Title of Class: Anaerobic Digestion for Operators

Date of Webinar: 1:00 PM PST - Wednesday, September 2, 2020

Training Timeline:

1:00 - 01:05 Introductions and roll call.

1:05 – 1:50 Anaerobic Digestion Basics/Fundamentals. Speaker: Scott Joslyn, PE

The presentation will focus on the fundamentals of the anaerobic digestion process for operations staff. The presentation will describe the biological processes that occur during anaerobic digestion and the conditions that favor stable operation and what to look for to determine if the digester is operating within a stable operating range. Anaerobic digestion systems must address several key factors or challenges including adequate heating, mixing, digester feed and the required solids retention time, the volatile acids to alkalinity ratio, volatile solids reduction performance, ammonia toxicity, gas production, aesthetics, and reliability. These factors will be described in detail along with typical operating ranges and what to look for when operating an anaerobic digester process.

1:50 – 2:25 Anaerobic Digestion Operations, Process Control, Factors to Consider and Equipment. Speaker: Scott Joslyn, PE

This presentation will focus on the equipment used in the anaerobic digestion process, as well as process control and operating factors for the anaerobic digestion process for operations staff.

- Digestion Equipment Overview
- Types of feed; primary, WAS, Food waste, FOG
- Parameters (Healthy Digesters); Temperature; Volatile Solids Reduction, Acid to Alkalinity Ratio – typical operating ranges
- Responding to upset conditions and change in parameters (what to look for)
- Mixing, Heating, Pumping - Equipment types; Instrumentation- Useful analyzers/meters
- Process Control and Monitoring:
  - What and how to measure process parameters; how it transfers, retains, loses heat; when clean heats faster, when build up heats slower.
  - Solids Loading,
  - Potential for inert material build-up inside the digester
- What's worked and what has not.

2:25 – 3:25 Anaerobic Digestion Maintenance and Troubleshooting- Case Studies and Roundtable Discussion. Speakers: Tony Harmon and Craig Prosser

This presentation will benefit agencies and operators who work with anaerobic digestion systems and are considering taking one digester out of service for cleaning, condition assessment and maintenance. Using case studies of existing projects, this presentation will identify the operational considerations that operators need to know prior to removing a digester from operation. Standard operating procedures will be provided for discussion for planning, taking digesters off-line and back on-line in a safe manner.

Digester Cleaning Case Studies - (Boise, ID West Boise WRF and Woodburn, OR)

- Cleaning – preparation, cleaning and start up
- Inspections and condition assessment
- Preparation, Cleaning, Start up
- Discussion; how to decide when and how?
    - How many digesters?
    - Seasonal loading considerations.
- Best practices.
    - Upstream and Downstream considerations
        - What's upstream matters-
        - Headworks- screen size/type, grit removal impacts on digestion
        - Grit in sludge may stay in digester after digestion (mixing considerations)
        - Downstream Matters –
        - Storage for dewatering scheduling
        - Part 503 Discussion - Biosolids - Class A or B
        - Nutrient Recycle Impacts to Plant
- Digester Redundancy Considerations
- What's worked and what has not.
- SOP Development: For Example: Safety: Isolating, shut down, gas purging and start-up considerations (example: nitrogen purging SOP). Discussions would provide example SOP's for safely taking digesters off line.

Roundtable Discussion of what is worked and what's not worked based on past experiences from the attendees.

3:25- 3:30pm Wrap-up and roll call