

**COURSE OVERVIEW HE0142(AD6)-4D**

**Quantitative Risk Assessment (QRA) in Production Operations**

*Risk Assessment, Hazard Identification, Consequence & Frequency Analysis*

**Course Title**

Quantitative Risk Assessment (QRA) in Production Operations: *Risk Assessment, Hazard Identification, Consequence & Frequency Analysis*

**Course Date/Venue**

September 09-12, 2024/Boardroom, Warwick Hotel Doha, Doha, Qatar

**Course Reference**

HE0142(AD6)-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.***



Quantitative Risk Assessment (QRA) is the process through which the risks associated with any system or process are assessed and managed. Risk is always associated with uncertainty and undesirability of certain states of the system of process of interest. QRA methods are used to identify the risk scenarios and estimate the corresponding probabilities.



QRA methods identify system vulnerabilities, and rank them according to their occurrence frequencies and severity of the consequences. In addition, uncertainties associated with the data and models used to quantify the levels of risk are identified and factored into measures of risk.

This course is designed to provide delegates with detailed and up-to-date overview of Quantitative Risk Assessment (QRA). It will cover quantitative risk assessment; hazard identification; consequences analysis including loss of containment calculation, explosion modelling, fire modelling and dispersion modelling; frequency analysis; and quantifying risk using of probit analysis.

## Course Objectives

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

- Apply and gain an in-depth knowledge on quantitative risk assessment in production operations including consequence and frequency analysis
- Carryout proper methodology on risk assessment as well as the step-by-step approach
- Identify hazards and employ consequence and frequency analysis including loss of containment calculation, explosion modeling, fire modeling and dispersion modeling
- Apply quantifying risk by using systematic techniques including probit 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 aspect and considerations of quantitative risk assessment in production operations for safety management staff, team leaders, engineers, supervisory roles and middle management. The course is essential for those managing the production operations in process plants and oil/gas fields.

## 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\$ 5,000** per Delegate 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)

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: -


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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.

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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. Pete Du Plessis** is an **International Health, Safety & Environment (HSE) Expert** within **Oil, Gas and Petrochemical** industries. His expertise includes **Risk Assessment** within Production Operation, **Hazard Identification, Safety Auditing, Site Inspection, Quantified Risk Assessment, Process Hazard Analysis (PHA), Process Safety Management, HAZOP Studies & Leadership, FMEA, Waste Management, Industrial Effluents, Dangerous Goods, Hazardous Material, Chemical Handling, Emergency Response Services, HAZCOM, HAZWOPER and HAZMAT** with over **30 years** of practical experience in the **process** industry. His wide experience also includes **Environmental Management (ISO 14001), Safety Management (OHSAS 18001), Quality Management (ISO 9001)**.

While Mr. Du Plessis has been very active in the process industry he has likewise headed Consultancy projects for major **petrochemical companies**. In all his projects, he utilizes a systems approach which includes **risk management, process safety, health & environmental management, human behaviour and quality management**. Furthermore, he has come to share his expertise through the **numerous international trainings** he has held on **PHA, HAZOP, Risk Assessment, Handling Hazardous Materials & Chemicals, Petroleum Products Handling & Transportation**. Moreover, he completed various assignments as a consultant, trainer, facilitator, auditor & designer and conducted numerous licensed international Safety, Technology and Auditing Awareness & Implementing training courses including **IMS, ISO 9001, ISO 14001, ISO 27001, ISO 17799, OHSAS 18001** audits & assessments. With his accomplishments and achievements, he had been a **Safety Superintendent, Senior Safety Official and Senior Process Controller** for several international petrochemical companies.

Mr. Plessis has **Bachelor** degree with **Honours** in **Industrial Engineering & Management**. Further, he has gained **Diploma in Quality & Production Management**. He is also a **Certified Assessor & Moderator** with the Manufacturing, Engineering & Related Services Education and Training Authority (MERSETA), a **Certified Trainer/Assessor** by the **Institute of Leadership & Management (ILM)** and a **Certified Instructor/Trainer** by the APICS. He has further delivered numerous trainings, courses, seminars, conferences and workshops internationally.

**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, 09<sup>th</sup> September 2024**

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	<b>PRE-TEST</b>
0830 – 0930	<b>Quantitative Risk Assessment</b>
0930 – 0945	Break
0945 – 1100	<b>Quantitative Risk Assessment (cont'd)</b>



1100 – 1215	<b>Hazard Identification</b>
1215 – 1230	Break
1230 – 1420	<b>Hazard Identification (cont'd)</b>
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day One

**Day 2: Tuesday, 10<sup>th</sup> September 2024**

0730 – 0930	<b>Consequences Analysis</b> Loss of Containment Calculation
0930 – 0945	Break
0945 – 1100	<b>Consequences Analysis (cont'd)</b> Explosion Modelling
1100 – 1215	<b>Consequences Analysis (cont'd)</b> Fire Modelling
1215 – 1230	Break
1230 – 1420	<b>Consequences Analysis (cont'd)</b> Dispersion Modelling
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Two

**Day 3: Wednesday, 11<sup>th</sup> September 2024**

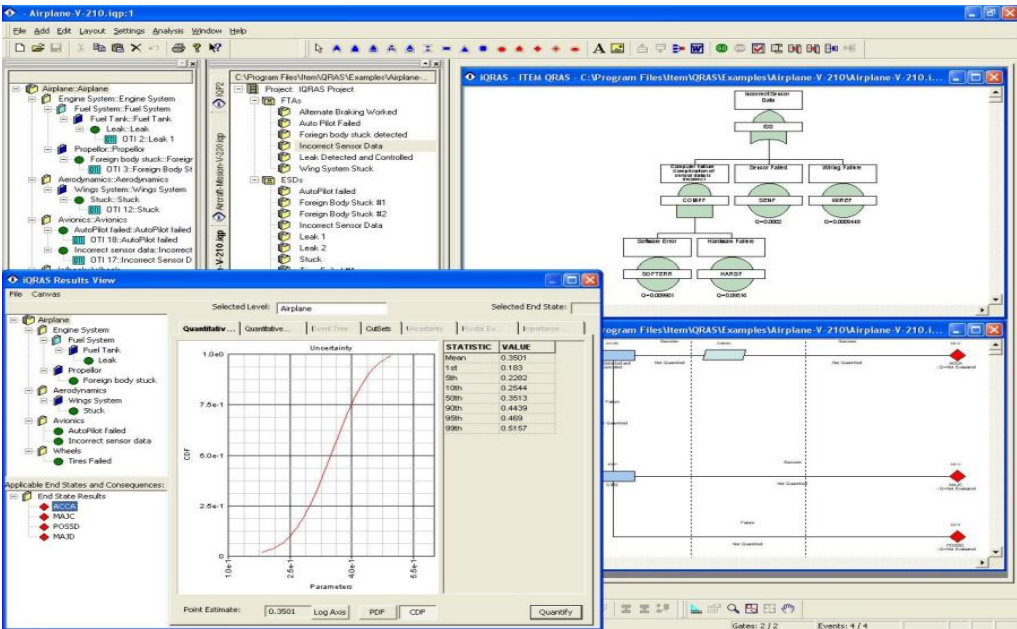
0730 – 0930	<b>Frequency Analysis</b>
0930 – 0945	Break
0945 – 1100	<b>Frequency Analysis (cont'd)</b>
1100 – 1215	<b>Frequency Analysis (cont'd)</b>
1215 – 1230	Break
1230 – 1420	<b>Frequency Analysis (cont'd)</b>
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Three

**Day 4: Thursday, 12<sup>th</sup> September 2024**

0730 – 0930	<b>Quantifying Risk</b> Using of Probit Analysis
0930 – 0945	Break
0945 – 1100	<b>Quantifying Risk (cont'd)</b> Using of Probit Analysis (cont'd)
1100 – 1215	<b>Quantifying Risk (cont'd)</b> Using of Probit Analysis (cont'd)
1215 – 1230	Break
1230 – 1345	<b>Quantifying Risk (cont'd)</b> Using of Probit Analysis (cont'd)
1345 – 1400	<b>Course Conclusion</b>
1400 – 1415	<b>POST-TEST</b>
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” and “CAMEO Chemicals Suite Software”.



The screenshot displays the QRA System Software interface. It includes a fault tree diagram on the right, a graph showing uncertainty on the left, and a statistics table. The statistics table is as follows:

STATISTIC	VALUE
Mean	0.3501
1st	0.163
5th	0.2292
10th	0.2544
50th	0.3513
90th	0.4439
95th	0.469
99th	0.5157

**QRA System Software**



The screenshot shows the CAMEO Chemicals Suite Software interface, which is a database of hazardous materials. It features a search bar, a search button, and a search results section. The search results section includes a search icon, a search button, and a search results section. The search results section includes a search icon, a search button, and a search results section.

**CAMEO Chemicals Suite Software**

### Course Coordinator

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