

PERM247- Control of Gaseous Emissions- Course Syllabus

Day 1

1. Introduction: Primary and Secondary Gaseous Pollutants and Their Sources, Regulations, and Environmental Impacts.
2. Control Techniques for Gaseous Contaminants
 - Gas stream characteristics, including the calculation of explosive limits and why they are important
 - An overview of the control techniques to be covered in this course.
3. Air Pollution Control Systems
 - Emission capture systems and fans
 - Hood capture efficiency as measured by EPA Method 204

Day 2

4. Adsorption: Transfer of Pollutants from a Gas to a Solid
 - Carbon adsorbers for control of VOC and organic HAP
 - Activated carbon for control of Hg and dioxin/furans
 - Zeolite and other molecular sieves
 - Adsorbers used to concentrate dilute streams before oxidation system controls
5. Absorption: Transfer of Pollutants from a Gas to a Liquid
 - Flue gas desulfurization
 - Other acid gas scrubbers
6. Oxidation Systems
 - Thermal oxidation
 - Regenerative thermal oxidation
 - Catalytic oxidation
7. Condenser Systems
 - Conventional systems
 - Refrigerated or cryogenic systems

Day 3

8. Nitrogen Oxides Control
 - ERG has developed a dedicated NO_x control course, which we will leverage to develop and present this material.
9. Sulfur Oxides Control
 - Wet vs. dry scrubbing systems
 - Controls for coal combustion vs. waste combustion
10. Control Techniques for Greenhouse Gas Emissions
 - Emission profiles will be updated with information from the GHGRP and more current inventories.
 - Sources of GHG emissions will also be updated to include, for example, oil and gas production and landfills, and other important sources not currently included in PERM247.