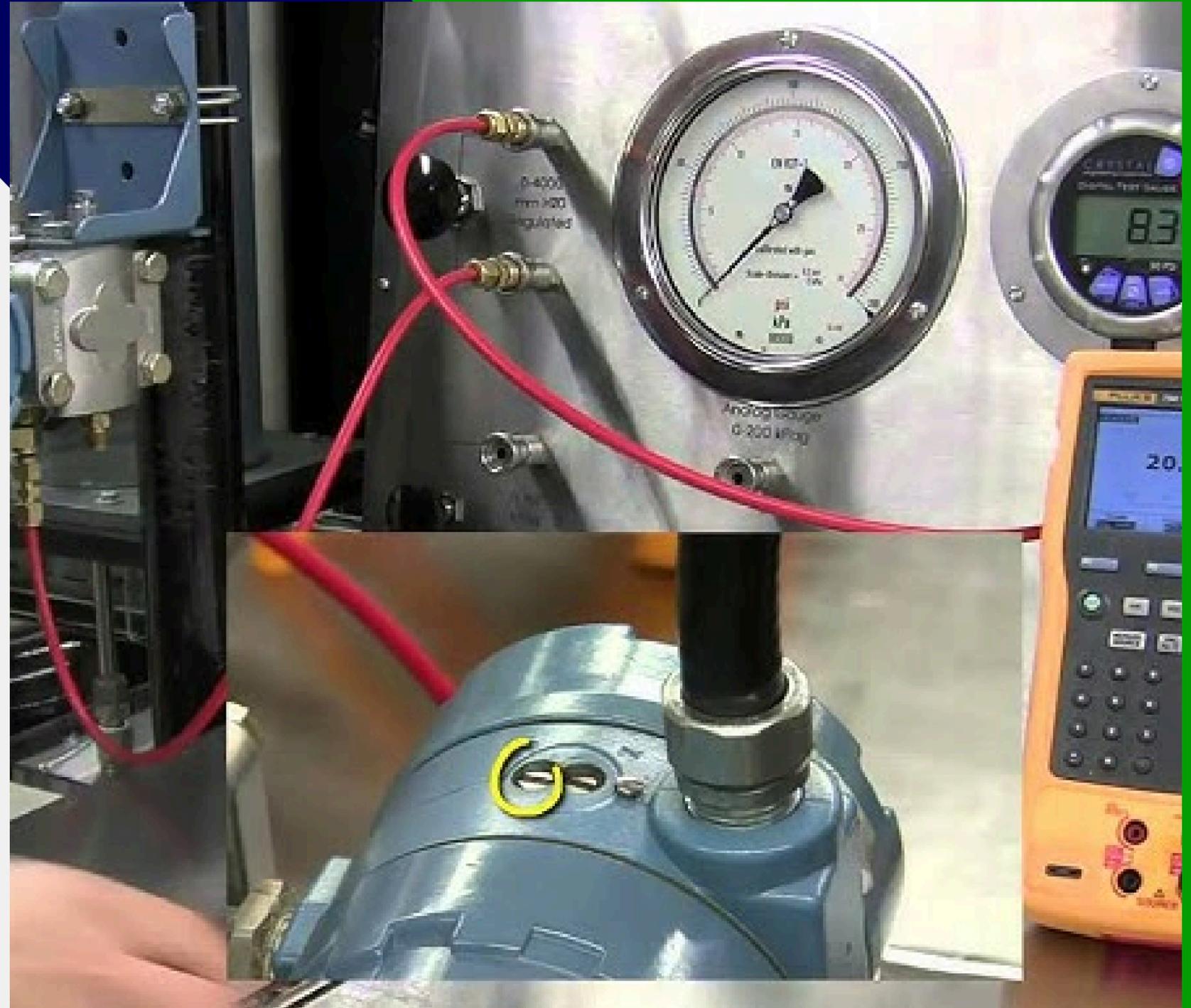


PRINCIPLES OF LEVEL MEASUREMENT

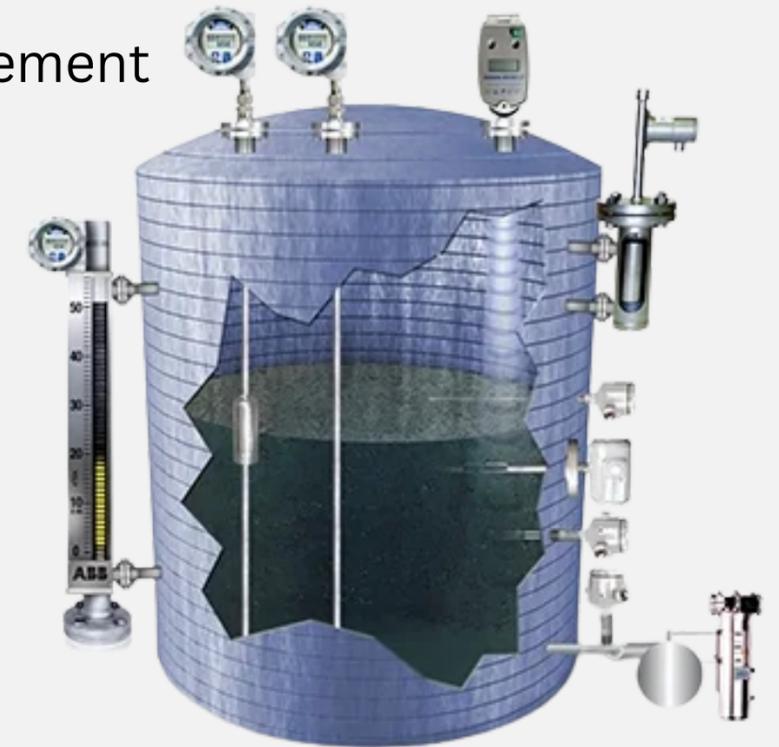


Course Objectives

- Understand the fundamental principles of level measurement in process industries
- Identify and select appropriate level measurement techniques for different applications
- Explain the working principles of mechanical, hydrostatic, and electronic level instruments
- Perform basic calibration concepts for common level measurement devices
- Recognize limitations, installation considerations, and common errors in level measurement

Target Audience

- Instrumentation & Control Engineers
- Maintenance and Reliability Engineers
- Operations and Production Personnel



Course Content

Introduction to Level Measurement

- Definition of level and interface level
- Importance of accurate level measurement in process industries
- Units of level measurement

Types of Level Measurement Techniques

A. Dipstick Method

- Simple Dipstick
- Graduated Dipstick
- Folded Dipstick
- Plumb Bob Dipstick
- Innage Dipstick
- Outage Dipstick

Applications, advantages, and limitations

Course Content

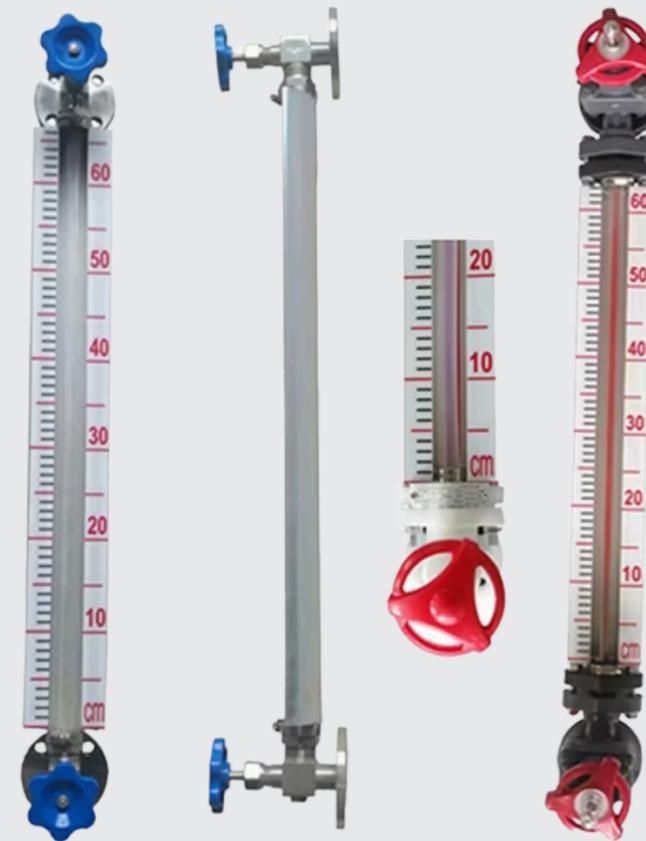
Types of Level Measurement Techniques

B. Float-Based Level Measurement

- Simple Float Level Indicator
- Float Type Level Transmitter

C. Gauge Glass Level Measurement

- Simple Gauge Glass
- Reflux Gauge Glass
- Transparent Gauge Glass
- Bi-Color Gauge Glass
- Remote Gauge Glass
- Safety Ball Device in Gauge Glass
- Purpose and operation of safety balls



Course Content

Types of Level Measurement Techniques

D. Electronic and Remote Level Gauges

- Electronic Level Gauges
- Remote Glass Level Gauges

E. Displacer Type Level Measurement

- Principle of buoyancy (Archimedes' principle)
- Displacer type level indicators and transmitters
- Wet calibration of displacer type level indicators
- Dry calibration of displacer type level transmitters
- Interface level measurement and calibration



Course Content

Types of Level Measurement Techniques

F. Bubbler (Purge) Level Measurement

- Working principle
- Applications and limitations

G. Differential Pressure (DP) Level Measurement

- Hydrostatic pressure principle
- Level measurement using DP transmitters

Applications:

- Open Tanks
- Closed Tanks with Dry Leg
- Closed Tanks with Wet Leg

Concepts:

- Zero Elevation
- Zero Suppression



Course Content

Types of Level Measurement Techniques

H. Advanced Level Measurement Techniques

- Frequency-based level measurement
- Capacitance level measurement
- Radiation (Nucleonic) level measurement

I. Level Switches and Special Applications

- Level switches (overview and applications)
- See-Saw Rain Gauge (principle and usage)



Instructor



Mr. Aftab Ahmed Mazari **Instrumentation Expert**

Mr. Aftab Ahmed Mazari has over 43 years of extensive practical experience as an Instrument Engineer. He completed his science graduation from Punjab University and received industrial instrumentation training from Russia.

He began his professional career at Pakistan Steel, where he served for 10 years. He later joined Fauji Fertilizer Company (FFC) and retired after completing 30 years of service with rich and diverse experience. Following his retirement, he worked as an Instrument and Consultant Engineer with SABIC in Saudi Arabia for one year.

Mr. Aftab Ahmed Mazari possesses wide expertise in instrumentation consultancy, Reliability Centered Maintenance (RCM), reliability engineering, and professional training. He has delivered training programs and courses to both local and international clients, including SABIC in Saudi Arabia and multinational companies such as ENI, Lotte, BHP, Engro, and HUBCO.

He has developed several training aids for instrument engineers and technicians, including simulators and training rigs such as vibration simulators, vibration switch testing rigs, speed simulators, compound gear simulators, and SOV training rigs. In addition, he has designed and produced cutaway models of control valves, pressure safety valves (PSV), rotameters, temperature sensors, pressure regulators, volume boosters, and trip relays.

Mr. Aftab Ahmed Mazari has also authored eight industrial instrumentation books for instrument and operations personnel, which are widely referred to in various industrial facilities across Pakistan.

Logistics

Duration

1 day

Location

Client site or Lahore

Training Instructors

Mr. Aftab Ahmed Mazari

Get in Touch

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 **info@ftc-consultancy.com**



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Trainings & Consultancy