COURSE OVERVIEW HE0249

Certified Quantitative Risk Assessment (QRA) Professional

Course Title
Certified Quantitative Risk Assessment (QRA) Professional

Course Date/Venue
December 08-12, 2024/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
HE0249

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.

The escape of toxic methyl isocyanate vapour from the Union Carbide plant at Bhopal in India on December 1984 was the most serious process plant incident in history, causing thousands of deaths and many tens of thousands of severe injuries, many of them causing permanent incapacity. This and the explosion at the Phillips Petroleum polyethylene plant at Pasadena on 23 October 1989, which killed 23 people and injured hundreds more, alerted management and governments to the need for much more than traditional occupational safety and health programs to provide safety for those working in, or living around, process plants.

Loss prevention is not only concerned with incidents that cause injury to people. It covers all forms of loss, including damage to the environment and property, and interruption to production caused by major failures of a plant, even when there is no injury to people or damage to the surroundings. Avoidance or minimization of the risks of all these types of incident is embraced by the field of risk management.

There are many reasons why organizations may be concerned with managing their risks. These range from avoidance of injury or the cost of replacing damaged equipment, to such matters as maintaining a good public image or avoiding legal claims or prosecution of senior managers for negligence.

This course is designed to cover the latest techniques in risk management in general and the quantitative risk assessment (QRA) in particular. Quantitative Risk Assessment (QRA) provides an estimate of the risks posed as well as enabling risk mitigation methods to be evaluated so that risk can be reduced to acceptable levels. This training course examines the techniques required to quantify risk assessments to both evaluate and minimize risk both internally and externally to the outside community.

Course Objectives

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

- Get certified as *"Certified Quantitative Risk Assessment (QRA) Professional"*
- Employ the latest methodology on hazard identification with various types of process plant incidents, impact and approaches to systematic identification of hazards and risks
- Identify the steps of ranking and short-listing of risks using pareto methodology and by estimation of the magnitude of the consequences or the frequency of operational losses
- Identify several risk and reliability criteria by calculating and displaying the risks of potential losses and carryout the assessment of the severity of the consequences of hazardous incidents related to fires, BLEVEs, toxic gas escapes and other explosions
- Discuss the process of assessing the frequency of likelihood of potential hazardous incidents or losses through analysis of causes of incidents using fault trees and availability and modeling the production capability of a plant
- Determine consequences and frequency analysis such as loss of containment calculation, explosion modelling, fire modelling and dispersion modelling
- Apply quantifying risk by using latest techniques such as probit analysis
- Determine the applications of hazard analysis and risk management through scope of quantitative risk assessment such as modelling, separation distances experiences, strength & limitations, applications and faults
- Carryout systematic approach to risk reduction in connection to transferring the risk and reducing fire risks in process plants and improve knowledge in safety, reliability and environmental specification through management of risk and reliability of new plants

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 quantitative risk assessment for technical staff who are in charge of project development, design, modification and maintenance in process plants. HSE professionals and those responsible for the risk register who require a comprehensive understanding of the advanced techniques and software available for the assessment of the risks will gain an excellent knowledge from the course.

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 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.

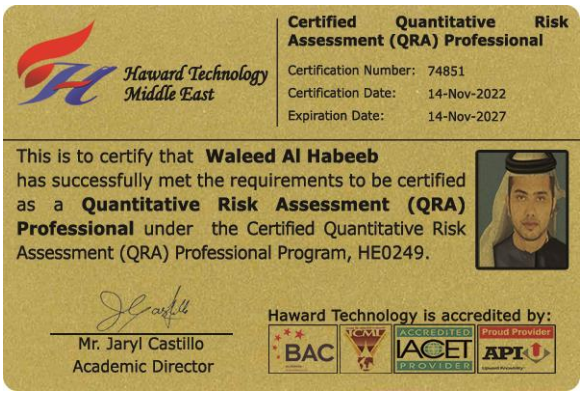
Course Certificate(s)

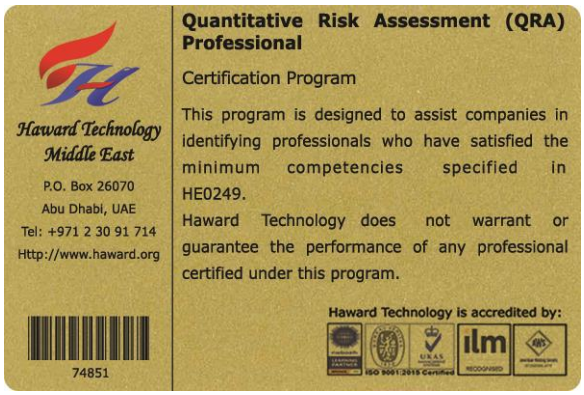
(1) Internationally recognized Wall Competency Certificates and Plastic Wallet Card Certificates will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Successful candidate will be certified as a "*Certified Quantitative Risk Assessment (QRA) Professional*". Certificates are valid for 5 years.

Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:-





(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.

Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 14-Nov-22

HTME No. 74851

Participant Name: Waleed Al Habeeb

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
HE0249	Certified Quantitative Risk Assessment (QRA) Professional	November 10-14, 2022	30	3.0

Total No. of CEU's Earned as of TOR Issuance Date **3.0**

TRUE COPY

Jaryl Castillo
Academic Director

Haward Technology has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2013 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2013 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 Association 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 is accredited by

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | E-mail: info@haward.org | Website: www.haward.org

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 **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.

- 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. Peter Christian is an **International Expert** in **Safety**, **Health**, **Environmental** and **Quality** with over **25 years** of practical and industrial experience in **NEBOSH** International General Certificate in Occupational Health & **Safety**, **Lifting & Rigging Equipment HAZOP**, **HAZWOPER**, **HAZMAT**, **HAZCOM**, **PHA** (**Process Hazard Analysis**), **FMEA**, **HAZID**, **ISO 14001**, **OHSAS 18001**, **ISO 9001**, Process Safety Management (**PSM**), Safety, Health, Environmental & Quality Management (**SHEQ**), **Behavioral Safety Management**, **Industrial Hygiene**, **Human Factors Engineering**, **Risk Assessment**, Fire Fighting, Rope Rescue Operations, Emergency Response within process industries. He is currently the **President** of **NKWE** and spearheads the companies major projects and business ventures, where he specializes in the areas of **SHEQ** solutions, **ISO**, **Quality Control** and **OSHA systems**. Previously, he has had much on–hand experience in the initiation and management of projects (technical as well organizational development) including involvement in **design of process plants**; **the commissioning & decommissioning** of process plants; the **operational and financial responsibility** for large process operations; **risk management**; **operational and maintenance management**, **crisis and emergency management**, **accident investigation**, **risk assessment**, **hazard identification** and **emergency preparedness & response** (oil spillage and gas explosions).

Much earlier in his career, Mr. Christian was a **HAZOP Team Leader** for numerous **HAZOP** studies and he has further managed the **Health, Safety & Environmental** and **Quality** requirements of a large process company. This included responsibilities as an auditor for compliance against **SHEQ standards**, **ISO standards** and the **Fatal Risk Control Protocols**. He then facilitated the development and implementation of the above standards as a group and at site level as part of the SHEQ council. Moreover, he established, trained and led a Rope rescue team and a high level emergency care clinic and ambulance service for many years. He still abseils recreationally and leads adventure groups during abseiling activities and serves as a rescue team member for mountain and water emergencies.

During his career life, Mr. Christian has gained his practical and field experience through his various significant positions as the **Plant Manager**, **Project Metallurgist**, **Metallurgist**, **HSE Team Leader**, **SHEC Superintendent**, **Mentor**, Instructor/Trainer, Acting **Technical Manager**, **Process Plant Superintendent**, Acting **Project Leader**, Acting **Plant Superintendent**, Appointed **Health & Safety & Environmental Superintendent**, Production Technician, Acting **Senior Shiftsman**, Foreman and Learner – Official Extraction Metallurgy from various companies such as the NKWE Consulting, SAMANCOR, Middleburg Mine Services (Pty) Ltd., Koomfontein Mines, Emelo Mine Services, Gencor Group and South African Defence Force.

Mr. Christian has a **Postgraduate Studies** in **Advanced Executive Programme** and a **National Higher Diploma** (**NHD**) & a **National Diploma** in **Extraction Metallurgy**. He is also a **Certified/Registered Tutor** in **NEBOSH International General Certificate**, **Certified Auditor** in **OHSAS 18001**, **ISO 14001** & **ISO 9001**, a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), a **Six Sigma Black Belt Coach** and holds a Certificate in Facilitate Learning Using a Variety of Given Methodologies **NQF Level 5** (**EDTP-SETA**) as a **Certified Facilitator**. He has further delivered innumerable courses, trainings, workshops and conferences globally.

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 December 2024***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Hazard Identification*** *Types of Impact ● Typical Types of Incident Leading to the Impact ● Types of Process Plant Incidents ● Approaches to Systematic Identification of Hazards and Risks*
0930 – 0945	*Break*
0945 – 1100	***Ranking and Short-Listing of Risks*** *The Pareto Principle ● Two Classes of Risks for Attention ● Ranking the Hazards and the Associated Risk Scenarios ● Examples of Scoring Systems for Use in Rapid Ranking ● Estimation of the Magnitude of the Consequences or the Frequency, of Operational Losses ● Case Studies ● Risk Management Without Numbers ● Identifying the Questions to be Answered in the Risk Assessment*
1100 – 1230	***Risk and Reliability Criteria*** *The Problem with "Acceptable Risk" ● Some Everyday Risks ● Risks to Members of the Public From New Plant ● Risks to Employees ● Economic Factors in Risk Criteria ● Regulatory Approaches to Setting Risk Criteria ● Calculating and Displaying the Risks of Potential Losses*
1230 – 1245	*Break*
1245 – 1420	***Assessment of the Severity of the Consequences of Hazardous Incidents*** *Fires ● Bleves ● Vapor Cloud Explosions ● Other Explosions ● Toxic Gas Escapes ● Environmentally Damaging Escapes ● Assessment of Probability of Fatality using Probit Mathematics*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Monday, 09th of December 2024***

0730 – 0900	***Assessing the Frequency of Likelihood of Potential Hazardous Incidents or Losses*** *Analysis of Causes of Incidents using Fault Trees ● Introduction to Reliability Mathematics ● Quantifying Incident Frequency on Fault Trees ● Alternative Approach to Assessing the Failure Frequency of a System: the Cutset Approach*
0900 – 0915	*Break*
0915 – 1100	***Assessing the Frequency of Likelihood of Potential Hazardous Incidents or Losses (cont'd)*** *Assessing the Probabilities of Various Outcomes using Event Trees ● Calculation of Reliability of Units with Installed Spares ● Availability and Modelling the Production Capability of a Plant ● Methods of Improving Reliability of Control and Protective Systems ● Sources of Failure Data*
1100 – 1230	***Consequences Analysis*** *Loss of Containment Calculation*
1230 – 1245	*Break*
1245 – 1420	***Consequences Analysis (cont'd)*** *Explosion Modelling*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3: Tuesday, 10th of December 2024

0730 – 0900	***Consequences Analysis (cont'd)*** *Fire Modelling*
0900 – 0915	*Break*
0915 – 1100	***Consequences Analysis (cont'd)*** *Dispersion Modelling*
1100 – 1230	***Frequency Analysis***
1230 – 1245	*Break*
1245 – 1420	***Quantifying Risk*** *Using of Probit Analysis*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4: Wednesday, 11th of December 2024

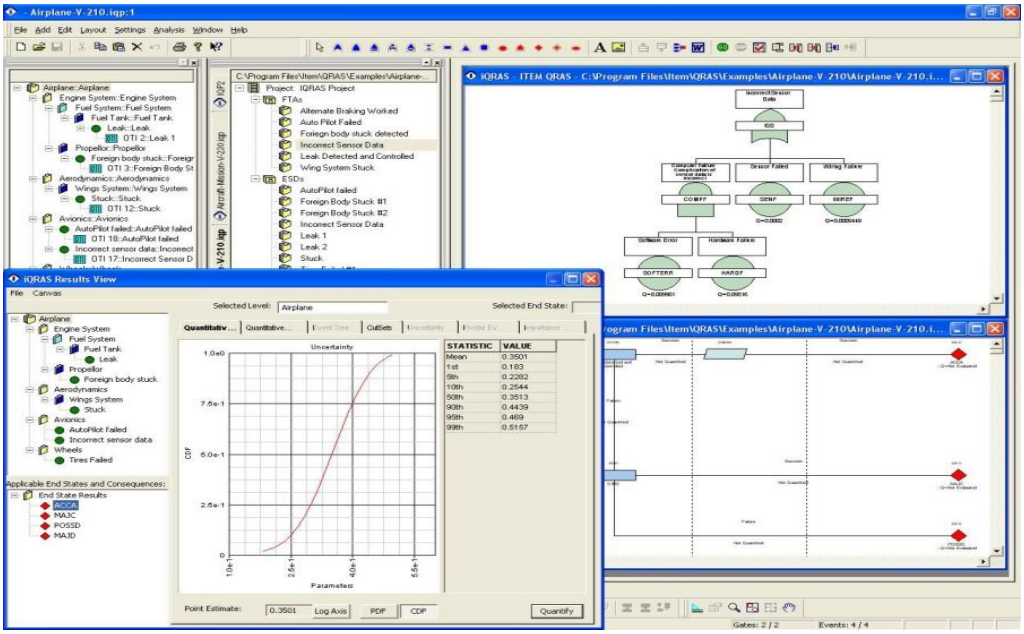
0730 – 0900	***Quantitative Risk Assessment*** *Modelling the Risk*
0900 – 0915	*Break*
0915 – 1100	***Quantitative Risk Assessment (cont'd)*** *Separation Distances (or Buffer Zones)*
1100 – 1230	***Quantitative Risk Assessment (cont'd)*** *Some Experiences with Quantitative Risk Assessment*
1230 – 1245	*Break*
1245 – 1420	***Quantitative Risk Assessment (cont'd)*** *Summary of the Strengths and Limitations of Quantitative Risk Assessment*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5: Thursday, 12th of December 2024

0730 – 0900	***Quantitative Risk Assessment (cont'd)*** *Applications of Hazard Analysis and Risk Assessment*
0900 – 0915	*Break*
0915 – 1100	***Quantitative Risk Assessment (cont'd)*** *Faults in the Application of Hazard Analysis and Risk Assessment*
1100 – 1200	***A Systematic Approach to Risk Reduction*** *Transferring the Risk ● Reducing Fire Risks in Process Plants ● Steps in Design of a New Plant to Maximize Fire Safety ● Case Study: Upgrading a Firefighting Water System ● Principles of Firefighting ● Reducing the Risks in Warehouse Operations*
1200 – 1215	*Break*
1215 – 1300	***A Systematic Approach to Risk Reduction (cont'd)*** *Reduction of Risks in Transport of Hazardous Materials ● Reduction of BLEVE Risks ● Reduction of Vapour Cloud Explosion Risks ● Reduction of Toxic Gas Risks ● Reduction of Environmental Risks of Reduction of the Risk of Loss of Reliability ● Design for Reliability of Control and Protective Systems ● Equipment Design for Reliability and Safety in the Oil and Gas Industry in Particular*
1300 – 1315	***Course Conclusion***
1315 – 1415	***COMPETENCY EXAM***
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 our state-of-the-art simulators "QRA System Software".



QRA System Software

Course Coordinator

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