

## **Process Piping 5 Syllabus**

### **Clarifier System Installation**

**Time:** 40 hours

**Maximum Class Size:** 12

**Prerequisites:** Process Piping 1, Process Piping 2, Fall Protection, Hoisting & Rigging & Signal Person

**Course Description:** This course is designed to introduce skills needed to install various types of mechanical equipment. The water industry is constantly changing to meet demands. Understanding the uses and functions of a variety of water industry systems is a huge advantage for the Construction Craft Laborer (CCL). This course will help the CCL understand the uses, components, and workings of Clarifier systems. Ample time will be given in reading and analyzing blueprints, applying the information, and fabricating parts of, or entire systems.

#### **Goals/Objectives/Student Learning Outcomes:**

- Describe and demonstrate the use of all PPE required for scope of work
- Describe layout using blueprints
- Fabricate specific components of a Clarifier System using an isometric drawing:
  - Set a drive cage and motor
  - Set run out of drive cage and drive within factory specification by shimming
  - Attach and pre-adjust rake arms
  - Set elevation reference marks on tank wall
  - Final adjust of rake arms
  - Install scum beach and scum skimmer trailing arms
  - Install and properly adjust stainless steel squeegees
  - Adjust trailing arms and rubber squeegees
  - Find elevations on blueprints and transfer with field level for installation of weir baffles

#### **Standards**

OSHA Standards 29CFR

- |            |  |
|------------|--|
| • 1910.106 | Flammable and Combustible Liquids      |
| • 1910.146 | Permit Required Confined Space         |
| • 1910.147 | Isolation Procedures: Lock Out Tag Out |
| • 1926.106 | Working Over or Near Water             |
| • 1926.50  | Medical Service and First Aid          |
| • 1926.503 | Fall Protection                        |

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- 1926.55 Gases, Vapors & Fumes
- 1926.702 Requirements for Equipment & Tools
- 1926.1117 Vinyl Chloride
- 1926.1418-28 Signal Person Qualification Requirements
- ANSI A10.42 Rigging Qualifications and Responsibilities
- Cal/OSHA Subchapter 7:
  - Group 2 Article 7- Safe Practices Pipelines
  - Group 6 Article 47- Machine and Machine Parts

### **Classroom Rules and Procedures**

- All classes begin at 6:30 am and end at 3:00 pm
- Upon entering classroom, all participants must sign in and be seated by 6:30 am
- Class will consist of a combination of lecture, video, demonstration, coached group exercises, individual exercises, and assessment.
- Students are required to report to class ready to work and maintain the provided PPE

### **Textbooks/Readings/Materials:**

- Fall Protection: LIUNA PG/IG
- Mechanical Pipe Math Quiz
- Process Piping 5 Exit Exam
- Process Piping 5 Hands-On Performance Evaluation
- Installing a Clarifier Handout
- Scum Skimmer Assembly Blueprint
- Symbols Explanation Blueprint
- COP Clarifiers Handout
- Spiral Rake Clarifiers Handout
- Segmented Plow Rake Handout
- Set of MWWRF Blueprints CD
- Downsized Clarifier for School Use Handout

### **Tools/Equipment/Other Materials: TBD**

### **Personal Protective Equipment**

- 12 pairs of gloves
- 12 pairs of safety glasses
- 20 pairs of ear plugs
- 12 hard hats

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#### **Course Requirements**

To receive credit for the course, participants must:

- Be present for full forty hours
- Participate in all classroom exercises
- Pass a written exam
- Pass a hands-on exam

#### **Course Policies**

- Participants must be on-time and ready to work.
- Participants must return from breaks on-time.
- Participants must participate in each exercise and assignment
- Participants who are on “light duty” are not allowed to take this course due to the physically demanding requirements.

#### **Assessment and Grading**

Participants will be assessed on the following:

- All written exams must be passed with a score of 80% or above.
- All hands-on exercises are graded on performance and participation. They are pass/fail and must be passed with a score of 80% or above.

#### **Safety**

Failure to maintain and use PPE may result in dismissal from the course.