CRANE
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2019
Open Enrollment Training Calendar

www.cranenuclear.com

Utilities have long recognized the inherent improvements in plant safety, efficiency, and quality that effective training can bring. At CRANE Nuclear, our training courses offer:

1. **Experienced and knowledgeable instructors:** learn from personnel who actively work in the field, and are current with industry trends and technological advancements.
2. **Small class sizes:** Experience greater interaction, increase participation, and classes tailored to students' needs.
3. **Extensive hands-on training:** gain a better understanding while working directly with the equipment encountered in the field.
4. **New training facilities:** Enjoy access to world class facilities, valves, actuators, and a flow loop to enhance learning.
5. **New Class:** VOTES Infinity Advanced Configuration.

Crane Nuclear provides extensive nuclear valve training courses to facilitate personnel proficiency and maximize operations of highly regulated nuclear facilities. Crane Nuclear's open enrollment courses are designed to allow students in need of training to purchase individual seats. Open enrollment is ideal for situations such as re-certification, change of responsibilities, and continuing education.

Additionally, Crane Nuclear offers companies the ability to purchase classes that can be taught at your facility or in Kennesaw, GA.

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For complete course offerings or to register for a course, visit:
www.cranenuclear.com and select Training Schedule
or email: training@cranevs.com

This version superceeds all others 10-11-2018

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CRANE Nuclear 2019- Winter Open Enrollment

January

Sun	Mon	Tue	Wed	Thur	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Limitorque Actuator Maintenance & Repair

February

Sun	Mon	Tue	Wed	Thur	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

VOTES Infinity MOV Data Acquisition & Basic Analysis

VOTES Infinity AOV Data Acquisition & Basic Analysis

VOTES Infinity MOV Advanced Signature Analysis

VOTES Infinity AOV Advanced Signature Analysis

VOTES Infinity Advanced Configuration

To register for a course, visit: www.cranenuclear.com and select *Training,* email: training@cranevs.com or email Stephanie Hood, Training Coordinator at shood@cranevs.com

CRANE NUCLEAR

CRANE Nuclear 2019- Summer Open Enrollment

June

Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1
2	3	4	5	6	7	8
	Limitorque Actuator Maintenance & Repair					
9	10	11	12	13	14	15
	VOTES Infinity MOV Data Acquisition & Basic Analysis					
16	17	18	19	20	21	22
	VOTES Infinity MOV Advanced Signature Analysis					
23/30	24	25	26	27	28	29
	VOTES Infinity Advanced Configuration					

July

Sun	Mon	Tue	Wed	Thur	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
	VOTES Infinity AOV Data Acquisition & Basic Analysis					
14	15	16	17	18	19	20
	VOTES Infinity AOV Advanced Signature Analysis					
21	22	23	24	25	26	27
	VOTES Infinity Check Valve Data Acquisition & Basic Anaylsis					
28	29	30	31			
	Valve Maintenance & Repair					

August

Sun	Mon	Tue	Wed	Thur	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
		AOV/ MOV Technical Seminar				
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

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CRANE Nuclear 2019- Open Enrollment Training Schedule

Part Numbers	Courses	2019 Date(s)	Prerequisite	Days	Tuition (per student)
TR-9-70110-HA	Limitorque Actuator Maintenance and Repair	Jan 28/ June 3	None	**5**	$4130.00
Instruction on mechanical and electrical operation of Limitorque® SMB, SB, SBD, and HBC actuators. Through classroom instruction and hands-on experience, this course will provide the student with practical knowledge on the operation, refurbishment, trouble-shooting, and preventive maintenance of Limitorque® actuators. Instruction covers theories of operation of SMB-000 through SMB-4 and HOBC through H3BC actuators, and provides hands-on disassembly/reassembly of various SMB and HBC actuators.					
TR-9-91400-HA	VOTES Infinity MOV Data Acquisition and Basic Analysis	Feb 4/ June 10	**TR-9-70110**	**5**	$4330.00
Course provides instruction on the proper installation and operation of the VOTES Infinity Motor-Operated Valve (MOV) Diagnostic System through classroom instruction, hands-on laboratory training, and OE discussions. Upon successful course completion, the student will be able to correctly set-up and operate the VOTES Infinity diagnostic system, adjust actuator limit and torque switches to specified criteria, and identify critical MOV parameters and common actuator/valve degradations through basic signature analysis techniques.					
TR-9-91410-HA	VOTES Infinity MOV Advanced Signature Analysis	Feb 11/ June 17	**TR-9-90400 or TR-9-91400**	**4**	$3650.00
Course provides instruction on the analysis of acquired Motor-Operated Valve (MOV) performance test data utilizing the VOTES Infinity diagnostic system. The signature analysis techniques covered in this course will include: critical MOV parameters, actuator/valve degradations, and the components of differential pressure traces. An overview is presented on generic acceptance criteria for MOVs and industry-standard pressure equations.					
TR- 9-92500 - HA	VOTES Infinity Advanced Configuration	Feb 25 / June 24	**TR- 9-91410 or TR- 91520**	**4**	$4130.00
Course provides instruction on performing initial setup of VOTES Infinity, configuring VOTES Infinity reporting and setup of field machines. Through classroom instruction, each student will demonstrate how to set up a network database, understand setting up local databases, importing and exporting settings and VOTES Infinity data. Other objectives covered in this course include importing Signature Software, Flowscanner and Quiklook data, interfacing with KVAP, custom reports and advanced settings.					
TR-9-91510-HA	VOTES Infinity AOV Data Acquisition and Basic Analysis	Feb 4 / July 7	**TR-9-90530**	**5**	$4330.00
Course provides instruction on the proper installation and operation of the VOTES Infinity Air-Operated Valve (AOV) Diagnostic System through classroom instruction, hands-on laboratory training, and OE discussions. Upon successful completion, the student will be able to correctly set-up and operate the VOTES Infinity diagnostic system to acquire test data and evaluate typical AOV performance parameters and common actuator/valve degradations through basic signature analysis techniques.					
TR-9-91520-HA	VOTES Infinity AOV Advanced Signature Analysis	Feb 11 / July 15	**TR-9-90510 or TR-9-91510**	**4**	$3650.00
Classroom instruction on the analysis of acquired Air-Operated Valve (AOV) performance test data utilizing the CRANE® Nuclear Diagnostic Software. Students analyze numerous real traces acquired with CRANE® Nuclear diagnostic equipment and learn to recognize healthy traces and those with anomalies such as: stem wear, packing, stiction improper alignment, component air leaks, component wear, and seat damage/wear.					
TR-9-70200-HA	Valve Maintenance and Repair	July 29	**None**	**5**	$4130.00
Provides instruction on how to maintain gate, globe and check valves to optimum working condition. Included are discussions on motor-operators, air-operators, hydraulic-operators, and manual-operators. The classroom discussion and hands-on laboratory experience covers the principals of operation, disassembly, inspection, adjustment, and reassembly of gate, globe and check valves. An overview is presented on the techniques of packing removal and installation, lapping of valve seats and wedges to facilitate fit up, blue check, and in-line machining of valve components including the use of specialty tools.					
TR-9-91600-HA	VOTES Infinity Check Valve Data Acquisition and Basic Analysis	Aug 22	**None**	**5**	$4330.00
This course instructs students in the use of acoustics, eddy current, and ultrasonic devices used for check valve diagnostics. Instruction and hands on activities will demonstrate how to acquire and analyze signatures to verify proper operation of check valves. Students will also learn advanced techniques for acoustics, eddy current and ultrasonic theory and application for check valve diagnosis. Operational issues covered during the class include: frequency of disk flutter, disk position in flow, and backseat disc tapping. The student will leave the class familiar with the diagnostic system and advanced signature analysis of check valve diagnostic traces for evaluation purposes.					
2019 AOV/MOV Tech Seminar		Aug 6 - 8	**None**	**3**	
This is a continuing training opportunity for VOTES® Infinity users to keep updated with the latest software and hardware improvements. Time is allocated for plenty of hands-on training geared toward VOTES® Infinity Engineering and Maintenance testing personnel.					

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Terms and Conditions

- CRANE reserves the right to limit class sizes.
- Attendees are strongly encouraged to register greater than 30 days prior to class start date.
- CRANE reserves the right to cancel any class. If a class is cancelled, students will be notified. Every effort will be made to reschedule a cancelled class or transfer enrollments to a later date.
- If a class do not meet the minimum enrollment, it will be canceled within 30 days of start date.
- Pricing does not include food, lodging or transportation.
- Class registration is not confirmed by CRANE without a P.O. or registration committing payment (credit card).
- If notification is received at least two weeks prior to the course, credit may be granted for a later date. No refunds are available for cancellations made less than 30 days prior to the start of the scheduled course.
- All courses are offered at CRANE Nuclear Kennesaw, GA Training Center
- Course attendee substitutions are acceptable any time prior to the course start date, however, CRANE must be notified in writing (e-mail) prior to class start date.
- Payments made by credit card will carry a 3% processing fee.

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