

INSTRUMENTATION SYSTEM DESIGN

Review of conventional concepts

Liquid and gas flow meters- Mechanical type and Electrical type- Guidelines for installation.

Advanced gas metering and devices

Two phase flow metering using coriolis and Ultrasonic Flow Meter- Wet gas online flow measurement- V-cone throttle device- Short duct flow devising – Two phase flow calibration for gas metering.

Advanced flow meters

Solid state flow meters- need and types- Fluidic oscillator flow meter (SM700) - Electromagnetic remanance technology- Tomography based magnetic flow meters- Ultrasonic Flow Meter

Smart integrated meters

Smart meters- Components of smart meter-Post meter leakage and water loss management- Network modeling – Improved Flow measurement using Ultrasonic Flow Meter - Remote sensing smart meters- SCADA and smart metering-Futuristic approach of advanced smart meters.

Case study

User issues of smart metering-Italian gas metering- U.S. gas metering and integrated control- Metering Best practices (FEMP).

References

1. Ernest O. Doebelin, Measurement Systems and Application and System Design International Student Edition, Tata McGraw Hill Publishing co., New Delhi- 1999.
2. D. Patranabis, Principles of Industrial Instrumentation, Tata McGraw Hill Publishing co., New Delhi- 1999.
3. R. K. Jain, Mechanical and Industrial Measurements, Khanna Publishers, Delhi- 1999.