

## 2 Days Training Programme on

# **PIPELINE & TERMINAL VALVES, CONTROL VALVES & ACTUATORS: OPERATIONS & MAINTENANCE, SELECTION**

Selection, Sizing, Application, Operation, Maintenance & Troubleshooting  
(23-24 Jan 2019 at Pune)

### Description

Control Valve is a very vital component in the Feedback Control Loop. Proper selection and sizing of control valve and its accessories play very important role in the entire plant performance. It also ensures optimized operating costs and energy consumption.

This course presents a practical approach to selection, sizing, installation, operation and maintenance of Control Valves, Actuators and Positioners. This training course is designed with a total balance between theory and practical examples and will help the participants in better understanding of the Control Valve as a loop component, its functions, testing and maintenance of valves.

The course provides participants with useful tips, Does and Don'ts in carrying out installation, maintenance and troubleshooting of valves, matching of valve / actuator technical specifications and system operational parameters. Emphasis is given on good engineering practices and relevant practical examples. A successful valve overhaul is critical in the reliability of the valve when re-installed in the process. Expert tips are included to ensure an efficient overhaul.

### Objectives

#### Upon Completion of this course the participants will

- Know different types of valves commonly used in process industries and Understand the relative advantages and limitations of each type
- To understand the various terminologies associated with Control Valves
- Understand the characteristics, function, and application of the control valve
- Understand methodology of selecting the proper control valve and proper valve sizing
- Describe the functions of a valve actuator and control valve positioners and their working
- Know the functions, applications, and differences of pneumatically operated actuators, electrically operated actuators, and rotary motion actuators
- Know the criteria for selecting the proper actuator and auxiliary devices
- Understand the proper installation and maintenance procedures of a control valve
- Know the does and don'ts, good engineering practices of valve installation and operation
- Understand the modern and advanced methods of diagnostics, and testing of valves

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## Who Should Attend

Ideal for the engineers who are involved in selection, installation or operation of Control Valves and Actuators in the Oil & Gas, Petroleum and Petrochemical, Power Plants, Chemical, Pharmaceutical, Sugar, Water & Waste Water Industries. This course is a good introduction to someone who has had no dealings with valves in the past as well as an important refresher course for valve specialists. Also recommended for Operations and maintenance persons, Instrumentation and Control Engineers, Process Engineers, Plant overhauling and troubleshooting Engineers and Technicians.

## Course Contents:

### 1. Fluid Mechanics Basics

- Laminar Flow, Turbulent Flow
- Reynolds Number,
- Flow Profiles
- Bernoulli's Theorem

### 2. Types of Valves & Their Broad Application Areas

- Gate Valve
- Ball valve
- Butterfly Valve
- Diaphragm Valve
- Globe Valve

### 3. Control Valves Basics

- Definition of a control valve
- Parts of Pneumatic Diaphragm Actuated Control Valve
- Control Valve Accessories: Actuator, Positioner, I/P Converter, Position Sensors
- Inherent Characteristics of Control Valves (Plugs)
  - i. Linear
  - ii. Equal percent
  - iii. Quick opening
- Pressure drop & Pressure Profile
- Cavitation & Flashing
- Noise & Noise Treatment / Control
- Materials used for Control Valve Parts and Accessories

### 4. Control Valve Actuators, Positioners, I to P Converter & Accessories

- Basic Actuators and Actuator Operation
- Pneumatic, Hydraulic, Electric
- Mounting considerations, Manual overrides
- Sizing of actuators (overview)
- Functions of Control Valve Positioner
- Types of Positioners
- Positioner as a cascade loop

## 5. Control Valve Application Engineering

- Feedback Control Basics & Control Loop Components
- Understanding Control Valve as a Control Loop Component
- Process Characteristics via-a-vis Control Valve Inherent Characteristic Selection
- Selection of Control Valve for various industrial applications
- Factors for Sizing and Selection of Control Valves
- International Guidelines for Selection of Control Valves
- Case Studies for Control Valves Selection & Sizing
- Good installation practices
- International Standards Overview

## 6. Testing & Diagnostics of Control Valves and Accessories

- Flow Coefficient/Capacity (Cv) testing
- Control Valve Characteristics testing
- Non Destructive Testing of Control Valve components
- “In-place” Diagnostic Testing
- Modern innovative methods of Control Valve Condition Based Diagnostics
- Valve Signature Analysis

## 7. Maintenance of Control Valves, Actuators and Accessories

- Routine, Predictive & Breakdown Maintenance
- Periodic Inspection and Testing

### Certification

Every successful participant will be awarded an Attendance Certificate

### Delivery Methodology

- Pre Course Test
- Classroom Sessions, Animations & Videos
- Real Life Case studies
- Assignments & Exercises
- Discussion and Interaction
- Feedback and Assessment
- Post Course Test
- Delivery 9:30 AM to 17:00 PM

### Organisers

***This specialised course is launched by CISAT in collaboration with SAN Techno Mentors Pvt. Ltd. Pune.***

***CISAT (Centre for Industrial Solution & Advanced Training), Nagpur***

CISAT is a group of Industrial Experts with experience from diversified fields and passion of teaching from various fields such as Electrical, Mechanical, Instrumentation & Process Control and Computer/IT from Power, Aluminium, Steel, Oil and Cement Industries.

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(Your partner for Industrial Solution & Empowerment of Human Capital)

CISAT delivers various services, consultancy & customized trainings to employees of many esteemed corporates.

CISAT impart quality in knowledge sharing to the Employees of Corporate at all levels on various topics



### **SAN Techno Mentors Pvt. Ltd. Pune**

SAN Techno Mentors Pvt. Ltd. is managed by a group of technocrats (COEP and IIT Bombay alumni) with long years of professional experience in diverse industry verticals. It is focused on providing Value Engineering Services by "Training", "Mentoring" and "Consultancy" for "Building KASH (Knowledge, Attitude, Skills, Habits)" / "Performance Excellence".

The Executive team set up SAN Techno Mentors to impart technical education to satisfy not only the demands of the industry but also bridge an ongoing gap between academia and industry on the foundation of the knowledge base, international projects experience, industrial contacts and the SAN Group's brand image of manufacturing of premium products.

SAN Techno Mentors is an outsourced "Training Partner" for premium MNC (USA HQ) in India. It is also a "Training Service Provider" to the same company for EMEA (Europe, Middle East & Africa). **It has also conducted training programmes for Japanese, European, Asian and Arabian professionals in Pune.**

**Having a pool of more than 50 eminent Subject Matter Experts (SMEs)** with brilliant academic background (from IITs and premium engineering colleges) long industrial experience, and teaching passion, SAN Techno Mentors is in a unique position to provide above services for corporate companies.

## Mentor: Mr . Sudhir Panditrao



### Education

**Bachelor of Engineering:** (Instrumentation and Control), College of Engineering Pune, 1985

**Master of Engineering:** (Instrumentation and Control), College of Engineering Pune, 2003

**Specialisation:** Process Instrumentation & Control

**Professional Experience: OVER 31 YEARS**

**Profile:** Sudhir is the CEO and Director of SAN Techno Mentors Pvt. Ltd.

During his professional career spanning over 31 years, Sudhir has worked in the areas of instrumentation and automation design, detailed engineering, projects, installation and commissioning at site for variety

of industry applications. He has also worked as a director for process control and computer peripherals manufacturing company mainly supplying to major automation manufactures. **He has experience of working in the Middle East as a profit centre head** that included international projects, sales and marketing in instrumentation and industrial packaging. He has worked as a consultant to various leading international organizations viz. Tata Honeywell, Eureka Industrial Equipments, Thermax etc.

His passion for teaching / training goes way back with his association with academic institutions since 1988. He has been a visiting faculty at the Government College of Engineering Pune (COEP) and the Department of Instrumentation Science at the University of Pune. He played a key role in launching and conducting training programmes for industry professionals and students at COEP. His continued passion saw him establish SAN Techno Mentors in 2007 – a company focussed on providing training and consultancy in various engineering areas.

He has worked as an Asst. Professor with one of the leading technical institutes and has published many papers. He is associated with number of institutes as a visiting faculty and is a member of board of studies and postgraduate recognized teacher at University. **He has presented a paper at IEEE Conference on Advance Process Control at Vancouver, Canada in May 2005.**

Sudhir has carried out training in India and abroad in the areas of instrumentation, industrial automation, PLC, DCS, SCADA, advanced process control, automation project engineering etc. for many professionals, students and professors from several leading companies, engineering colleges and institutes.

**Sudhir has conducted many training programmes for participants from oil & gas, petrochemical, power, water & waste water industries from India and Middle East including following:**

Dubai Electricity & Water Authority (DEWA)  
Abu Dhabi Water & Electricity Authority (ADWEA)  
Zakum Development Company (ZADCO)  
Abu Dhabi Company for Onshore Oil Operation (ADCO)  
Kuwait National Petroleum Company (KNPC)  
Qatar Petroleum (QP)  
Qatar Chemical Company (QCHEM)  
Saudi Electricity Company  
Larsen & Toubro (L & T)  
Reliance Industries Ltd.  
Jindal Steel & Power Ltd. (JSPL)  
Welspun Corporation  
Vedanta Aluminium Ltd.  
Thermax

**Sudhir has also conducted many Continuing Education Programmes for faculties from many universities and engineering colleges.**

Sudhir has been a speaker in many international conferences in his expertise area.



Having worked in both industrial and academic worlds Sudhir has a unique proposition to conduct training for faculty, students and industry professionals.

#### Training Facility:

CISAT & SAN Techno Mentors has International Level Training Centre Located in a learning atmosphere at Nagpur & Pune (India) respectively. It is equipped with training facility fully air conditioned, LCD Projector, Audio-Video, White Board and all other necessary infrastructure.

CISAT & SAN Techno Mentors jointly have facilities for conducting hands on practicals including

1. Electrical, Test & Measurement Instruments
2. Electrical Equipments, Motors & Drives, Mechatronics Setup
3. PLC (Allen Bradley, Siemens, GE) & SCADA (GE/Allen Bradley/Siemens)
4. Field Instrumentation (Sensors, Transducers, Meters etc.) & Flow Control Loop
5. Computer Lab with required software support
6. Industry Grade Panels, Electronics Kits for Experiments

#### Registration Details:

**Dates of the programme:** 23-24 Jan 2019 at Pune (2 Days).

**Participation Fee:** Rs. 20000/- Per participant plus all taxes (GST@18%); (The fee includes Course material, Tea, Snacks, and Lunch only)

**Payment:** ECS/NEFT/DD in favor of "Centre for Industrial Solutions and Advanced Training" Payable at Nagpur, Maharashtra, India. Account No: 0509102000003353 Bank: IDBI, Wardha- 442001, MS, India; IFSC Code: IBKL0000509; Swift Code IBKLINBB007; MICR Code 000259000

**Venue:** 1. KEC International Training Centre, Butibori, Nagpur, Maharashtra, India

**For Registration, please contact:**

1. [Mahendra Dhande: 9168326662](tel:9168326662)
2. [Vikas- 00-91-8669546332; 7709012815; \[cisat.nagpur@gmail.com\]\(mailto:cisat.nagpur@gmail.com\); \[vikas@cisat.co.in\]\(mailto:vikas@cisat.co.in\).](tel:00918669546332)

**Alternatively you can do 'on line Registration' through our web [www.cisat.co.in](http://www.cisat.co.in) or confirm through email.**

Contact for any In-house Training at your plant.

We do undertake all types of Training activities at all levels

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