

ADVANCED **VALVE** TECHNOLOGY TECHNIQUES



OUR ACCREDITATION & PARTNERS



ADVANCED VALVE TECHNOLOGY TECHNIQUES



OVERALL DESCRIPTION:

In modern industrial operations, valves are complex, precision-engineered assets that directly influence operational risk, safety, and profitability. The hidden costs of improper valve selection, inefficient maintenance, and outdated technology can lead to significant unplanned downtime and lost revenue. This course is designed to transform your approach, moving you from reactive maintenance to proactive, strategic asset management. We will provide you with the advanced, practical techniques needed to optimize performance, minimize system vulnerabilities, and leverage cutting-edge technology to turn your valving systems into a source of competitive advantage.

Course Objectives:

Upon completion of this course, participants will have the knowledge and skills to:

- **Strategically select** the most suitable valve type, material, and actuation for specific, demanding applications and extreme operating conditions.
- **Diagnose and troubleshoot** complex valve failures and performance issues with a systematic, root-cause analysis approach.
- **Implement advanced maintenance strategies**, including predictive and preventive techniques, to extend valve lifespan and minimize operational interruptions.
- **Integrate smart valve technology** and positioners to enhance system control, data acquisition, and remote monitoring capabilities.
- **Optimize valve sizing** and flow control to improve process stability, reduce energy consumption, and enhance overall system efficiency.
- **Develop comprehensive valve management plans** that align with regulatory standards and improve asset reliability and safety.



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Course Outline:

- **Advanced Valve Sizing and Selection**
 - Fluid dynamics and advanced control valve sizing (Cv, Kv, Fl)
 - Materials selection for corrosive, abrasive, and high-temperature environments
 - Specialty valve types: Cryogenic, API 6A, and severe service applications
- **Actuators, Positioners, and Smart Technology**
 - Selecting and calibrating electric, pneumatic, and hydraulic actuators
 - Digital and smart positioners: Configuration and integration
 - Fieldbus communication protocols (e.g., HART, Foundation Fieldbus) for diagnostics
- **Advanced Maintenance and Troubleshooting**
 - Systematic troubleshooting methodologies for common and complex valve issues
 - Predictive maintenance technologies: Acoustic monitoring and thermal imaging
 - Developing effective preventative maintenance schedules and protocols
- **Lifecycle Management and Safety**
 - Valve asset management and total cost of ownership (TCO) analysis
 - Regulatory compliance and industry standards (e.g., API, ASME, ISA)
 - Safety relief valve sizing, setpoint management, and testing
- **Hands-on Practical Sessions**
 - Simulations of advanced valve control loops
 - Practical actuator and positioner configuration exercises
 - Case studies on real-world valve failure analysis and optimization projects



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WHO SHOULD ATTEND?

This course is ideally suited for professionals who are already familiar with basic valve operations and are ready to take their skills to the next level. This includes:

- Mechanical and Process Engineers
- Maintenance Supervisors and Technicians
- Plant Operators and Reliability Engineers
- Project Managers and Procurement Specialists

Course Methodology:

We utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This training course will be conducted as a highly interactive workshop session. A variety of training methodologies will be used Before and during the course whenever applicable. Some of these methods are gamification, online pre-post test, role plays, self-assessment instruments, group exercises & case studies.

