



COURSE OVERVIEW DE1064 Cementing Operations

Course Title

Cementing Operations

Course Reference

DE1064

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Date/Venue



Session(s)	Date	Venue
1	February 18-22, 2024	Oryx Meeting Room, DoubleTree By Hilton Doha-Al Sadd, Doha, Qatar
2	May 19-23, 2024	
3	October 13-17, 2024	
4	December 08-12, 2024	

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.

Cementing is a fundamental element of effective well construction. By understanding cement chemistry, additive use, and lab procedures the participants will be able to build a solid foundation to design and execute cement jobs. Mud removal and centralization will be taught so that the participants can apply effective processes to ensure cement job success.



Special purpose cements will be discussed in a way to show when they should and should not be used, as well as how they can be used to solve challenges encountered in complex and extreme well environments. Foamed, engineered particle sized, flexible, and salt cements will also be covered in detail.



During this course, participants will practice cementing calculations, as well as job design exercises and cement evaluation methods using real-life examples. Liner cementing and stage cementing jobs will be developed in the classroom. Cement design software will also be demonstrated.

Course Objectives

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

- Apply and gain an in-depth knowledge on cementing operations
- Demonstrate operational knowledge and understanding on how to use cementing additives properly to improve and reduce job costs
- Demonstrate operational knowledge and understanding on how cements are classified
- Demonstrate operational knowledge and understanding on how to interpret laboratory test results
- Perform primary cementing operations to include casing cementing, liner cementing, multi-stage cementing
- Conduct remedial squeeze jobs and selection of squeeze tools
- Perform remedial cementing plug operations to improve overall job success
- Perform the overall cementing operation i.e. perform primary and remedial cementing operations to include: casing cementing, liner cementing, multi-stage cementing, plug cementing, the use of cementing additives properly to improve and reduce job costs, interpret laboratory test results, conduct squeeze jobs and selection of squeeze tools
- Perform cement plug operations to improve overall job success and interpret cement sheath evaluation logs, all under minimum supervision
- Demonstrate operational knowledge and understanding on how to calculate cement slurry volumes the following types of casing jobs primary casing, intermediate casing, production casing and liners know how to calculate differential pressure to bump the cement plug and to calculate displacement volumes
- Demonstrate operational knowledge and understanding on how to identify cementing float equipment
- Discuss cementing operations, cement rheology, cementing equipment and cementing calculations and laboratory testing
- Explain well parameters to be considered for cementation, preparation of well and successful execution and how to use cementing additives properly to improve and reduce job costs
- Describe how cements are classified and how to interpret laboratory test results
- Demonstrate primary cementing operations, casing cementing, linear cementing, multi-stage cementing, remedial cementing and plug cementing
- Conduct squeeze jobs and selection of squeeze tools, perform cement plug operations to improve overall job, interpret cement sheath evaluation logs and calculate cement slurry volumes
- Explain types of casing jobs, primary casing, intermediate casing and production casing and liners.
- Calculate differential pressure to pump the cement plug and calculate displacement volumes

- Discuss ultra light weight cements, horizontal well cementing, evaluation of the job, reasons for failures and cement spacers and flushes
- Describe casing and squeeze tool hydraulics, tuned cementing, right angle set cement, API connection ratings and formulas and H.P.H.T cementing technology
- Explain squeeze techniques, squeezing fractured zones, packer squeeze tools, balance plug method and cementing problems

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 cementing operations for subsurface supervisors, senior engineers, mud engineers, cementing engineers, drilling engineers, drilling representatives, workover and completions personnel, drilling contractors, cement company personnel and for those who are responsible in cementing operations.

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\$ 8,500 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 **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 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. Konstantin Zorbalas, MSc, BSc, is a Senior Petroleum Engineer & Well Completions Specialist with over 25 years of offshore and onshore experience in the Oil & Gas, Refinery & Petrochemical industries. His wide expertise includes Workovers & Completions, Petroleum Risk & Decision Analysis, Acidizing Application in Sandstone & Carbonate, Well Testing Analysis, Stimulation Operations, Reserves Evaluation, Reservoir Fluid Properties, Reservoir Engineering & Simulation Studies, Reservoir Monitoring, Artificial Lift Design, Gas Operations, Workover/Remedial Operations & Heavy Oil Technology, Applied Water Technology, Oil & Gas Production, X-mas Tree & Wellhead Operations & Testing, Artificial Lift Systems (Gas Lift, ESP, and Rod Pumping), Well Cementing, Production Optimization, Well Completion Design, Sand Control, PLT Correlation, Slickline Operations, Acid Stimulation, Well testing, Production Logging, Project Evaluation & Economic Analysis. Further, he is actively involved in **Project Management** with special emphasis in production technology and field optimization, performing conceptual studies, economic analysis with risk assessment and field development planning. He is currently the **Senior Petroleum Engineer & Consultant of National Oil Company** wherein he is involved in the mega-mature fields in the Arabian Gulf, predominantly carbonate reservoirs; designing the acid stimulation treatments with post-drilling rigless operations; utilizing CT with tractors and DTS systems; and he is responsible for gas production and preparing for reservoir engineering and simulation studies, well testing activities, field and reservoir monitoring, production logging and optimization and well completion design.

During his career life, Mr. Zorbalas worked as a **Senior Production Engineer, Well Completion Specialist, Production Manager, Project Manager, Technical Manager, Technical Supervisor & Contracts Manager, Production Engineer, Production Supervisor, Production Technologist, Technical Specialist, Business Development Analyst, Field Production Engineer and Field Engineer.** He worked for many **world-class oil/gas companies** such as **ZADCO, ADMA-OPCO, Oilfield International Ltd, Burlington Resources** (later acquired by **Conoco Phillips**), **MOBIL E&P, Saudi Aramco, Pluspetrol E&P SA, Wintershall, Taylor Energy, Schlumberger, Rowan Drilling and Yukos EP** where he was in-charge of the **design and technical analysis** of a gas plant with capacity **1.8 billion m³/yr gas**. His achievements include **boosting oil production 17.2% per year** since 1999 using **ESP and Gas Lift systems**.

Mr. Zorbalas has **Master and Bachelor** degrees in **Petroleum Engineering** from the **Mississippi State University, USA**. Further, he is an **SPE Certified Petroleum Engineer, Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)**, an active member of the **Society of Petroleum Engineers (SPE)** and has numerous scientific and technical publications and delivered innumerable training courses, seminars and workshops worldwide.





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:

0730 - 0800	Registration & Coffee
0800 - 0815	Welcome & Introduction
0815 - 0830	PRE-TEST
0830 - 0900	<i>Introduction to Cementing Operations</i>
0900 - 0915	<i>Cement Rheology</i>
0915 - 0930	<i>Cementing Equipment</i>
0930 - 0945	Break
0945 - 1030	<i>Cementing Calculations & Laboratory Testing</i>
1030 - 1130	<i>Well Parameters to be Considered for Cementation</i>
1130 - 1230	<i>Preparation of Well & Successful Execution</i>
1230 - 1245	Break
1245 - 1345	<i>How to Use Cementing Additives Properly to Improve & Reduce Job Costs</i>
1345 - 1420	<i>How Cements are Classified</i>
1420 - 1430	Recap
1430	Lunch & End of Day One

Day 2:

0730 - 0830	<i>How to Interpret Laboratory Test Results</i>
0830 - 0900	<i>Primary Cementing Operations</i>
0900 - 0930	<i>Casing Cementing</i>
0930 - 0945	Break
0945 - 1030	<i>Linear Cementing</i>
1030 - 1130	<i>Multi-Stage Cementing</i>
1130 - 1230	<i>Remedial Cementing</i>
1230 - 1245	Break
1245 - 1345	<i>Plug Cementing</i>
1345 - 1420	<i>Conduct Squeeze Jobs & Selection of Squeeze Tools</i>
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3:

0730 - 0830	<i>Perform Cement Plug Operations to Improve Overall Job Success</i>
0830 - 0900	<i>Interpret Cement Sheath Evaluation Logs</i>
0900 - 0930	<i>Calculate Cement Slurry Volumes</i>
0930 - 0945	Break
0945 - 1030	<i>Types of Casing Jobs</i>
1030 - 1130	<i>Primary Casing</i>
1130 - 1230	<i>Intermediate Casing</i>
1230 - 1245	Break
1245 - 1345	<i>Production Casing & Liners</i>
1345 - 1420	<i>Calculate Differential Pressure to Pump the Cement Plug</i>
1420 - 1430	Recap
1430	Lunch & End of Day Three





Day 4:

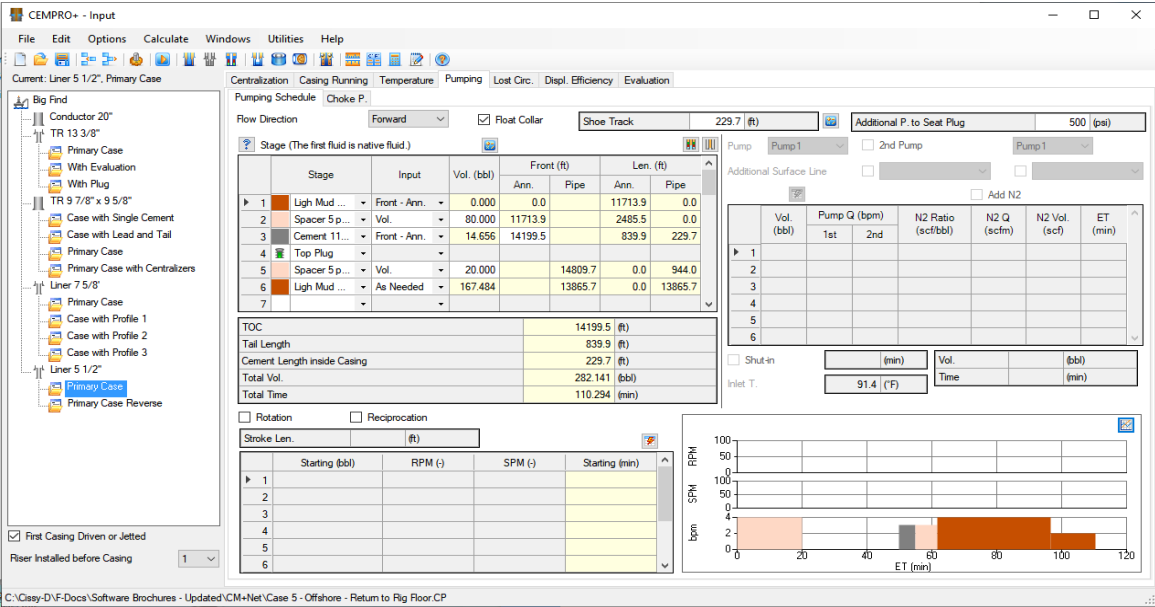
0730 – 0830	<i>Calculate Displacement Volumes</i>
0830 – 0900	<i>Cementing Float Equipment</i>
0900 – 0930	<i>Ultra Light Weight Cements</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<i>Horizontal Well Cementing</i>
1030 – 1130	<i>Evaluation of the Job, Reasons for Failures</i>
1130 – 1230	<i>Cement Spacers & Flushes</i>
1230 – 1245	<i>Break</i>
1245 – 1345	<i>Casing & Squeeze Tool Hydraulics</i>
1345 – 1420	<i>Tuned Cementing</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Four</i>

Day 5:

0730 – 0830	<i>Right Angle Set Cement</i>
0830 – 0900	<i>API Connection Ratings & Formulas</i>
0900 – 0930	<i>H.P.H.T Cementing Technology</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<i>Squeeze Techniques</i>
1030 – 1130	<i>Squeezing Fractured Zones</i>
1130 – 1230	<i>Packer Squeeze Tools</i>
1230 – 1245	<i>Break</i>
1245 – 1315	<i>Balance Plug Method</i>
1315 – 1345	<i>Cementing Problems</i>
1345 – 1400	<i>Course Conclusion</i>
1400 – 1415	<i>POST-TEST</i>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

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 “CEMPRO + Integrated Cementing” software.



The screenshot displays the CEMPRO+ software interface with the following components:

- File Tree (Left):** Lists project files such as 'Conductor 20"', 'TR 13 3/8"', 'Primary Case', 'With Evaluation', 'With Plug', 'TR 9 7/8" x 9 5/8"', 'Case with Single Cement', 'Case with Lead and Tail', 'Primary Case', 'Primary Case with Centralizers', 'Liner 7 5/8"', 'Primary Case', 'Case with Profile 1', 'Case with Profile 2', 'Case with Profile 3', 'Liner 5 1/2"', 'Primary Case', and 'Primary Case Reverse'.
- Centralization / Casing Running / Temperature / Pumping / Lost Circ. / Displ. Efficiency / Evaluation:** A series of tabs for different simulation aspects.
- Flow Direction:** Set to 'Forward'. Includes 'Float Collar' and 'Shoe Track' (229.7 ft) options.
- Stage Table:**

Stage	Input	Vol. (bbl)	Ann.	Pipe	Ann.	Pipe
1	Ligh Mud ...	Front - Ann.	0.000	0.0	11713.9	0.0
2	Spacer 5 p...	Vol.	80.000	11713.9	2485.5	0.0
3	Cement 11...	Front - Ann.	14.656	14199.5	839.9	229.7
4	Top Plug					
5	Spacer 5 p...	Vol.	20.000	14809.7	0.0	944.0
6	Ligh Mud ...	As Needed	167.484	13865.7	0.0	13865.7
7						
- Summary Table:**

TOC	14199.5 (ft)
Tail Length	839.9 (ft)
Cement Length inside Casing	229.7 (ft)
Total Vol.	282.141 (bbl)
Total Time	110.294 (min)
- Rotation / Reciprocation:** Includes 'Stroke Len.' and a table for starting points.

Stroke Len. (ft)	Starting (bbl)	RPM (-)	SPM (-)	Starting (min)
- Graph:** A bar chart showing Pump Q (bpm) vs ET (min). The x-axis ranges from 0 to 120 minutes, and the y-axis ranges from 0 to 100 bpm. The chart shows a pulse of approximately 25 bpm between 60 and 100 minutes.

CEMPRO+ Integrated Cementing Software

Course Coordinator

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