COURSE OVERVIEW RE0165
Root Cause Analysis & Corrective Action

Course Title
Root Cause Analysis & Corrective Action

Course Date/Venue
April 12-16, 2026/TBA Meeting Room, The H Hotel, Sheikh Zayed Road Trade Centre, Dubai, UAE or, TBA Meeting Room, Dinamo Hotel Baku, Baku, Azerbaijan

Course Reference
RE0165

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 Root Cause Analysis & Corrective Action. It covers the difference between symptoms, causes and root causes and the benefits of effective RCA in organizations; the failures, incidents and non-conformities, principles of causation and human factors in incident causation; the systems thinking approach, RCA methodologies and problem statement development; the incident information gathering, interviewing techniques and timeline and event reconstruction; the barrier and control identification, data validation and quality checks; and the 5-Whys technique.

During this interactive course, participants will learn the cause-and-effect (fishbone) analysis, fault tree analysis (FTA), change analysis and barrier analysis; the true root causes and the difference between corrective and preventive actions; developing effective corrective actions; the preventive action strategies, action ownership and accountability; the risk assessment of proposed actions and documentation of corrective actions; the RCA report writing, verification of action effectiveness and management review and approval; and the RCA integration into management systems by linking RCA to HSE, quality and reliability systems, integration with audits and inspections, continuous improvement cycles and performance trend analysis.

Course Objectives

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

- Apply and gain an in-depth knowledge on root cause analysis and corrective action
- Discuss the difference between symptoms, causes and root causes and the benefits of effective RCA in organizations
- Recognize failures, incidents and non-conformities, principles of causation and human factors in incident causation
- Carryout systems thinking approach, RCA methodologies and problem statement development
- Apply incident information gathering, interviewing techniques and timeline and event reconstruction
- Employ barrier and control identification, data validation, quality checks and 5-Whys technique
- Illustrate cause-and-effect (fishbone) analysis, fault tree analysis (FTA), change analysis and barrier analysis
- Determine true root causes, differentiate corrective versus preventive actions and develop effective corrective actions
- Apply preventive action strategies, action ownership and accountability, risk assessment of proposed actions and documentation of corrective actions
- Employ RCA report writing, verification of action effectiveness and management review and approval
- Apply RCA integration into management systems by linking RCA to HSE, quality and reliability systems, integration with audits and inspections, continuous improvement cycles and performance trend analysis

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 root cause analysis and corrective action for maintenance, reliability and asset management engineers, quality assurance and quality control professionals, HSE and incident investigation personnel, operations and production supervisors, process and manufacturing engineers, continuous improvement and operational excellence teams, project engineers and technical specialists, maintenance planners and technical coordinators and other technical staff.

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.

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. Andrew Ladwig is a **Senior Mechanical & Maintenance Engineer** with over **25 years** of extensive experience within the **Oil & Gas**, **Refinery**, **Petrochemical & Power** industries. His expertise widely covers in the areas of **Maintenance Optimization & Best Practices**, **Process Plant Shutdown & Turnaround**, **Maintenance Auditing & Benchmarking**, **Reliability** Management, **Reliability Centered Maintenance Principles & Application**, **Efficient Shutdowns**, **Machinery Lubrication**, **Maintenance Planning & Scheduling**, **Coupling & Shaft Alignment** Techniques, **Maintenance Auditing & Benchmarking**, **Reliability** Management, **Reliability Centered Maintenance Principles & Application**, **Efficient Shutdowns**, **Machinery Lubrication**, **Maintenance Planning & Scheduling**, **Coupling & Shaft Alignment** Techniques, 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, **Pressure Safety Relief Valve** Repair & Recalibration, **PSV/PRV** Troubleshooting, **PRV** Testing & Repair, **Valve** Testing & Inspection, **Valve** Sealing, **Valve** Calibration, **Control Valves & Actuators**, **Boiler** Inspection & Maintenance, **Boiler** Systems, **Boiler** instrumentation & Controls, **Boiler** Start-up & Shutdown, **Boiler** Operation & Steam System Management, **Boiler** Water Chemistry & Treatment, **Boiler** Efficiency & Waste Heat Recovery, **Boiler** Inspection & Testing, **Boiler** Maintenance, **Boiler** Troubleshooting & Safety, **Boiler** Emissions & Pollution Control, **Combustion** Analysis & Tuning Procedures, **Water Treatment** Technology, Heat Recovery Steam Generating (**HRSG**), **Impulse Tube** Installation & Inspection, **Parker Compression Fittings**, **Pipes & Fittings**, **PSV Inspection**, **Root Cause Failure Analysis**, **Tank** Design & Engineering, **Tank Shell**, **Tanks & Tank Farms**, **Vacuum Tanks**, **Gas Turbine** Operating & Maintenance, **Reciprocating & Centrifugal Compressors**, **Screw Compressor**, **Compressor** Control & Protection, **Gas & Steam Turbines**, **Turbine** Operations, **Gas Turbine** Technology, **Valves**, **Process Control Valves**, **Bearings & Lubrication** and Advanced **Machinery Dynamics**.

During his career life, Mr. Ladwig has gained his practical experience through his various significant positions and dedication as the **Mechanical Engineer**, **Project Engineer**, **Reliability & Maintenance Engineer**, **Maintenance Support Engineer**, **Process Engineer**, **HSE Supervisor**, **Warehouse Manager**, **Quality Manager**, **Business Analyst**, **Senior Process Controller**, **Process Controller**, **Safety Officer**, **Mechanical Technician**, **Senior Lecturer** and **Senior Consultant/Trainer** for various companies such as the Sasol Ltd., Sasol Wax, Sasol Synfuels, just to name a few.

Mr. Ladwig has a **Bachelor's** degree in **Chemical Engineering** and a **Diploma** in **Mechanical Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and has delivered various trainings, workshops, seminars, courses and conferences internationally.

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$ 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 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, 12th of April 2026***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to Root Cause Analysis*** *Purpose and Objectives of RCA • Difference Between Symptoms, Causes and Root Causes • When and Why RCA is Required • Benefits of Effective RCA in Organizations*
0930 – 0945	*Break*
0945 – 1030	***Understanding Failures, Incidents & Non-Conformities*** *Types of Failures (Process, Equipment, Human, System) • Near Misses versus Incidents versus Accidents • Quality, Safety and Operational Failures • Regulatory and Organizational Expectations*
1030 – 1130	***Principles of Causation*** *Cause-and-Effect Relationships • Direct, Contributing and Root Causes • Latent vs Active Failures • Multiple Causation Theory*
1130 – 1215	***Human Factors in Incident Causation*** *Human Error Types (Slips, Lapses, Mistakes, Violations) • Behavioral versus System-Induced Errors • Workload, Fatigue and Situational Awareness • Organizational Influence on Human Performance*
1215 – 1230	*Break*

1230 – 1330	***Systems Thinking Approach*** *Viewing Incidents as System Failures • Interaction Between People, Process and Equipment • Management System Weaknesses • Importance of Organizational Culture*
1330 – 1420	***Overview of RCA Methodologies*** *Qualitative versus Quantitative RCA Methods • Simple versus Complex Investigation Tools • Selecting the Right RCA Tool • Overview of Common Industry Techniques*
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, 13th of April 2026***

0730 – 0830	***Problem Statement Development*** *Writing Clear and Concise Problem Statements • Defining What Happened, Where and When • Avoiding Blame-Focused Language • Setting Investigation Boundaries*
0830 - 0930	***Incident Information Gathering*** *Physical Evidence Collection • Documentation and Records Review • Operational Data and Trends • Preservation of Evidence*
0930 – 0945	*Break*
0945 – 1100	***Interviewing Techniques*** *Planning Effective Interviews • Questioning Techniques (Open versus Closed) • Avoiding Bias and Assumptions • Documenting Witness Statements*
1100 – 1215	***Timeline & Event Reconstruction*** *Chronological Mapping of Events • Identifying Deviations and Anomalies • Use of Timelines and Sequence Diagrams • Verification of Event Accuracy*
1215 – 1230	*Break*
1230 – 1330	***Barrier & Control Identification*** *Existing Safeguards and Controls • Failed or Missing Barriers • Administrative versus Physical Controls • Detection vs Prevention Controls*
1330 – 1420	***Data Validation & Quality Checks*** *Cross-Checking Facts and Evidence • Eliminating Assumptions • Managing Conflicting Information • Establishing Investigation Credibility*
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, 14th of April 2026***

0730 – 0830	***5 Whys Technique*** *Logic and Structure of 5 Whys • When to use and When to Avoid • Common Pitfalls and Limitations • Practical Examples and Exercises*
0830 – 0930	***Cause-and-Effect (Fishbone) Analysis*** *Building an Effective Fishbone Diagram • Common Categories (Man, Machine, Method, Material, Environment) • Brainstorming Potential Causes • Prioritizing Significant Causes*
0930 – 0945	*Break*

0945 – 1100	***Fault Tree Analysis (FTA)*** *Top-Down Analytical Approach • Logical Gates (AND / OR) • Identifying Combinations of Failures • Application in Complex Systems*
1100 – 1215	***Change Analysis*** *Identifying Changes Before Incidents • Planned versus Unplanned Changes • Human, Technical and Organizational Changes • Linking Change to Failure*
1215 – 1230	*Break*
1230 – 1330	***Barrier Analysis*** *Identifying Barrier Functions • Barrier Degradation and Failure Modes • Relationship Between Barriers and Consequences • Improving Barrier Effectiveness*
1330 – 1420	***Determining True Root Causes*** *Validating Root Cause Statements • Cause vs Contributing Factor Distinction • Evidence-Based Conclusions • Testing Root Cause Logic*
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, 15th of April 2026***

0730 – 0830	***Corrective versus Preventive Actions*** *Definitions and Differences • Short-Term Fixes versus Long-Term Solutions • Addressing Causes at the System Level • Avoiding Superficial Actions*
0830 – 0930	***Developing Effective Corrective Actions*** *Linking Actions Directly to Root Causes • Engineering, Administrative and Behavioral Controls • Risk-Based Action Prioritization • SMART Action Principles*
0930 – 0945	*Break*
0945 – 1100	***Preventive Action Strategies*** *Eliminating Recurrence Potential • Strengthening Systems and Processes • Design and Procedural Improvements • Training and Competency Enhancements*
1100 – 1215	***Action Ownership & Accountability*** *Assigning Responsibility • Setting Realistic Timelines • Resource and Budget Considerations • Management Commitment*
1215 – 1230	*Break*
1230 – 1330	***Risk Assessment of Proposed Actions*** *Evaluating Unintended Consequences • Residual Risk Assessment • Hierarchy of Controls Application • Action Effectiveness Prediction*
1330 – 1420	***Documentation of Corrective Actions*** *Action Tracking Systems • Documentation Standards • Regulatory and Audit Requirements • Communication of Actions*
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*

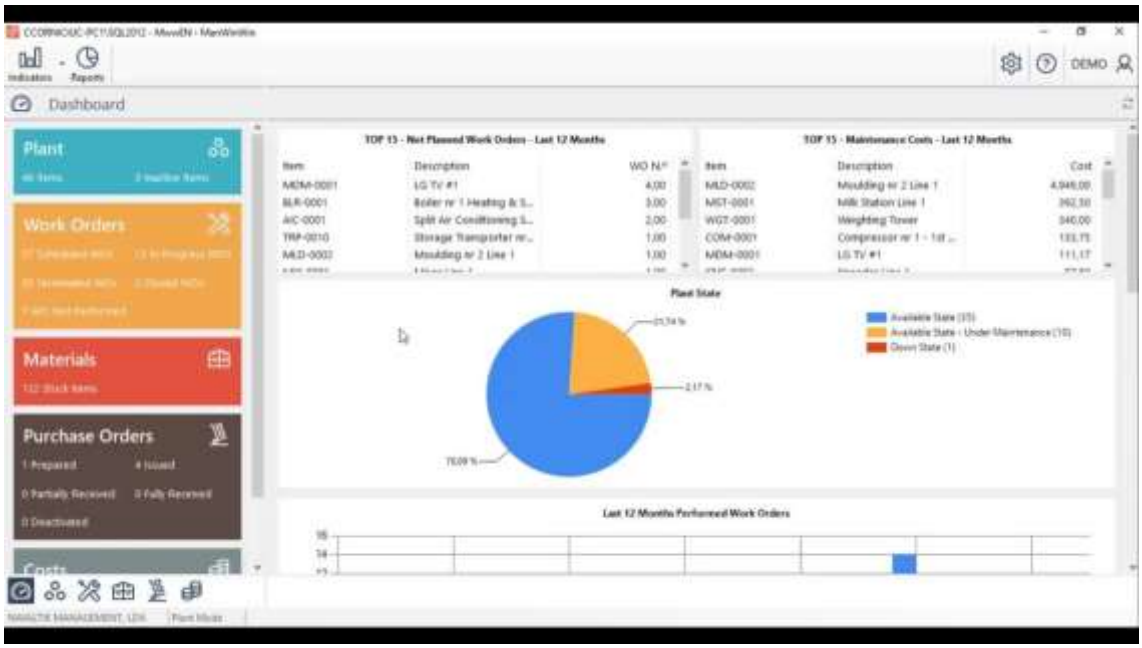
Day 5: Thursday, 16th of April 2026

0730 – 0830	***RCA Report Writing*** *Standard RCA Report Structure • Clear and Defensible Conclusions • Use of Diagrams and Evidence • Executive Summary Development*
0830 – 0930	***Verification of Action Effectiveness*** *Leading and Lagging Indicators • Monitoring Implementation Progress • Field Verification Techniques • Closure Criteria*
0930 – 0945	*Break*
0945 – 1100	***Management Review & Approval*** *Presenting RCA Findings to Management • Justifying Recommendations • Decision-Making Support • Escalation of Systemic Issues*
1100 – 1215	***Lessons Learned & Knowledge Sharing*** *Capturing Organizational Learning • Communicating Lessons Learned • Integration into Procedures and Training • Preventing Knowledge Loss*
1215 – 1230	*Break*
1230 – 1300	***RCA Integration into Management Systems*** *Linking RCA to HSE, Quality and Reliability Systems • Integration with Audits and Inspections • Continuous Improvement Cycles • Performance Trend Analysis*
1300 – 1345	***Practical Case Study & Workshop*** *Full RCA Exercise from Incident to Closure • Team-Based Analysis • Presentation of Findings • Instructor Feedback and Best Practices*
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

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