COURSE DESCRIPTION

Crane Nuclear offers to provide the services as described in this Technical Description subject to the pricing, terms and conditions delineated in the Commercial Description.

VOTES® Infinity AOV Data Acquisition and Basic Analysis

Standard Class Size:	6 Students per Instructor
Maximum Class Size:	8 Students per Instructor
Course Duration:	5 days
Prerequisite:	Should be familiar with the basic principles of process control and valve fundamentals, and a working knowledge of pneumatic actuators and instrumentation.
Supplied Materials:	A training manual for each student.
Suggested Training Aides:	VOTES Infinity AOV Diagnostic System, various actuators, instruments and accessories
Suggested Attendees:	Plant instrument and control technicians, electricians and their foreman, engineering, QC and operations personnel
Course Description:	This course will provide students with instruction on the proper installation and operation of the CRANE Nuclear VOTES Infinity AOV Diagnostic System through classroom instruction, hands-on laboratory training, and accounts of testing experience. Upon successful completion, the student will be able to correctly set-up and operate the VOTES Infinity Diagnostic System, acquire test data and evaluate typical AOV performance parameters and common actuator/ valve degradations through basic signature analysis.

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Course Terminal Objectives:

Each student will be required to pass a written test with a minimum score of 80% in order to successfully complete this course. Upon successful completion of this training course, the student will:

- Demonstrate the setup of the VOTES Infinity AOV Diagnostic System and transducers.
- Evaluate typical AOV performance parameters and common actuator/ valve degradations through basic signature analysis techniques.
- Successfully acquire, store, and perform basic analysis of applicable signatures.
- Successfully perform a benchset adjustment and calibration using the manual control function of the software.
- Identify the causes of common AOV degradations and perform necessary adjustments to correct the deficiencies.

Course Enabling Objectives:

After completing this course, the student will:

- Identify the basic AOV diagnostic system test equipment.
- Describe the AOV system components.
- Demonstrate the functions of the diagnostic main menu.
- Demonstrate the proper techniques for configuring the software, acquire and store data for control and isolation valves using the “Test” and “Live Display” routines in the VOTES Infinity AOV diagnostic system software.
- Understand how to analyze signatures under manual analysis, automated analysis, and overlay analysis.
- Learn how to import and export valves, signatures and transducers.
- Perform basic analyses under pilot, automated, manual mode, live display and overlay.

Course Benefits:

- Increase the plant's self-sufficiency in AOV diagnostic testing.
- Increase the reliability of the plant's AOVs.
- Reduce the plant's cost of AOV diagnostic testing.

Required for On-Site Classes

To conduct the highest quality training class, we request that you have the required equipment below placed in the training classroom prior to the start of class. Please let me know if you have any questions or concerns.

- Classroom/Lab suitable for the number of students attending
- 1 computer per student (With VOTES Infinity software installed)
- 1 Data Acquisition systems per two students, including all transducers used at the plant
- PPE for all participants, as required
- Projector and screen
- Ability to import/export data to the provided computers via usb
- White board/flip chart
- Markers
- Air sufficient to supply all actuators to the class
- Actuators with valves typically found in the plant with associated positioners and I/Ps
- Tubing
- Fittings including lock-up/ drop test rig
- Tooling