

COURSE OVERVIEW DE0997

**Coiled Tubing
(E-Learning Module)**

Course Title

Coiled Tubing (E-Learning Module)

Course Reference

DE0997

Course Format & Compatibility

SCORM 1.2. Compatible with IE11, MS-Edge, Google Chrome, Windows, Linux, Unix, Android, IOS, iPadOS, macOS, iPhone, iPad & HarmonyOS (Huawei)

Course Duration

30 online contact hours
(3.0 CEUs/30 PDHs)



Course Description



This E-Learning course is designed to provide participants with a detailed and up-to-date overview of coiled tubing. It covers the coiled tubing technology, well control equipment and CT field applications; the evolution of CT equipment; the control cabin of a modern CT unit and CT unit rigged down for highway transport; the CT manufacturing and CT mechanical performance; the workover and completion application and common CT workover application; the removal of sand or fill from a wellbore and unloading of a well with nitrogen; the fracturing, acidizing formation, drilling applications, non-directional wells and directional wells; the wellbore hydraulics, wellbore fluids, overbalanced CTD and underbalanced CTD.

During this course, participants will learn the overcoming of pipeline drag limitations and permanent installations, offshore flowlines, velocity strings, control lines and nomenclature; the buckling of coiled tubing, truck-mounted coiled tubing reel assembly, coiled tubing reel assembly, etc.; the schematic view of the small scale test loop and the schematic for coiled tubing buckling in a vertical wellbore; the postbuckled configuration of pipe in a horizontal hole and sinusoidal buckling load; the force balance for segments in curved wellbores and helically buckled segments; the pressure-area force and overall force balance; the rigid tool calculations and permanent CT installations; and the externally upset reeled completion, spoolable completion and pressure barrier during completion installation.

Course Objectives

After completing the course, the employee will:-

- Apply and gain a comprehensive knowledge on coiled tubing
- Discuss coiled tubing technology, well control equipment and CT field applications
- Recognize early CT equipment and evolution of CT equipment
- Describe the control cabin of a modern CT unit, CT unit rigged down for highway transport
- Employ CT manufacturing and CT mechanical performance as well as identify CT plastic deformation points
- Carryout workover and completion application, common CT Workover application and selected workover applications
- Remove sand or fill from a wellbore and unload a well with nitrogen
- Illustrate fracturing, acidizing formation, drilling applications, non-directional wells and directional wells
- Describe wellbore hydraulics, wellbore fluids, overbalanced CTD and underbalanced CTD
- Overcome pipeline drag limitations and recognize permanent installations, offshore flowlines, velocity strings, control lines and nomenclature
- Employ buckling of coiled tubing, truck-mounted coiled tubing reel assembly, coiled tubing reel assembly, etc.
- Describe the schematic view of the small-scale test loop and the schematic for coiled tubing buckling in a vertical wellbore
- Configure postbuckling of pipe in a horizontal hole and identify sinusoidal buckling load
- Ensure force balance for segments in curved wellbores and helically buckled segments
- Discuss pressure-area force and overall force balance as well as carryout rigid tool calculations and permanent CT installations
- Identify externally upset reeled completion, spoolable completion and pressure barrier during completion installation

Who Should Attend


This course provides an overview of all significant aspects and considerations of coiled tubing for production technologists, production engineers, operation engineers, field technicians and reservoir engineers.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course.

Certificate Accreditations


Certificates are accredited by the following international accreditation organizations:-

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USA International Association for Continuing Education and Training (IACET)

Haward Technology is an Authorized Training Provider by the International Association 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 1-2013 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 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 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.

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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 Fee

As per proposal

Training Methodology

This Trainee-centered course includes the following training methodologies:-

- Talking presentation Slides (ppt with audio)
- Simulation & Animation
- Exercises
- Videos
- Case Studies
- Gamification (learning through games)
- Quizzes, Pre-test & Post-test

Every section/module of the course ends up with a Quiz which must be passed by the trainee in order to move to the next section/module. A Post-test at the end of the course must be passed in order to get the online accredited certificate.

Course Contents

- Coiled Tubing Technology
- What is CT
- Detailed Photos of CT Unit Key Elements
- Well Control Equipment
- Quiz -1
- CT Field Applications
- Quiz – 2, 3, 4, 5, 6, 7, 8
- History
- CT Origin
- Early CT Equipment
- Evolution of CT Equipment
- Quiz – 9
- Inside the Control Cabin of a Modern CT Unit
- CT Unit Rigged Down for Highway Transport
- Photos of Various Offshore CT Operating Environments
- The Business
- New CT Markets / Field Applications
- CT Service Providers
- The Tubing
- Raw Material For CT





- CT Manufacturing
- CT Mechanical Performance
- CT Plastic Deformation Points
- CT Fatigue Modeling Software
- Quiz – 10, 11
- CT Inspection Tools
- Repairs and Splicing
- Quiz – 12
- Workover & Completion Applications
- Common CT Workover Applications
- Overview of Selected Workover Applications
- Removing Sand or Fill From A Wellbore
- Quiz – 13,14,15
- Unloading a Well with Nitrogen
- Fracturing / Acidizing a Formation
- Quiz – 16
- Drilling Applications
- Non-Directional Wells
- Directional Wells
- Quiz – 17
- Wellbore Hydraulics and Wellbore Fluids
- Overbalanced CTD
- Exercise - 1
- Quiz -18
- Underbalanced CTD
- Pipeline Applications
- Land
- Offshore
- Limitations
- Overcoming Pipeline Drag Limitations
- Permanent Installations
- Offshore Flowlines
- Velocity Strings





- Control Lines
- Nomenclature
- Well Drilling – Coiled Tubing
- Buckling of Coiled Tubing
- Truck-Mounted Coiled Tubing Reel Assembly
- Coiled Tubing Reel Assembly
- Hydraulic Coiled Tubing Unit
- Cut-away view of the Injector Head Drive Assembly
- Some Applications of Coiled Tubing
- Sidetrack Procedure
- Coil Tubing Drilling on the North Slope
- Advantages
- Disadvantages
- Schematic View of the Small-Scale Test Loop
- A Schematic for Coiled Tubing Buckling in a Vertical Wellbore
- Postbuckled Configuration of Pipe in a Horizontal Hole
- Sinusoidal Buckling in a Horizontal Wellbore
- Sinusoidal Buckling Load
- Helical Buckling in a Horizontal Wellbore
- General Equation
- Buckling in Vertical Wellbores
- Helical Buckling in a Vertical Wellbore
- Buckling of 2" x 1.688" CT
- Tubing Forces
- Fundamental Questions
- General Force Balance
- Force Balance for Straight Segments
- Exercise – 2
- Derivation
- Force Balance for Segments in Curved Wellbores
- Force Balance for Helically Buckled Segments
- Pressure-Area Force
- Overall Force Balance





- Rigid Tool Calculations
- Permanent CT Installations
- Reeled Completions
- Candidate Selection
- Velocity Strings
- Reeled Production Conduit
- Externally Upset Reeled Completion
- Spoolable Completion
- Pressure Barrier during Completion Installation
- Tubing Connectors
- External Threaded Connector
- External CT-to CT Connector
- Gas Lift Valves and Mandrels
- Exercise – 3
- Exercise – 4
- External Gas Lift Mandrel
- Spoolable Gas Lift Mandrel
- Spoolable Safety Valve
- Additional Reeled Completion Hardware
- Exercise – 5
- Offshore Flowlines
- A Reel of 4.5 in. CT Flowline
- CT Umbilicals (Control Lines)
- Casing and Tubing Repairs
- High Pressure Operations
- Planning Considerations for HPCT Operations
- CT Simulators
- CT String Selection
- Parametric Sensitivity
- CT Simulator Output and Its Interpretation
- HPCT Job Program
- Equipment Selection For HPCT Operations
- CT String





- Injector Head
- Injector Performance Requirements
- Anti-buckling Guide
- Equipment Selection For HPCT Operations
- Consequence of Excessive Snubbing Force on Unsupported CT
- Injector Snubbing Test
- Pressure Control Equipment
- Primary Components
- Secondary Components
- Tertiary Components
- Injector Head Support and Work Platform
- Data Acquisition System (DAS)
- CT Diameter Measurement Tool
- Safety Issues and Minimizing Risk for HPCT Operations
- Operating with Tandem Strippers
- Preventing CT Collapse
- Pressure Testing
- CT String Management

