

#### Course Description

This course discusses the sand control considerations involved in drilling and completing a well to provide candidates with the understanding they need for their own projects. It introduces the various sand control techniques commonly used across the industry, including surface sand handling, rate control, consolidation, standalone screen, gravel packs, high rate water packs and frac packs. The course also discusses the key design and operational criteria for each treatment together with practical exercises to put theory into practice and cement what the attendees have learned.

#### Why Attend

Participants will gain a good understanding of:

- Sand control techniques used across the industry, including their advantages and limitations
- Operational consideration and differences between various sand control treatments
- Sand control design, including screen and gravel selection
- Gravel placement techniques for both open and cased hole wells

- Part 2: Cased Hole Sand Control • 14 - 17 February 2022
- Part 3: Open Hole Sand Control • 4 - 7 April 2022

**Participants will be provided with access to an industry-standard sand control software package during the course.**

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Contact us at [apweb@spe.org](mailto:apweb@spe.org) for Group Registrations**

#### Your Instructor

Kesavan Govinathan is a Technical Sales Engineer based in Asia with DuneFront and has 10 years of experience in the field of sand control.

Prior to joining DuneFront, he worked for Halliburton in numerous positions, including field engineering and technical roles for various clients in sand control and stimulation related services in Asia-Pacific, as well as training young engineers.

During this time, he was involved with a variety of challenging projects such as deepwater open hole gravel packs (alpha/beta and shunt tube techniques), single trip multi-zone gravel packs, and frac packs in highly deviated wells. Currently, Kesavan works internationally on the design and evaluation of sand control completions for various clients.

He has authored many presentations and technical papers in the field of sand control, sand consolidation, and well stimulation. Kesavan has a Bachelor of Science in Chemical Engineering from Universiti Teknologi Malaysia.

#### PRELIMINARY AGENDA

DAY 1 (6 December 2021)	
1230 - 1300	Attendee Login and Ice Breaking Session
1300 - 1310	<b>Welcome and Introduction by SPE</b> <ul style="list-style-type: none"> <li>• Housekeeping Information</li> <li>• Training Course Agenda Review</li> </ul>
1310 - 1415	<b>Session 1: Sand Control Introduction</b> Introduce the concept of sand control to understand why it is a concern and needs to be managed, including issues with surface and downhole equipment, production limits, and HSE considerations. Explore the factors affecting sand production and its prediction using various industry testing methodologies to understand its dynamic nature over the life of the well, including the importance of continued monitoring. <ul style="list-style-type: none"> <li>• Reasons for sand control</li> <li>• Factors affecting sand production</li> <li>• Formation sand characteristics and classifications</li> <li>• Predicting sand production</li> <li>• Sand production monitoring</li> </ul>
1415 - 1430	Break
1430 - 1600	<b>Session 2: Sand Control Techniques</b> Introduce the various open hole and cased hole sand control techniques used across the industry including surface handling, rate control, consolidation, standalone screen, pre-packed screens, gravel packs, high rate water packs and frac packs. Each technique is reviewed to identify its advantages, challenges and applications, culminating in a comparison between all techniques to provide attendees with an application guide for their operations. <ul style="list-style-type: none"> <li>• Overview of passive, chemical, and mechanical sand control techniques used in the industry</li> <li>• Identification of advantages, challenges, and application of each technique</li> <li>• Comparison and application guide for all techniques in both open/cased hole scenarios</li> </ul>
1600 - 1615	Break
1615 - 1730	<b>Session 3: Screen and Gravel Selection</b> There are a variety of practices when it comes to sizing screens and gravel for sand control applications which have evolved over time. This session details the history of screen sizing to give important context to the current best practices used in the industry. <ul style="list-style-type: none"> <li>• Review history of screen sizing including works of Coberly, Penberthy and Cope, Gulf Coast, Tiffin, Gillespie, and Chanpura</li> <li>• Review Saucier's work on gravel sizing and ISO 13503-2:2006 proppant requirement for sand control</li> <li>• Understand current best practices for screen and gravel sizing as used across the industry</li> </ul>
1730 - 1800	<b>Day 1 Wrap Up</b>

DAY 2 (7 December 2021)	
1230 - 1300	Attendee Login and Ice Breaking Session
1300 - 1430	<b>Session 4: Screen and Gravel Selection Exercise</b> Participants will be provided with PSD lab test data and will use what they have learned on the course to analyze and interpret it. They will determine the most appropriate screen and/or gravel sizing for both standalone screen and gravel pack applications. <ul style="list-style-type: none"> <li>• Calculation of all relevant parameters in the analysis of PSD data</li> <li>• Selection of appropriate sand control completion technique</li> <li>• Sizing of screen and or gravel pack for standalone screen and gravel pack</li> </ul>
1430 - 1445	Break
1445 - 1615	<b>Session 5: Gravel Placement Techniques</b> This session reviews the fundamentals of gravel transport and placement, considering the various gravel placement techniques used in the industry. The advantages and challenges of each technique are considered to determine their application window, with animations used to enable attendees to visualize the mechanisms involved. <ul style="list-style-type: none"> <li>• Alpha/beta, alpha/alpha gravel packing</li> <li>• Slurry pack, shunt tubes</li> <li>• High rate water pack and frac pack</li> <li>• Understand the design considerations, advantages, challenges, and applications of each placement technique</li> </ul>
1615 - 1630	Break
1630 - 1800	<b>Day 2 Wrap Up with Practical Exercises and Q&amp;A</b>