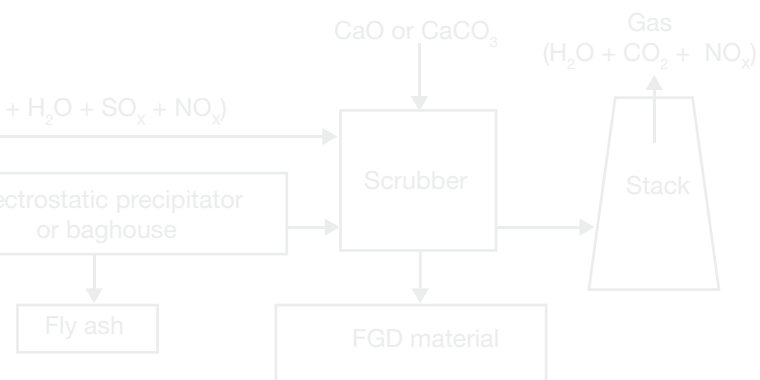




Flue Gas Desulfurization Theory & Operation



A Sciencetech
Training Course

February 2-4, 2016
Clearwater, Florida

▶ Course Overview

The current “Green” mindset of government and industry puts coal-fired power plants under increased pressure to remove sulfur dioxide from their exhaust.

In order to make cost-effective decisions and get the maximum benefit from your scrubbers, it is vital to have the best training and information available.

This specialty course meets that need. It begins with basic chemistry concepts and discusses the following methods of scrubbing sulfur dioxide from flue gas emissions.

- Calcium-based wet scrubbing
- Magnesium-based wet scrubbing
- Dual alkali wet scrubbing
- Lime spray-drying
- Wellman Lord Process
- Alstom Seawater FGD

Attendees will gain a thorough understanding of the chemistry behind the scrubber operation (both fossil scrubber chemistry and lime/limestone process chemistry are covered).

To ensure proper operation of the scrubbers, we have also included analysis and sampling methods, monitoring process performance, and acquiring and handling samples.



▶ Who Should Attend

Power plant managers, operators, and chemistry and environmental personnel will benefit from attending this course.

Valuable information is also included to aid corporate engineering in evaluating process design.

► This Course Covers

- Water chemistry concepts
 - The atom, atomic structure, and chemical periodicity
 - Compounds, compound formation, and chemical reactions
 - Solutions in power plant chemistry
 - pH and conductivity of solutions
- Corrosion and corrosion control
 - Corrosion mechanisms and types of corrosion
 - Chemistry aspects of corrosion
- Fossil scrubber chemistry
 - Calcium-based wet scrubbing
 - Magnesium-based wet scrubbing
 - Dual alkali wet scrubbing
 - Lime spray-drying
 - Wellman Lord process
 - Alstom seawater (FGD)
- Lime/Limestone process chemistry
 - Gas-liquid interactions
 - Liquid-liquid interactions
 - Liquid-solid interactions
- Limestone scrubber process considerations
 - Reagent selection / feed
 - Reagent size reduction / classification
 - Absorber designs and additives
 - Recycle streams
 - Reject stream
 - Product gypsum
 - Waste handling
- Monitoring process performance
 - Flue gas measurements
 - Reagent feed system measurements
 - Slurry measurements
 - Alkaline reagent utilization
 - Ion balance calculations
 - Liquid phase alkalinity
 - Relative saturation
 - Product solids measurements and characterization
- Acquiring and handling samples
 - Flue gas desulfurization system samples
 - Obtaining representative samples
 - Sample handling, preservation, and storage

► About the Instructor



In his 14 years at Florida Power Corporation's Crystal River facility, Mr. Witherow held positions as Laboratory Supervisor, Plant Chemist, and Head of Corporate Fossil Chemistry. He also served as Corporate Quality Control Officer for the State of Florida COMPQA program.

- Over 30 years experience in industries including:
 - Organic feedstock production
 - Coal gasification pilot plant research
 - Environmental laboratory direction
 - Electric utility operation
- Utility experience includes:
 - Oversight of corporate chemistry program
 - Technical support to simple cycle combustion turbines and combined cycle CT/HRSG plants
- High purity water production processes includes:
 - Cold lime softening
 - Demineralization
 - Evaporation
 - Reverse osmosis
- Cooling tower experience includes:
 - Hyperbolic and mechanical draft salt water systems using dispersants, penetrants, and biocides for fill deposition control
- Central laboratory oversight includes:
 - Fuel analyses (oil and coal)
 - Transformer oil analyses
 - Water analyses using AA, HGA, ICP, automated and manual bench testing
 - Field sampling and analyses protocols
- Coal gasification pilot plant experience includes:
 - High-pressure sampling
 - Chemical analyses of synthesis gas and waste streams
 - Analyses of fuels, slags, ashes, and chemical deposits

▶ Course Schedule

Tuesday, Wednesday and Thursday, February 2-4, 2016

7:30 am	—	8:00 am	Continental breakfast in classroom
8:00 am	—	12:00 noon	Course w/morning break
12:00 noon	—	1:00 pm	Lunch at Sheraton's Island Grille Café
1:00 pm	—	5:00 pm	Course w/afternoon refreshment break

▶ Registration Information

FGD Theory & Operation

The registration fee is \$3885.00 per attendee and includes all course materials; continental breakfast each day; full lunch in Sheraton's Island Grille Café each day; afternoon refreshment breaks each day, and a Certificate of Educational Achievement for each student that successfully completes the course.

Register on-line at our secure web site:

www.chemistryapplications.scientech.com

1. In the menu in the middle of the screen, click **Event Schedule**
2. Under the 2016 heading, click **Flue Gas Desulfurization (FGD) Theory & Operation February 2-4**
3. Click **Registration** in the menu box on the left side of the screen
4. Enter the registrant's e-mail address and leave the ID Code Box blank
5. Click **Continue** to complete the registration
6. A confirmation will be sent to you via e-mail

The latest information on all Scientech Chemistry training courses and meetings is available on our Web site at

www.chemistryapplications.scientech.com

Register Today!

**Cancellation Policy**

Sciencetech reserves the right to cancel this course at any time and refund the full amount of all registration fees paid. Sciencetech must have a minimum number of students to hold this course. When the minimum number of attendees is reached, Sciencetech will send a notice (21) days prior to the course start date, that the required quota has been met or the course has been cancelled. Any cancellations made after the date of the notification e-mail, the attendee will be charged a 75% cancelation fee.

Please do not make any non-refundable travel reservations until we tell you that the course will definitely be held as scheduled. Substitutions can be made at any time.

Hotel

A block of rooms has been reserved at the Sheraton Sand Key Resort at the rate of \$222.00 per night. Please make your hotel reservations directly with the Sheraton by calling 727.595.1611. Be sure to specify that you are attending this Sciencetech course to receive the reduced rate. The room block will be released 30 days before each course. After that, the Sheraton cannot guarantee rate or availability.

Contact Information:

For general information contact Rose Kieffer at:

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