

# Professional Development Courses from SigmaTech

Course Location: TBD

Course Date: TBD

## 1. COURSE TITLE

Electric Actuators for Valves- Design Principles & Applications

## 2. COURSE DESCRIPTION

Valves and their actuators are the lifeblood of fluid systems - they must control flow of water, steam, air, gas, fuel, oil, slurries, wastes, and treatment chemicals very reliably. Proper specification of valves and actuators requires a thorough understanding of system (s) requirements, design, specification, automation, testing, maintenance, and logistic issues. This two-day intensive course on **electric actuators** provides a balanced blend of these issues.

## 3. COURSE EMPHASIS AND APPLICATION

### **IN THIS COURSE YOU WILL LEARN TO**

- Know the types of electric actuators
- Select types of on/off and control valve actuators
- Apply elements of valve actuator design. Understand design deficiencies
- Select optimum actuator type construction: application specific
- Pick the optimum valve-actuator combination
- Select optimum valve actuator size: effects of torque and thrust
- Avoid incorrect Valve and Actuator installation practices
- Understand Performance versus Detail specifications
- Typical problems encountered in valve actuators
- Preventive maintenance of actuators (PMS)

You will learn to apply these techniques to select the optimum valve actuators to reduce lifecycle costs and improve valve performance. Discussing actual problems from your job experience is encouraged.

## 4. SPECIAL FEATURES AND BENEFITS

Participants will receive comprehensive notes based on the course presentation.

## 5. WHO SHOULD ATTEND?

This course was developed for engineers and other individuals involved with the design, specification, use, logistics, and maintenance of valves & actuators. Valve and actuator specialists and those with some valve-actuator experience will come away with valuable information from this course. Participants should have some technical background and job related experience. Please bring calculators to the class.

## **6. COURSE OUTLINE**

### **DAY 1 AM: Module Description**

- Types of Electric Valve Actuators:
  - Quarter Turn
  - Multi-Turn
- Types of Service conditions:
  - On-Off
  - Modulating
- Actuator selection
  - Type of valve
  - Service conditions

### **DAY 1 PM: Module Description**

- Electric Control Components
  - Position Limit Switch
  - Torque Limit Switch
  - Motor Control
- Actuator Instrumentation

### **DAY 2 AM: Module Description**

- Motor design considerations
  - Duty cycle
  - Torque vs. Speed curve
- Gear design considerations
  - Spur Gear
  - Bevel Gear
  - Worm Gear

### **DAY 2 PM: Module Description**

- Applications and Specifications
  - Torque only
  - Torque and Thrust
- Maintenance issues
  - Preventive maintenance (PMS)
  - Condition based maintenance (CBM)

## 7. COURSE INSTRUCTORS

**Mr. Vinod Bhasin**, founder and Principal at SigmaTech, a consulting engineering company, has over 25 years of professional experience in the design, application, and manufacturing of piping, valves, and actuators for several companies including Hills McCanna Company, Rockwell International, and Westinghouse Electric Corporation. He served as Chief Engineer at Hills McCanna Company and Rockwell International. He is an alumnus of Illinois Institute of Technology (IIT), Chicago, Illinois. A registered PE, he holds BSME, MSME, and MSIE degrees. He has published numerous papers in Chemical Engineering, Chemical Processing, Chemical Processing International (UK), and the Journal of Naval Engineering related to piping, valves, and actuators. Mr. Bhasin has taught professional development courses on valves and actuators for the Instrument Society of America (ISA), and Navy's Life Cycle managers. He has also taught undergraduate courses in Solid Mechanics, and Machine Design at IIT. Mr. Bhasin is a member of ASME B16 committee and is currently chairing several valve and actuator technical committees on ships and marine technology under ASTM F25.

**Mr. James 'Ron' Whitmore**, has over 20 years of professional experience in the design, application, and manufacturing of valves and actuators for several companies including EIM Controls, RuLynn, Keystone Controls and Biffi, Inc.. He has a B.S. Degree in Maritime Engineering from Texas A&M University. Mr. Whitmore's expertise is in the field of electric actuators. He has taught valve and actuator classes worldwide from basic applications for Valve distributors to advanced courses for Valve and Engineering Companies.

## 8. UNCONDITIONAL MONEY-BACK GUARANTEE

If for any reason you are not satisfied with the course, we will refund your money.



**REGISTRATION AND FEES**

Course fee is \$795 per person, payable in advance. Class size will be limited to ensure optimum interaction among participants. The course will be reviewed two weeks prior to course start date and SigmaTech reserves the right to cancel the course if the minimum enrollment has not reached.

The course fee is payable in advance and includes the cost of classroom materials. The fee does not include expenses for hotel accommodations. Please make check payable to SigmaTech. The course program is all day sessions from 8:00 am to 4:30 pm.

Cancellation Policy: All cancellations must be in writing, postmarked 14 days prior to the course date to receive a full refund. Those postmarked less than 14 days prior to the class will be subject to a service charge of \$250. After the 14 days cancellation period, no refund is given. You may send a substitute.

**Course Dates: To be determined (TBD)**

**Course Hotel Location and Accommodations:**

Course location is to be determined. Hotel accommodations must be arranged directly with the hotel.

**Registration Form - Electric Actuators for Valves**

Name \_\_\_\_\_ Organization \_\_\_\_\_

Title \_\_\_\_\_ Code \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_ Fax (\_\_\_\_) \_\_\_\_\_ E-mail \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Method of payment: Circle one

Check Enclosed

Purchase Order Enclosed

**Make check or purchase order payable to "SigmaTech" and mail with registration form to: SigmaTech, 601 Wyndham Crossings Circle, St. Louis, MO 63131.**

**Phone: (636) 346-7594 Fax: (314) 821-3386 E-mail: info@sigmatechconsulting.com**

**Please visit the following WEB site for downloading the course content and any changes: <http://www.sigmatechconsulting.com/coursetraining/coursetraining.htm>**