

#### Course Description

This course discusses the different gravel packing techniques available for cased hole completion, including cased hole gravel pack below fracture pressure, high rate water pack and frac pack. The course also discusses the importance of perforation packing along with the key design and operational criteria for each treatment with practical exercise used throughout to put theory into practice and cement what the attendees have learned.

#### Why Attend

Participants will gain a good understanding of:

- Perforation techniques for gravel packing
- Design of gravel packs for cased hole wells with
- Practical exercise on cased hole gravel pack below fracture pressure and high rate water pack

- Part 1: Introduction to Sand Control • 6 – 7 December 2021
- 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 (14 February 2022)		DAY 3 (16 February 2022)	
1230 – 1300	Attendee Login and Ice Breaking Session	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>	1300 – 1415	<b>Session 4: High Rate Water Pack and Frac Pack</b> This session reviews gravel pack placement above fracture pressure in which attendees will be able to better understand the differences between high rate water pack design and frac pack design. The design considerations for both treatment method will also be discussed. <ul style="list-style-type: none"> <li>• Review cased hole gravel pack above fracture pressure (high rate water pack and frac pack)</li> <li>• Understand the differences between the two treatments</li> </ul>
1310 – 1430	<b>Session 1: Perforating for Sand Control</b> Perforations are the only connection between the wellbore and the reservoir in cased hole completion, so their technique and design used are critical to success. This session introduces the various perforating strategies and discusses various considerations for sand control applications. <ul style="list-style-type: none"> <li>• Perforation geometry</li> <li>• Perforation techniques</li> <li>• Design and operational considerations</li> <li>• Perforation damage</li> <li>• Perforation for gravel packing</li> </ul>	1415 – 1430	Break
1430 – 1445	Break	1430 – 1645	<b>Session 5: High Rate Water Pack Practical Exercise</b> Participants will be provided with well data and they will be guided to set up and design a high rate water pack job in a sand control simulator. The impact of both pumping and completion considerations on the design will also be evaluated. <ul style="list-style-type: none"> <li>• Setup a high rate water pack treatment in sand control simulator</li> <li>• Design the high rate water pack operation and evaluate the design changes to obtain desired packing efficiency</li> </ul>
1445 – 1615	<b>Session 2: Cased hole Gravel Pack below Fracture Pressure</b> This session reviews gravel pack placement below fracture pressure in cased hole applications along with modelling considerations. Attendees will be able to understand the importance of perforation packing in cased hole gravel pack and how to obtain an optimum perforation packing. <ul style="list-style-type: none"> <li>• Review the placement mechanism for cased hole gravel pack below fracture pressure</li> <li>• Understand the importance of perforation packing</li> </ul>	1645 – 1700	<b>Day 3 Wrap Up with Q&amp;A</b>
1615 – 1645	Break	<b>DAY 4 (17 February 2022)</b>	
1645 – 1700	<b>Day 1 Wrap Up with Q&amp;A</b>	1230 – 1300	Attendee Login and Ice Breaking Session
<b>DAY 2 (15 February 2022)</b>		1300 – 1430	<b>Session 5: Introduction to Gauge Evaluation</b> This session reviews the theory and application of downhole gauge data analysis in the evaluation of gravel packs for better understanding of downhole mechanisms <ul style="list-style-type: none"> <li>• Review all the different methods to evaluate success of a gravel pack treatment</li> <li>• Understand downhole gauge data analysis and how to interpret the data</li> </ul>
1230 – 1300	Attendee Login and Ice Breaking Session	1430 – 1445	Break
1300 – 1500	<b>Session 3: Cased Hole Gravel Pack Practical Exercise</b> Participants will be provided with well data and they will be guided to set up and design a cased hole gravel pack job in a sand control simulator. The impact of both pumping and completion considerations on the design will also be evaluated. <ul style="list-style-type: none"> <li>• Setup a cased hole gravel pack treatment in sand control simulator</li> <li>• Design the gravel pack operation and evaluate the impact of design changes on the pack efficiency</li> </ul>	1445 – 1600	<b>Session 6: Cased hole Gravel Pack Evaluation Example</b>
1500 – 1515	Break	1600 – 1700	<b>Day 4 Wrap Up with Q&amp;A</b>
1515 – 1615	<b>Session 3: Cased Hole Gravel Pack Practical Exercise (cont.)</b> Review and discuss outcome of exercise		
1615 – 1700	<b>Day 2 Wrap Up with Q&amp;A</b>		