

COURSE OVERVIEW DE0125
Matrix Stimulation

Course Title
 Matrix Stimulation

Course Date/Venue
 Session 1: February 25-29, 2024/Kizkulesi,
 Crown Plaza Istanbul Asia Hotels
 & Convention Center, Istanbul,
 Turkey
 Session 2: March 03-07, 2024/The Mouna
 Meeting Room, The H Dubai Hotel,
 Sheikh Zayed Rd - Trade Centre,
 Dubai, UAE



Course Reference
 DE0125

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.



Matrix stimulation is a treatment designed to treat the near-wellbore reservoir formation rather than other areas of the production conduit, such as the casing across the production interval, production tubulars or the perforations. Matrix stimulation treatments include acid, solvent and chemical treatments to improve the permeability of the near-wellbore formation, enhancing the productivity of a well. Matrix stimulation is a process of injecting a fluid into the formation, either an acid or solvent at pressures below the fracturing pressure, to improve the production or injection flow capacity of a well.



This course is designed to provide participants with a detailed and up-to-date overview of matrix stimulation. It covers the formation characterization; the nature of formation damage; the acidizing fluids selection; the fluid placement and diversion in sandstone acidizing; the matrix acidizing treatment; the principles of acid fracturing; the mechanics of acid fracture propagation; and the acidizing techniques for extended reach and horizontal wells.



Course Objectives

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

- Apply and gain systematic techniques and methodologies on matrix stimulation
- Identify the formation characterization and illustrate the nature of formation damage
- Select acidizing fluids and implement fluid placement and diversion in sandstone acidizing
- Evaluate the matrix acidizing treatment and explain the principles of acid fracturing
- Illustrate the mechanics of acid fracture propagation and implement acidizing techniques for extended reach and horizontal wells

Who Should Attend

This course covers systematic techniques and methodologies on matrix stimulation for production engineers and other petroleum industry professionals who are involved in the important activities of reservoir evaluation, development and management and for those who require invaluable skills in the application of the techniques described for the successful exploitation of oil and gas reservoirs.

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

Istanbul	US\$ 8,500 per Delegate + VAT . This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), 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.

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. Victor Saran, MSc, BSc, is a Senior Drilling & Petroleum Engineer with over 40 years of offshore & onshore experience within the Oil & Gas and Petroleum industries. His wide expertise covers Wellhead Testing & Operations, Well Stimulation & Reservoir Management, Well Performance, Well Servicing, Well Killing Procedures, Well Completion, Well Fracturing, Well Testing, Acid Additives, Perforating Techniques, Sandstone Acidizing, Carbonate Acidizing, Acid Fracturing, Production Engineering, Well Monitoring & Testing, Applied Reservoir Engineering, Water Flooding, Workover & Completions, Injection Systems, Artificial Lift Systems, Gas Lift, ESP, Rod Pumping, Production Testing & Optimization, Slickline and Electric Line Operations, Perforating & Logging, Coiled Tubing Operations, Nozzles, Motors, Deposits Removal & Inhibition and Asphaltnes-Sulphates, Workover Completion, Water Injection & Gas Lift, Nodal Analysis, Drill Stem Testing, H₂S Crude Oil and Oil & Gas Production. Further, he is also well-versed in risk assessments, pipelines construction, pump & loading terminals, material and services procurement, budgeting, contracts & logistics, safety and personnel issues, tendering procedures, budget and work program, cost control–cost recovery, selection of materials and services and quality control. Currently, he is the Country Manager of Energean Oil & Gas wherein he is responsible in organizing and supervising the drilling of exploration wells and well connections and testing.

During Mr. Saran’s life, he has gained his practical and field experience through his various significant positions as the **Completions Consultant, Lecturer/Instructors, Part-Time Assistant Lecturer, Part-Time Instructor, Technical Consultant, Drilling & Workover Manager, Production Manager, Production Engineer, Petrochemical Engineer, Mechanical Engineer, Petroleum Services Engineer** for numerous international companies and universities that includes **Lukoil Neftochim, J&P Avax, Kavala Oil Greece, North Aegean Petroleum Company, Petrola International, Dowell Schlumberger, Technological Institute of Kavala, University of Thessaloniki and University of Crete.**

Mr. Saran has a **Master’s degree in Fuel Technology** and a **Bachelor’s degree in Mechanical Engineering** from the **University of Portsmouth Polytechnic, UK** and the **University of Westminster London, UK** respectively. Further, he is a **Certified Instructor/Trainer, a Certified Trainer/Assessor** by the **Institute of Leadership & Management (ILM)** and has conducted numerous trainings, workshops and conferences 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- 0930	Overview of Reservoir Stimulation Inflow Performance • Alterations in the Near-Wellbore Zone • Tubing Performance & NODAL* Analysis • Decision Process for Well Stimulation • Reservoir Engineering Considerations for Optimal Production Enhancement Strategies • Stimulation Execution
0930 - 0945	Break
0945 - 1100	Formation Characterization Pressure Derivative in Well Test Diagnosis • Parameter Estimation from Pressure Transient Data • Test Interpretation Methodology • Analysis with Measurement of Layer Rate • Layered Reservoir Testing • Testing Multilateral & Multibranch Wells • Permeability Determination from a Fracture Injection Test
1100 - 1230	Formation Characterization (cont'd) Rock Behavior • Rock Mechanical Property Measurement • State of Stress in the Earth • In-Situ Stress Management • Depth • Temperature • Properties Related to the Diffusion of Fluids • Properties Related to the Deformation & Fracturing of Rock • Zoning
1230 - 1245	Break
1245 - 1420	Nature of Formation Damage Pseudodamage vs Formation Damage • True Formation Damage • Origin of Formation Damage • Damage Removal
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 - 0930	Acidizing Physics Solid-Liquid Reaction Under No-Flow Conditions • Solid-Liquid Reaction with a Moving Fluid • Other Instabilities
0930 - 0945	Break
0945 - 1115	Acidizing Physics (cont'd) Practical Implications in Sandstone Acidizing • Practical Implications in Carbonate Acidizing
1115 - 1245	Matrix Acidizing of Sandstones Criteria for Fluid Selection • Organization of the Decision Tree
1245 - 1300	Break



1300 - 1420	Matrix Acidizing of Sandstones (cont'd) <i>Preflush & Postflush • Acidizing Sandstones with Mud Acid</i>
1420 - 1430	Recap <i>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</i>
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 - 0930	Matrix Acidizing of Sandstones (cont'd) <i>Other Acidizing Formulations • Matrix Acidizing Design</i>
0930 - 0945	<i>Break</i>
0945 - 1115	Fluid Placement & Diversion in Sandstone Acidizing <i>Techniques of Fluid Placement • Diverting Agents • Laboratory Characterization of Diverting Agent Efficiency • Prediction of Efficiency at Reservoir Conditions</i>
1115 - 1245	Matrix Acidizing Treatment Evaluation <i>Derivation of Bottomhole Parameters from Wellhead Measurements • Monitoring Skin Evolution During Treatment</i>
1245 - 1300	<i>Break</i>
1300 - 1420	Matrix Acidizing Treatment Evaluation (cont'd) <i>The Prouvost & Economides Method • Discussion: Components of Pressure Response • Example Calculation</i>
1420 - 1430	Recap <i>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</i>
1430	<i>Lunch & End of Day Three</i>

Day 4

0730 - 0930	Principles of Acid Fracturing <i>Comparison of Acid Fracturing vs Fracturing with Propping Agent & Nonreactive Fluids • Factors Controlling the Effectiveness of Acid Fracturing Treatments</i>
0930 - 0945	<i>Break</i>
0945 - 1115	Principles of Acid Fracturing (cont'd) <i>Acid Fluid Loss • Acid Spending During Fluid Injection • Treatment Design</i>
1115 - 1130	<i>Break</i>
1130 - 1300	Principles of Acid Fracturing (cont'd) <i>Acid Fracturing Treatment Models • Example Application of Acid Fracture Design</i>
1300 - 1420	Acid Fracture Propagation & Production <i>Mechanisms of Acid Penetration • Production Model • Production Behavior of Acid Fractures</i>
1420 - 1430	Recap <i>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</i>
1430	<i>Lunch & End of Day Four</i>

Day 5

0730 - 0930	Acid Fracture Propagation & Production (cont'd) <i>Performance Type Curves • Comparison Between Acid & Propped Fractures</i>
0930 - 0945	<i>Break</i>
0945 - 1130	Extended Reach & Horizontal Wells <i>Performance Comparison Between Fully Completed Vertical & Horizontal Wells</i>
1130 - 1230	Extended Reach & Horizontal Wells (cont'd) <i>Comparison of Fully Completed Horizontal Wells with Hydraulically Fractured Vertical Wells • Borehole Stability</i>
1230 - 1245	<i>Break</i>
1245 - 1345	Extended Reach & Horizontal Wells (cont'd) <i>Stimulation • Performance of Hydraulically Fractured Horizontal Wells</i>
1345 - 1400	Course Conclusion <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course</i>
1400 - 1415	POST-TEST
1415 - 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Practical Sessions

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



Course Coordinator

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