COURSE OVERVIEW RE0996
REAM (Reliability, Engineering, Asset & Maintenance)

Course Title
REAM (Reliability, Engineering, Asset & Maintenance)

Course Date/Venue
November 23-27, 2025/Tunis 2 Meeting Room, Mövenpick Hotel Apartments Downtown Dubai, Dubai, UAE

3.0 CEUs (30 PDHs) AWARD

H-STK© INCLUDED

Course Reference
RE0996

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 Reliability, Engineering, Asset and Maintenance (REAM). It covers the reliability engineering concepts, failure mechanisms and modes; the asset life cycle management, risk management framework, risk assessment methodologies, FMEA and FMECA and criticality analysis; the sources of reliability data, failure reporting & analysis systems (FRACAS) and Weibull analysis basics; and the engineering for reliability, maintenance engineering concepts and root cause failure analysis (RCFA).

During this interactive course, participants will learn the reliability testing and qualification, engineering standards and compliance and asset management principles; the asset performance management (APM), asset risk and reliability strategies, asset investment and capital planning; the digitalization in asset management, maintenance fundamentals and reliability-centered maintenance (RCM); the condition-based maintenance (CBM), total productive maintenance (TPM) and maintenance planning and scheduling; and the maintenance optimization techniques, integrated REAM framework and change management in REAM.

Course Objectives

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

- Apply and gain an in-depth knowledge on reliability, engineering, asset and maintenance (REAM)
- Discuss the reliability engineering concepts, failure mechanisms and modes
- Illustrate asset life cycle management, risk management framework, risk assessment methodologies, FMEA and FMECA and criticality analysis
- Identify sources of reliability data, failure reporting & analysis systems (FRACAS) and Weibull analysis basics
- Carryout engineering for reliability, maintenance engineering concepts and root cause failure analysis (RCFA)
- Recognize reliability testing and qualification, engineering standards and compliance and asset management principles
- Apply asset performance management (APM), asset risk and reliability strategies, asset investment and capital planning
- Carryout digitalization in asset management, maintenance fundamentals and reliability-centered maintenance (RCM)
- Employ condition-based maintenance (CBM), total productive maintenance (TPM) and maintenance planning and scheduling
- Illustrate maintenance optimization techniques, integrated REAM framework and change management in REAM
- Differentiate leading versus lagging indicators and apply asset reliability KPIs, maintenance efficiency KPIs and balanced scorecard approach

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 REAM (reliability, engineering, asset and maintenance) for reliability engineers, asset integrity engineers, maintenance engineers, operations and production managers, engineering managers, technical managers, plant managers, asset management professionals, maintenance planners, schedulers, supervisors, quality assurance, risk management specialists and other technical staff.

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.

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

Haward's 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**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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.

Accommodation

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

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. Karl Thanasis, PEng, MSc, MBA, BSc, is **Senior Mechanical & Maintenance Engineer** with over **45 years** of extensive industrial experience within the **Power & Water Utilities** and other **Energy Sectors**. His wide expertise includes **Reliability** Management, **Reliability Centered Maintenance** Principles & Application, **Machinery Lubrication**, Advanced Techniques in **Maintenance** Management, **Predictive & Preventive** Maintenance, **Maintenance & Operation Cost Reduction** Techniques, **Reliability Centered Maintenance** (**RCM**), **Machinery Failure** Analysis, **District Cooling Plant**, **District Cooling Plant Operations**, **HVAC** Basics, **HVAC&R**, **KOTZA**, **Refrigeration**, **Modern HVAC & Refrigeration Systems Design, Utilization, Operation & Effective Maintenance, Control Valve & Actuators**, **Fire Safe Valves**, **Piping & Pipeline**, Maintenance, Repair, **Shutdown**, **Turnaround & Outages**, **Maintenance & Reliability** Management, **Mechanical Maintenance** Planning, Scheduling & Work Control, **Rotating Equipment Reliability** Optimization & Continuous Improvement, **Material Cataloguing**, **Mechanical & Rotating Equipment** Troubleshooting & Maintenance, **Root Cause Analysis & Reliability** Improvement, **Condition** Monitoring, **Root Cause Failure Analysis** (RCFA), **Steam Generation**, **Steam Turbines**, **Power Generator Plants**, **Gas Turbines**, **Combined Cycle Plants**, **Boilers**, **Process Fired Heaters**, Air Preheaters, Induced Draft Fans, All Heaters Piping Work, Refractory Casting, Heater Fabrication, Thermal & Fired Heater Design, **Heat Exchangers**, Heat Transfer, Coolers, **Power Plant** Performance, Efficiency & Optimization, **Storage Tank** Design & Fabrication, **Thermal Power Plant** Management, **Boiler & Steam** System Management, **Pump** Operation & Maintenance, **Chiller & Chiller Plant** Design & Installation, **Pressure Vessel**, **Safety Relief Valve** Sizing & Selection, **Valve** Disassembling & Repair, Pressure Relief Devices (**PSV**), **Hydraulic & Pneumatic** Maintenance, Advanced **Valve** Technology, **Pressure Vessel** Design & Fabrication, **Pumps**, Turbo-Generator, Turbine **Shaft Alignment**, **Lubrication**, Mechanical **Seals**, Packing, **Blowers**, **Bearing** Installation, **Couplings**, **Clutches** and **Gears**. Further, he is also versed in **Wastewater Treatment** Technology, **Networking** System, **Water Network Design**, Industrial **Water Treatment** in Refineries & Petrochemical Plants, **Piping** System, Water Movement, Water Filtering, Mud Pumping, **Sludge Treatment** and **Drying**, **Aerobic Process** of **Water Treatment** that includes **Aeration**, **Sedimentation** and **Chlorination Tanks**. His strong background also includes **Design** and **Sizing** of all **Waste Water Treatment Plant Associated Equipment** such as **Sludge Pumps**, **Filters**, **Metering Pumps**, **Aerators** and **Sludge Decanters**.

Mr. Thanasis has acquired his thorough and practical experience as the **Project Manager**, **Plant Manager**, **Area Manager - Equipment Construction**, **Construction Superintendent**, **Project Engineer** and **Design Engineer**. His duties covered **Plant Preliminary Design**, **Plant Operation**, **Write-up** of **Capital Proposal**, **Investment Approval**, **Bid Evaluation**, **Technical Contract Write-up**, **Construction** and **Sub-contractor Follow up**, **Lab Analysis**, **Sludge Drying** and **Management** of **Sludge Odor** and **Removal**. He has worked in various companies worldwide in the **USA**, **Germany**, **England** and **Greece**.

Mr. Thanasis is a **Registered Professional Engineer** in the **USA** and **Greece** and has a **Master's** and **Bachelor's** degree in **Mechanical Engineering** with **Honours** from the **Purdue University** and **SIU** in **USA** respectively as well as an **MBA** from the **University of Phoenix** in **USA**. Further, he is a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management** (**ILM**) a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, seminars, workshops and conferences worldwide.

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:	***Sunday, 23rd of November 2025***
0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to REAM*** *Scope & objectives of REAM • Key Principles & Terminology • Evolution from RCM to REAM • Business Value of REAM*
0930 – 0945	*Break*
0945 – 1030	***Reliability Engineering Concepts*** *Reliability Definitions & Measures • MTBF, MTTR & Failure Rate • Failure Distribution Models • Reliability Block Diagrams*
1030 – 1130	***Failure Mechanisms & Modes*** *Types of Equipment Failures • Mechanical versus Electrical Failures • Human & Process Failures • Case Studies of Critical Failures*
1130 – 1215	***Asset Life Cycle Management*** *Stages of Asset Life Cycle • Reliability Considerations at Each Stage • Asset Criticality Ranking • Cost versus Performance Trade-offs*
1215 – 1230	*Break*
1230 – 1330	***Risk-Based Approaches*** *Risk Management Framework • Risk Assessment Methodologies • FMEA & FMECA • Criticality Analysis*
1330 – 1420	***Reliability Data & Analysis Tools*** *Sources of Reliability Data • Failure Reporting & Analysis Systems (FRACAS) • Weibull Analysis Basics • Software Tools for Reliability*
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, 24th of November 2025

0730 – 0830	***Engineering for Reliability*** *Design for Reliability (DfR) Principles • Design Reviews & Validation • Stress-Strength Analysis • Reliability Growth Testing*
0830 – 0930	***Maintenance Engineering Concepts*** *Reliability-Centered Maintenance (RCM) Overview • Preventive versus Predictive Maintenance • CBM (Condition-Based Maintenance) Principles • TPM (Total Productive Maintenance)*
0930 – 0945	*Break*
0945 – 1100	***Root Cause Failure Analysis (RCFA)*** *Purpose & Methodology • Cause-&-Effect Diagrams • 5-Why Analysis • Case Applications*
1100 – 1215	***Reliability Testing & Qualification*** *Test Plans & Protocols • Accelerated Life Testing • Environmental & Stress Testing • Interpreting Test Results*
1215 – 1230	*Break*
1230 – 1330	***Engineering Standards & Compliance*** *ISO 55000 (Asset Management) • ISO 14224 (Reliability Data Collection) • IEC 60300 Series (Dependability) • Industry Best Practices*
1330 – 1420	***Reliability Modelling & Simulation*** *Fault Tree Analysis (FTA) • Event Tree Analysis (ETA) • Monte Carlo Simulation • Digital Twins for Reliability*
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, 25th of November 2025

0730 – 0830	***Asset Management Principles*** *Definition & Scope of Asset Management • ISO 55000 Framework • Linking Strategy to Asset Performance • Asset Value Realization*
0830 – 0930	***Asset Performance Management (APM)*** *KPIs for Asset Performance • Performance Monitoring Techniques • Failure Trend Analysis • Benchmarking*
0930 – 0945	*Break*
0945 – 1100	***Asset Risk & Reliability Strategies*** *Reliability-Based Maintenance • Risk-Based Inspection (RBI) • Risk-Based Maintenance (RBM) • Lifecycle Costing*
1100 – 1215	***Asset Criticality & Prioritization*** *Critical Equipment Ranking • Risk Matrix Application • Cost versus Risk Optimization • Decision-Making Frameworks*
1215 – 1230	*Break*
1230 – 1330	***Asset Investment & Capital Planning*** *CAPEX versus OPEX Trade-offs • Asset Replacement Strategies • ROI on Reliability Investments • Financial Modelling for Assets*

1330 – 1420	***Digitalization in Asset Management*** *Role of IoT & Industry 4.0 • Smart Sensors & Condition Monitoring • Digital Asset Registry • AI & Machine Learning Applications*
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, 26th of November 2025

0730 – 0830	***Maintenance Fundamentals*** *Evolution of Maintenance Practices • Preventive Maintenance Strategies • Predictive Technologies Overview • Proactive Maintenance Culture*
0830 – 0930	***Reliability-Centered Maintenance (RCM) in Detail*** *RCM Methodology Steps • Functions & Functional Failures • Maintenance Task Selection • Implementation Challenges*
0930 – 0945	*Break*
0945 – 1100	***Condition-Based Maintenance (CBM)*** *Condition Monitoring Technologies • Vibration, Oil, Thermal & Acoustic Analysis • Prognostics & Health Management (PHM) • CBM Implementation Case Studies*
1100 – 1215	***Total Productive Maintenance (TPM)*** *TPM Pillars & Objectives • Autonomous Maintenance • OEE (Overall Equipment Effectiveness) • Continuous Improvement*
1215 – 1230	*Break*
1230 – 1330	***Maintenance Planning & Scheduling*** *Work Order Systems • Planning versus Scheduling Roles • Backlog Management • Planning KPIs*
1330 – 1420	***Maintenance Optimization Techniques*** *Reliability versus Cost Optimization • Decision Analysis Tools • Shutdown & Turnaround Management • CMMS & EAM Software Integration*
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*

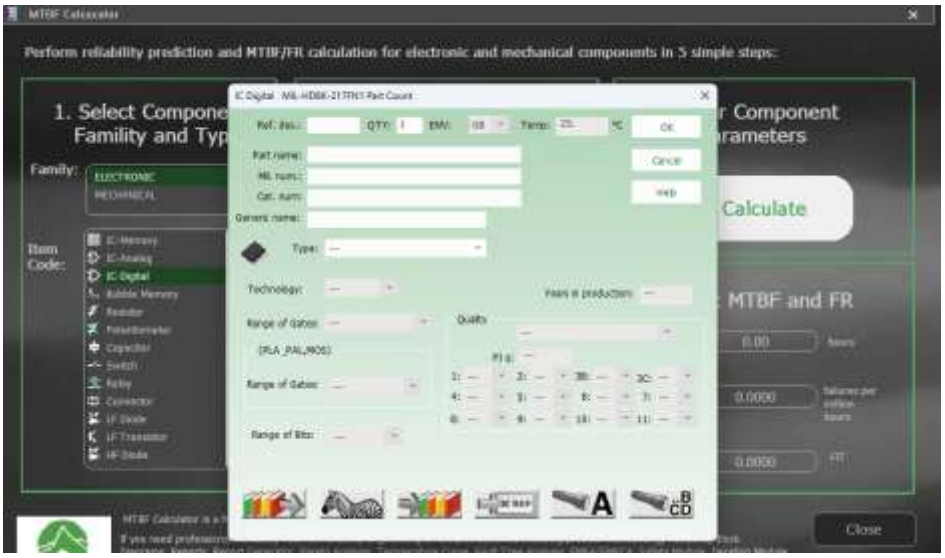
Day 5: Thursday, 27th of November 2025

0730 – 0830	***Integrated REAM Framework*** *Synergy Between Reliability, Engineering, Asset & Maintenance • REAM Maturity Model • Organizational Integration • Roadmap for REAM Adoption*
0830 – 0930	***Change Management in REAM*** *Organizational Culture & REAM Success • Overcoming Resistance to Change • Leadership & Stakeholder Engagement • Communication Strategies*
0930 – 0945	*Break*
0945 – 1100	***Performance Measurement & KPIs*** *Leading versus Lagging Indicators • Asset Reliability KPIs • Maintenance Efficiency KPIs • Balanced Scorecard Approach*
1100 – 1215	***Case Studies & Best Practices*** *REAM in Oil & Gas Sector • REAM in Power Generation • REAM in Manufacturing • Lessons Learned*

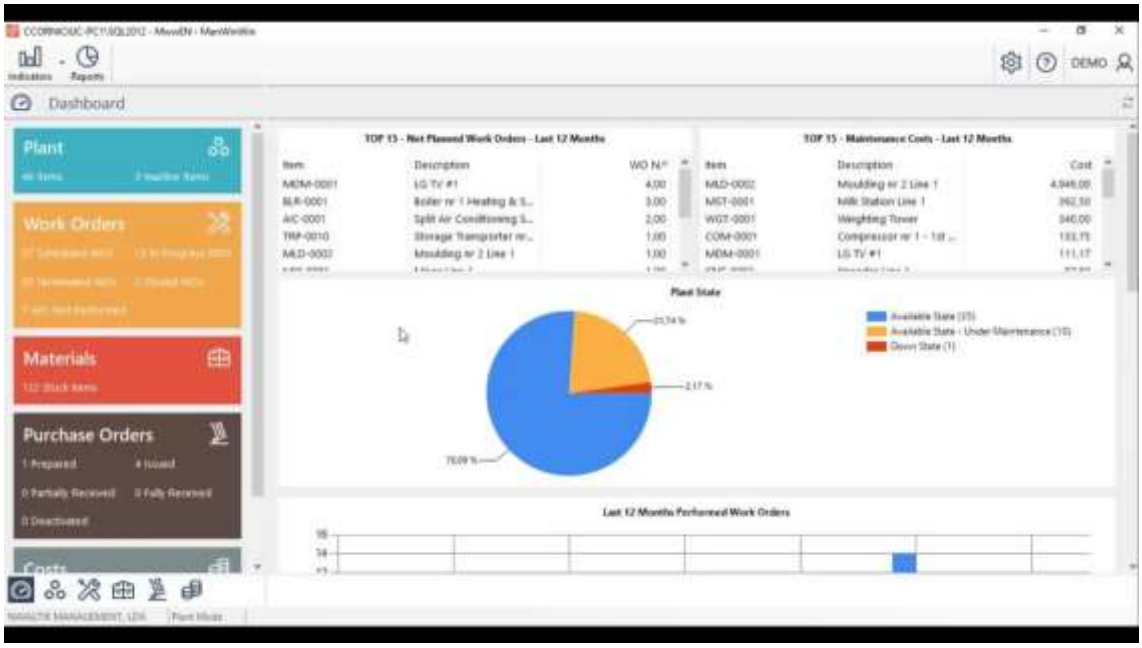
1215 – 1230	*Break*
1230 – 1345	***Future Trends in REAM*** *Artificial Intelligence in Reliability • Digital Twins for Asset Health • Predictive Analytics & Big Data • Sustainability & Green Asset Management*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief 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 "MTBF Calculator" and "ManWinWin Express CMMS Software".



MTBF Calculator



ManWinWin Express CMMS Software

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org