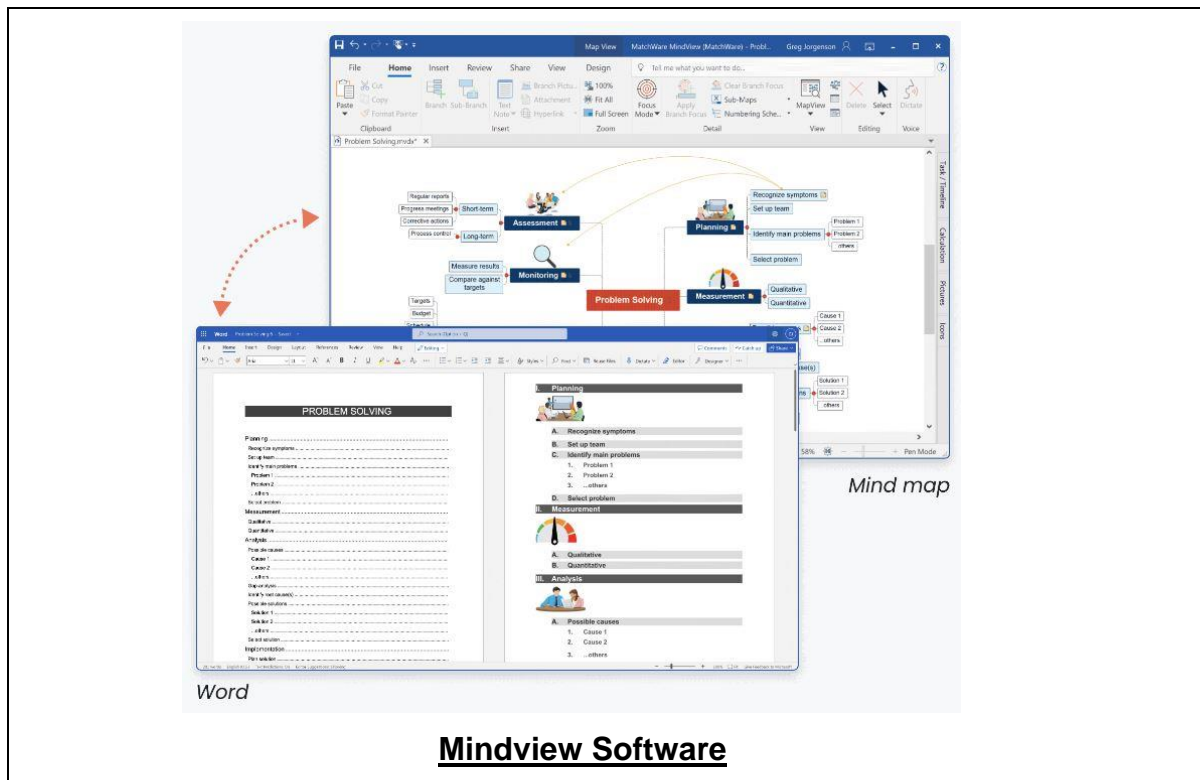
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