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Continuing Education Course #387  
Clarifier Rehabilitation

1. A clarifier can also be called which of the following?
  - a. cyclone
  - b. sedimentation tank
  - c. aerator
2. Compared to other treatment technologies, clarifiers are \_\_\_\_\_.
  - a. simple
  - b. complex
3. Floating particles and objects are known as what?
  - a. sludge
  - b. scum
  - c. supernatant
4. Which of the following is not a common shape for a wastewater clarifiers?
  - a. circular
  - b. triangular
  - c. rectangular
5. What is the most common application for clarifiers for water treatment?
  - a. aeration
  - b. membranes
  - c. lime softening
6. Which is a good first step in clarifier rehabilitation?
  - a. identify motivations
  - b. design
  - c. identify alternatives
7. Which of the following is NOT a potential motivating factor for clarifier rehabilitation?
  - a. coating failure
  - b. disinfection requirements
  - c. process problems
8. A condition assessment is critical with which of the following motivating factors?
  - a. flow demand increase
  - b. process problems
  - c. equipment failure
9. Which of following is a main clarifier component?

- a. drive
- b. anchorage
- c. angles

10. What is the typical life span for a clarifier drive?

- a. 10 years
- b. 20 years
- c. 40 years

11. Which of the following is NOT a field test for a drive?

- a. factory
- b. vibration
- c. noise

12. Often submerged steel is designed with what minimum thickness?

- a. 3/16"
- b. 1/4"
- c. 3/8"

13. What is corrosion allowance?

- a. The allowed number of places corrosion is observed.
- b. Funds set aside for correcting corrosion problems.
- c. Additional thickness added for conservatism.

14. For a condition assessment, which thickness measurements are helpful?

- a. Steel and Coating Thicknesses
- b. Rust and Solids Thicknesses
- c. Surface and Internal Thicknesses

15. Efflorescence on a tank wall indicates what?

- a. Presence of algae blooms
- b. There is a slow leak
- c. Light radiation

16. Which of the following is a common non-destructive test for concrete?

- a. Rebound Hammer Test
- b. Core Test
- c. Magnet Test

17. What is a surface removal test for concrete?

- a. Non-destructive
- b. Removing the concrete surface to view the steel
- c. Half-cell corrosion mapping

18. What is the aim of a performance assessment?

- a. To determine the physical condition of the clarifier
- b. To fully describe the clarifier
- c. Evaluate treatment efficiency and identify modifications to improve the treatment

19. What insight does a mass balance provide?

- a. How flow and solids pass through the clarifier
- b. The impact of the clarifier volume

- c. Surface overflow issues
20. Why is state point analysis used?
- a. To assess the condition of equipment
  - b. To understand the operating condition and determine corrective actions such as changing the RAS rate
  - c. To find the ideal mixing rate
21. Which of the following is NOT true regarding CFD modeling?
- a. Relatively expensive
  - b. A step in a condition assessment
  - c. Can help determine the peak flow rate and solids loading rate
22. Which of the following is NOT a field test for a clarifier performance assessment?
- a. Tracer Test
  - b. Settling Test
  - c. Skills Test
23. Which of the following are good first steps in an alternatives comparison?
- a. Identify Criteria and Brainstorm Alternatives
  - b. Cost Estimate and Design Report
  - c. Desktop study and Field Testing
24. Which of the following helps address differing conditions?
- a. Mass balance
  - b. Specify an allowance
  - c. Ask the Contractor to take photos
25. Which of the following is NOT a potential material for clarifier components?
- a. 316L stainless steel
  - b. Pressure treated lumber
  - c. 304L stainless steel
  - d. carbon steel
26. How much time should be allowed between sand blasting and prime coating?
- a. 24 hours
  - b. 1 week
  - c. 60 seconds
27. Which of the following help "hold the blast" for a successful prime coat?
- a. Remove all person from the blast area
  - b. Cover the tank
  - c. Check the coating thickness
28. Which of the following is NOT an option for a drive lubrication system cleaning?
- a. Double Oil Change
  - b. Advanced Power Flush
  - c. Chemical Power Flush
  - d. Water Flush
29. Which is typically the longest lead time item?
- a. Drive
  - b. Control Panel

c. Weirs & Baffles

30. Which is NOT an option to address stainless steel contamination?

a. Avoid field welding of stainless steel

b. Field passivation

c. Pressure washing

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