TTR Group Inc.
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Reference: AWWA Butterfly Valve & Actuator Course Objectives and Course Overview

Overview

1. This seminar will be comprised of classroom and some hands on activities. With the utilization of the following;
   - Power point presentations
   - AWWA standards & documentation
   - Cutaway Samples

   The attendees will learn the proper operation and maintenance of AWWA Butterfly Valves, worm gear and travelling nut type AWWA actuators. This will include the safe operation of the products as they apply to the standards and various applicable applications.
   Attendees will have an opportunity to handle the various components to understand the operation of the products. A video will be presented on the seat adjustment of two types of methods used in the AWWA C504 valve industry for adjusting butterfly valves that are leaking and identify means of avoiding damage.

2. Course records will be maintained in three locations.
   - The hard copy of the sign in sheet will be on file in the TTR office at 2011 Markle Drive Oakville, Ontario L6H-3N6.
   - The electronic Official Attendance Record at the same office.
   - This results and attendees with copies of the certificates will be backed up electronically saved on a CD and flash drive.
   - Both soft and hard copies will be maintained for seven years.

3. During the hands on component of this seminar, attendees will have the opportunity to disassemble and reassemble a valve and actuator. The importance of this is to identify the risks associated to packing retention designs, pressure relief requirements and normal procedure's. This seminar will identify and determine potential causes of valve and actuator failures in the field. Attendees must stay for the complete seminar to be eligible for any applicable CEU.s.

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Objectives

Note

The order of the following objectives are not based on the level of importance.

1. Familiarize the attendees with AWWA C504, AWWA C516 for Butterfly Valves and AWWA C540 for Actuation. Where and how to apply these standards specific for In-Plant applications, direct buried service and chambered service. We will identify the different specification requirements and necessary modification to specifications preventing field failures on specific installations.

2. Familiarization of M44 and M49 AWWA standards and their applicable roles associated to AWWA C504 Butterfly Valves.

3. The proper operation of AWWA valves preventing injury to the operator and or damage to the valve and actuator.

4. Proper sizing of AWWA Butterfly Valves for Control and impact of velocities on Uni-Directional and bi-directional applications at various operating angles. The maximum Velocity Ratings of AWWA Valves and Options available for higher velocities.

5. Provide details on the proper installation of AWWA Butterfly Valves, shaft orientation and how installation affects hydrostatic, bearing and dynamic torque in AWWA Butterfly Valves.

6. Provide information on the proper selection of AWWA Butterfly Valves for control and avoiding cavitation.

7. The various manufactures and acceptable designs that are accepted by AWWA C504 and associated actuator mounting issues. We will be identifying the independent importance of packing retention based on various methods compared to proper methods for AWWA Actuator mounting.

8. Identify how Valve indication of actuators should not be used in submerged or chambered service and position indication options that prevent the over torqueing of manual AWWA actuation.

9. Identify the effects of flow on AWWA Butterfly Valves under Unidirectional and Bi- directional applications. How actuation is undersized due to weak specifications or limited flow data.

10. The importance of engineered shaft extensions and torque tubes used in Water and Wastewater treatment plants. We will identify the minimum requirements for torsional rigidity and maximum allowable deflection on valve extensions based on typical valve seating surfaces. Generic standard specifications for this ancillary equipment will be provided.

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11. Valve performance evaluation based on Seat on Disc and Seat in Body designs in distribution systems and for long periods of valve activity.

12. Provide information on the proper handling, lifting and site storage and potential damaging conditions that are to be avoided.

13. Review the intent of AWWA C504 regarding field replaceable seats, the practicality, requirements and procedure for in field seat replacement.

14. The proper method for sizing Manual and Electric Actuators specific to their application.

15. The prevention of Actuator under sizing and associated limitations of valve shaft diameters and actuator sizing.

16. The unnecessary oversizing of actuators preventing damage to the Valve.

17. Proper Methods and safety concerns associated to actuator mounting and removal of the actuator in the field.

18. Identify the minimum requirements for submerged actuators and options for indication or remote indication without entering confined space.

Supporting Documents

- AWWA C504 Latest Revision
- AWWA C516 latest Revision
- AWWA C540 Latest Revision
- M11 Manual
- M44 & 49 Manual
- Pratt research on tuberculation effects on Valve performance
- Bernoulli's equation and application to arched Valve Discs
- OSHA September 1997 article of shaft blow out prevention
- AWWA report on Elastomer Degradation
- Hydraulic Machinery- Controlling cavitation
- Water & Sewer Works 1978- Proper Butterfly Valve Application
- TTR Produced Documents

Sincerely

Bruce James
President
TTR Group