COURSE OVERVIEW DE0420
API 6A: X-mas Tree & Wellhead Operations, Maintenance & Testing

Course Title
API 6A: X-mas Tree & Wellhead Operations, Maintenance & Testing

Course Date/Venue
Please refer to page number 3

Course Reference
DE0420

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

Course Description

This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date overview of API 6A: X-mas Tree & Wellhead Operations, Maintenance & Testing. It covers the components of a wellhead system and the fundamentals of API 6A standard; the X-mas tree system and its functionality in production and injection wells; the wellhead components and functions covering casing heads, casing spools, tubing heads and hangers, sealing mechanisms and load shoulders; the pressure ratings and temperature classes including materials and product specification levels (PSL); the installation procedures for wellhead equipment; and the X-mas tree assembly and installation.

Further, the course will also discuss the BPV (back pressure valve), TWCV (tubing wing check valve) and VR plug installation; the visual and dimensional checks and hydrostatic pressure testing; the leak testing and functional tests and documentation and test records; the maintenance schedules for wellhead and tree components and greasing and seal replacement; the valve maintenance and seat repair and troubleshooting common issues; and the tools and equipment for wellhead maintenance and types of valves in X-mas tree.

During this interactive course, participants will learn the valve operation, maintenance and surface safety systems and SCSSV, emergency shutdown (ESD) and safety protocols; the control panel operations, data logging and performance monitoring; the well integrity testing principles, hydrostatic and gas leak testing, BPV/TWCV and VR plug testing; the non-destructive testing (NDT) methods, flange and stud inspection and test documentation and QA/QC records; the common operational challenges and troubleshooting procedures; the hazard identification for wellhead activities, safe work practices (SWP), job safety analysis (JSA) and barrier management; the isolation of zones and plugging and valve sealing and pressure verification; and the use of plugs and barriers and re-entry planning and safety.

Course Objectives

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

- Apply and gain an in-depth knowledge on X-mas tree and wellhead operations, maintenance and testing in accordance with API 6A standards
- Identify the components of a wellhead system and the fundamentals of API 6A standard
- Discuss X-mas tree system and its functionality in production and injection wells
- Recognize wellhead components and functions covering casing heads, casing spools, tubing heads and hangers, sealing mechanisms and load shoulders
- Identify pressure ratings and temperature classes including materials and product specification levels (PSL)
- Carryout installation procedures for wellhead equipment as well as X-mas tree assembly and installation
- Apply BPV (back pressure valve), TWCV (tubing wing check valve) and VR plug installation
- Implement visual and dimensional checks, hydrostatic pressure testing, leak testing and functional tests and documentation and test records
- Employ maintenance schedules for wellhead and tree components, greasing and seal replacement, valve maintenance and seat repair and troubleshooting common issues
- Recognize tools and equipment for wellhead maintenance and types of valves in X-mas tree
- Employ valve operation, maintenance and surface safety systems and SCSSV, emergency shutdown (ESD) and safety protocols
- Carryout control panel operations, data logging and performance monitoring
- Discuss well integrity testing principles and apply hydrostatic and gas leak testing, BPV/TWCV and VR plug testing
- Apply non-destructive testing (NDT) methods, flange and stud inspection and test documentation and QA/QC records
- Recognize common operational challenges and employ troubleshooting procedures
- Employ hazard identification for wellhead activities, safe work practices (SWP), job safety analysis (JSA) and barrier management
- Apply isolation of zones and plugging, valve sealing and pressure verification, use of plugs and barriers and re-entry planning and safety

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 a complete and up-to-date overview of X-mas tree and wellhead for those who are involved in its operations, maintenance and testing. Field operations, production, maintenance, petroleum, reservoir and field engineers, wellhead maintenance supervisors, wellhead operations supervisors and other staff will definitely benefit from this course.

Course Date/Venue

Session(s)	Date	Venue
1	May 17-21, 2026	Meeting Plus 9, City Centre Rotana, Doha, Qatar
		Meeting Room 4, Four Seasons Hotel Cairo at Nile Plaza, Corniche El Nil, Garden City, Cairo, Egypt
2	July 06-10, 2026	Salon Expo, NH Hotel Plaza de Armas, Seville, Spain
3	August 02-06, 2026	Pierre Lotti Meeting Room, Movenpick Hotel Istanbul Golden Horn, Istanbul, Turkey
4	September 13-17, 2026	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
5	November 08-12, 2026	Meeting Plus 9, City Centre Rotana, Doha, Qatar
6	January 24-28, 2027	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
7	March 28-April 01, 2027	Pierre Lotti Meeting Room, Movenpick Hotel Istanbul Golden Horn, Istanbul, Turkey

Course Fee

Doha	**US$ 8,500** per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Cairo	**US$ 8,000** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Seville	**US$ 8,800** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Istanbul	**US$ 8,500** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Dubai	**US$ 8,000** 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.

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:

Dr. Hesham Abdou, PhD, MSc, BSc, is a **Senior Drilling & Petrole Engineer** with over **30 years** of integrated industrial and academic experier as a **University Professor**. His specialization widely covers in the areas **Wellbore** Interventions, **Wellbore & Reservoir** Fundamentals for **Slickli Slickline** Intervention, **Slickline Well** Intervention Procedures, **Slickline** T **Slickline Fishing** Operations, **Well Completion** Design & Operations, **W Stimulation** and **Workover** Planning, **Horizontal & Multilateral Wells**: **Completions Stimulation**, **Natural & Artificial Flow Well Completion**, **Well Testing** Procedures Evaluation, **Well** Performance, **Well Integrity** Management, **Well Casing & Cementi Advanced Drilling**, **Nodal Analysis (Advanced)**, **Integrated Nodal Analysis** for W Performance Optimization, Well & Reservoir Performance Analysis Using **Nodal Metho** Production System Optimization Using **Nodal Analysis**, Artificial Lift Design & Nodal Analys **Pressure Drop & Flow Performance** in Subsurface Systems, **Completion & Workov** Technology, **Workover Best Practices**, **Workover** Operations, **Workovers & Completio Drilling & Completion** Technology, Advanced **Completion Design**, Advanced **Coi Tubing Intervention** Design, **Casing & Tubing** Design, **Coiled Tubing** Technolo **Acidizing** Techniques & **Fluids Chemicals**, **Carbonates Acidizing & Sandstone Acidizi Oil Recovery Methods** Enhancement**, Acid Gas** Removal, **Directional Drilling**, **Horizor & Sidetracking**, **Drilling Operation** Management, **Drilling & Production** Equipment, **E Drilling & Stuck Pipe** Prevention, **Heavy Oil Production** & Treatment Techniques, **Cru Oil Testing & Water Analysis**, **Crude Oil & Water** Sampling Procedures, **Equipm Handling** Procedures, **Crude & Vacuum Process** Technology, **Gas Conditioning Processing**, **Cooling Towers** Operation & Troubleshooting, **Sucker Rod Pumping**, **ESI Gas Lift**, **PCP & Jet Pump**, **Pigging** Operations, Electric Submersible Pumps (**ES** Progressive Cavity Pumps (**PCP**), **Water Flooding**, **Water Lift Pumps** Troubleshooti **Water System Design** & Installation, **Water Networks Design** Procedures, **Water Pumpi** Process, **Pipelines**, **Pumps**, **Turbines**, **Heat Exchangers**, **Separators**, **Heate Compressors**, **Storage Tanks**, **Valves** Selection, **Compressors**, **Tank & Tank Far** Operations & Performance, **Oil & Gas Transportation**, **Oil & Gas Production** Strategi **Artificial Lift** Methods, **Piping & Pumping** Operations, Oil & Water Source Wells Restorati **Pump** Performance Monitoring, **Rotor Bearing** Modelling, **Hydraulic** Repairs & Cylinde **Root Cause Analysis**, **Vibration & Condition** Monitoring, **Piping Stress** Analysis, **Am Gas Sweetening & Sulfur Recovery**, Heat & Mass Transfer and Fluid Mechanics.

During his career life, Dr. Hesham held significant positions and dedication as the **Gene Manager**, **Petroleum Engineering Assistant General Manager**, **Workover Assist General Manager**, **Workover Department Manager**, **Artificial Section Head**, **Oil & G Production Engineer** and **Senior Instructor/Lecturer** from various companies a universities such as the Cairo University, Helwan University, British University in Egypt, Bar University and Agiba Petroleum Company.

Dr. Hesham has a **PhD** and **Master's** degree in **Mechanical Power Engineering** an **Bachelor's** degree in **Petroleum Engineering**. Further, he is a **Certified Instructor/Trai** and a **Peer Reviewer**. Dr. Hesham is a member of Egyptian Engineering Syndicate and Society of Petroleum Engineering. Moreover, he has published technical papers and journ and has delivered numerous trainings, workshops, courses, seminars and conferen 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 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	***Overview of Wellhead Systems*** *Definition & Components of a Wellhead System • Types of Wellheads: Surface & Subsea • Functions of a Wellhead • Relationship with X-Mas Tree*
0930 – 0945	*Break*
0945 – 1030	***API 6A Standard Fundamentals*** *Scope & Structure of API 6A • Key Definitions & Terminology • Specification Levels (PSL) • Product Specification & Performance Ratings*
1030 – 1130	***X-Mas Tree System Overview*** *X-Mas Tree versus Wellhead – Differences & Integration • Vertical & Horizontal X-Mas Tree Designs • Functionality in Production & Injection Wells • Importance of Pressure Control*
1130 – 1215	***Wellhead Components & Functions*** *Casing Heads & Casing Spools • Tubing Heads & Hangers • Sealing Mechanisms & Load Shoulders • Test Plugs & Lockdown Screws*
1215 – 1230	*Break*
1230 – 1330	***Pressure Ratings & Temperature Classes*** *Understanding Working Pressure Ratings • Temperature Class Requirements in API 6A • Material Class & Performance Rating Codes • Operating Envelope of Equipment*
1330 – 1420	***Materials & Product Specification Levels (PSL)*** *PSL 1 To PSL 4 Applications • Material Selection (AA To HH) • NACE MR0175/ISO 15156 Requirements • Corrosion & Sour Service Considerations*
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	***Installation Procedures for Wellhead Equipment*** *Pre-Installation Inspection & Preparation • Installation Sequence (Casing Head, Spool, Tubing Head) • Alignment & Torqueing Procedures • Use of Running Tools*
0830 – 0930	***X-Mas Tree Assembly & Installation*** *Installation Guidelines for Vertical & Horizontal Trees • Stud Tensioning & Bolt-Up Practices • Sealing & Lockdown Systems • Pressure Testing After Installation*
0930 – 0945	*Break*
0945 – 1100	***BPV/TWCV & VR Plug Installation*** *BPV (Back Pressure Valve): Function & Types • TWCV (Tubing Wing Check Valve): Application & Removal • VR Plug Types & Installation Tools • Safety Considerations During Installation/Removal*
1100 – 1215	***Inspection & Testing of Equipment*** *Visual & Dimensional Checks • Hydrostatic Pressure Testing • Leak Testing & Functional Tests • Documentation & Test Records*
1215 – 1230	*Break*
1230 – 1330	***Preventive & Corrective Maintenance*** *Maintenance Schedules for Wellhead & Tree Components • Greasing & Seal Replacement • Valve Maintenance & Seat Repair • Troubleshooting Common Issues*
1330 – 1420	***Tools & Equipment for Wellhead Maintenance*** *Running & Retrieval Tools • Pressure Testing Kits • Torque Wrenches & Hydraulic Equipment • Safety Gear & Barriers*
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	***Types of Valves in X-Mas Tree*** *Master Valves: Lower & Upper • Wing Valves: Production & Kill Line • Swab Valves & Crossover Valves • Valve Configurations*
0830 – 0930	***Valve Operation & Maintenance*** *Manual versus Actuated Valves • Greasing & Seal Replacement • Testing & Calibration • Valve Seat Repair & Changeout*
0930 – 0945	*Break*
0945 – 1100	***Surface Safety Systems & SCSSV*** *Surface-Controlled Subsurface Safety Valve (SCSSV) • Hydraulic Control Systems • Emergency Shutdown Valves • Testing & Validation*
1100 – 1215	***Emergency Shutdown (ESD) & Safety Protocols*** *Overview of ESD Systems • Safety Valve Fail-Safe Mechanisms • H2S & High-Pressure Handling • Lockout/Tagout Procedures*
1215 – 1230	*Break*
1230 – 1330	***Control Panel Operations (Surface Control Panel)*** *Pneumatic & Hydraulic Controls • Pressure Settings & Adjustments • Valve Position Indicators • Integration with DCS/PLC*

1330 – 1420	***Data Logging & Performance Monitoring*** *Recording Valve Operations • Vibration & Pressure Sensors • Use of Digital Twin & Condition Monitoring • Integration with SCADA Systems*
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	***Well Integrity Testing Principles*** *Primary & Secondary Barriers • Surface & Subsurface Testing • Pressure Buildup & Bleed-Off • Leak Paths & Identification*
0830 – 0930	***Hydrostatic & Gas Leak Testing*** *Test Procedures & Equipment • Acceptable Limits & Evaluation • Safety & Pre-Test Checklists • Post-Test Reporting*
0930 – 0945	*Break*
0945 – 1100	***BPV/TWCV & VR Plug Testing*** *Test Bench Procedure for BPV • In-Situ VR Plug Test Methods • Pressure Hold & Leak Detection • Removal, Re-Inspection & Reinstallation*
1100 – 1215	***Non-Destructive Testing (NDT) Methods*** *Ultrasonic & Magnetic Particle Testing • Dye Penetrant & Radiographic Inspection • Criteria for Acceptance & Rejection • Certification & Documentation*
1215 – 1230	*Break*
1230 – 1330	***Flange & Stud Inspection*** *Surface Condition Evaluation • Bolt Torque & Tension Testing • Re-Tightening Protocols • Stud & Gasket Replacement*
1330 – 1420	***Test Documentation & QA/QC Records*** *Test Plans & Procedures • Recordkeeping Per API 6A • Acceptance Criteria • Digital Records & Traceability*
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	***Common Operational Challenges*** *Valve Sticking & Leakage • Pressure Anomalies • Seal Degradation & Corrosion • Poor Alignment or Torque Errors*
0830 – 0930	***Troubleshooting Procedures*** *Root Cause Analysis • Isolation of Faulty Components • Use of Diagnostic Tools • Repair versus Replacement Decision-Making*
0930 – 0945	*Break*
0945 – 1100	***Risk Assessment & Mitigation*** *Hazard Identification for Wellhead Activities • Safe Work Practices (SWP) • Job Safety Analysis (JSA) • Barrier Management*
1100 – 1230	***Case Studies & Industry Incidents*** *Real-Life Failures & Lessons Learned • Best Practices Adopted Post-Incident • Failure Modes & Effects Analysis (FMEA) • Regulatory Responses & Changes*

1230 – 1245	*Break*
1245 – 1345	***Well Abandonment & Re-Entry*** *Isolation of Zones & Plugging • Valve Sealing & Pressure Verification • Use of Plugs & Barriers • Re-Entry Planning & Safety*
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*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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