ACID GAS INJECTION

Instructed by John Carroll, PhD, PEng, Gas Liquids Engineering Ltd.

COURSE DESCRIPTION

Acid gas injection (AGI) was developed in Western Canada and it has become the method of choice to monetize small reserves of sour natural gas. AGI is an environmentally friend way to deal with hydrogen sulfide producing almost no sulfurous emissions. It also plays an important role in reducing carbon dioxide emissions from gas processing plants. AGI is also an option for larger producer who do not want to produce elemental sulfur. Many of the principles in AGI can be directly transferred to the emerging technology of carbon capture and storage (CCS).

The course is a treatment of the important subject acid gas injection. This course provides the following information: (1) A discussion of the relevant physical properties of hydrogen sulfide, carbon dioxide, and acid gas mixtures, (2) A detailed review of the water content of acid gas mixtures and its relevance to the injection process. (3) Selection of an injection zone. (4) Considerations for the design of an acid gas compressor. (5) Health and safety concerns. Case studies from actual injection schemes showing the application of the design principles are presented, many worked on by the instructor.

The instructor has experience with AGI both from a theoretical point of view (physical properties, phase equilibrium, engineering design, etc.) and in the field where he has worked on more than 20 projects. He is the author of the book Acid Gas Injection and Carbon Dioxide Sequestration.

Time spent in the course is eligible for Profession Development Hours and a certificate will be issued after the course is finished, signed by the instructor and the organizer.

COURSE INFORMATION AND REGISTRATION

Date: December 9th, 2016, Friday

Time: 8:00am - 5:00pm

Location: Northcote, Bow Valley Square

Address: Suite 300, 205-5 Avenue SW, Calgary, Alberta, T2P 2V7

Name: Alice Wu

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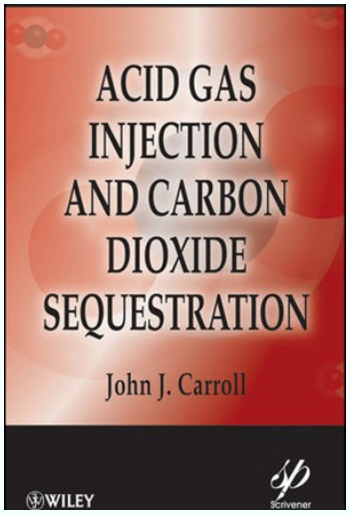
Email: alicewu@spheretechconnect.com

Website: www.spheretechconnect.com



INSTRUCTOR

John J. Carroll, PhD, PEng is the Director, Geostorage Process Engineering for Gas Liquids Engineering, Ltd. in Calgary, Canada. Dr. Carroll holds bachelor and doctoral degrees in chemical engineering from the University of Alberta and is a registered professional engineer in the provinces of Alberta and New Brunswick. He has more than twenty five years' experience in the areas of thermodynamics, phase equilibria, and physical property calculations, particularly in areas of interest to the petroleum and natural gas industries and sour, those containing hydrogen sulfide, systems in particular. He has worked as a process engineer on more than 25 gas plants and troubleshooting.

Dr. Carroll is the author of the book Acid Gas Injection and Carbon Dioxide Sequestration published by Scrivener Publishing and Natural Gas Hydrates: A Guide for Engineers published by Gulf Professional Publishers (now in the third edition). In addition he has contributed to more than 50 papers, in both scholarly journals and technical magazines, and contributed to approximately 60 conference presentations.

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COURSE OUTLINE

1. Introduction
   - 1.1 Natural Gas – Sweet and Sour
   - 1.2 Sweetening Natural Gas
   - 1.3 Acid Gas
   - 1.4 What is acid gas injection?
2. Hydrogen Sulfide and Carbon Dioxide
   - 2.1 Properties of Hydrogen Sulfide
   - 2.2 Properties of Carbon Dioxide
   - 2.3 Properties of Acid Gas Mixtures
   - 2.4 Effect of Hydrocarbons
3. Phase Equilibrium in Acid Gas
   - 3.1 Description
   - 3.2 Calculation of Phase Equilibrium
4. Water Content of Acid Gas
   - 4.1 Water Content of Sweet Gas
   - 4.2 Water Content of Acid Gas
   - 4.3 Water Content of Liquids
5. Hydrates
   - 5.1 Introduction to Hydrates
   - 5.2 Hydrates of Acid Gas
   - 5.3 Hydrate Forming Conditions
   - 5.4 Mitigation of Hydrate Formation
6. Injection Profiles
   - 6.1 Calculation of Injection Profiles
   - 6.2 Effect of Hydrocarbons
7. Compressor Design
   - 7.1 Basic Design
   - 7.2 Phase Equilibrium
   - 7.3 Water Knockout
8. Selection of Injection Zone
9. Cost Estimates
10. Health, Safety, and Environment
    - 10.1 Emergency Planning
11. Case Studies

STC Training Course Registration

Registration Information (Return to alicewu@spheretechconnect.com)

Course Name	Acid Gas Injection By John Carroll

Name		Title	
Direct Phone		Cell Phone	
Company			
Billing Address			
Contact Email			
How many people registered together?			
Signature			

1. Are you a student in University? Yes / No

2. Have you been any STC previous events? Yes / No

Payment Method

VISA ☐ Master Card ☐ American Express ☐ Company Cheque ☐

Card Number			
Expire Date		Card Holder Name	
Signature			