



Equipment III

Cyclones and Scrubbers



Course Objectives

1. Explain the theory of operation of cyclones and scrubbers.
2. Describe typical applications of cyclones and scrubbers in chemical processing.
3. Identify the components of cyclones and scrubbers.
4. Distinguish between the different types of cyclones and scrubbers.
5. Explain the function of auxiliary or support equipment to the function of scrubbers.
6. Identify typical parameters associated with operating scrubbers.
7. Describe common performance issues related to scrubbers including their causes and indicators.



Key Terms (Define the following)

adsorption - _____

chemical absorption - _____

cyclone - _____

physical absorption - _____

scrubber - _____



Questions

1. What types of substances in emission gases are regulated by Title V of the Clean Air Act?

2. What is the difference between a normal efficiency (NE) cyclone and a high efficiency (HE) cyclone?

3. Water is used to physically absorb ammonia from a gas stream. Give an example of an application that uses chemical absorption.

4. List the three requirements for wet scrubber design.

1) _____

2) _____

3) _____

5. Give one example of when a venturi scrubber would be selected over a spray scrubber.

6. How is moisture and liquid removed from the gas stream in an orifice scrubber?

7. Describe three performance issues related to plate scrubbers.

1) _____

2) _____

3) _____

8. Describe the mechanisms for distributing liquid in a packed bed scrubber.

9. Describe the causes of channeling in a packed bed scrubber.

10. What is the difference between a wet scrubber and a dry scrubber?

11. What are common operating parameters for a wet scrubber?

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