Current Trends in Utilities’ Steam Flow Measurement

Key Takeaways Based on 100 Survey Responses
RESEARCH OVERVIEW

Objective
Discover current trends in the use of steam flowmeters

Target Industries
Utility companies in the United States and Canada generating electricity with steam

Target Audience
Plant managers and engineers responsible for steam flowmeter use and selection

Total Surveys
100 executive interviews
Differential pressure flowmeters are the most common — and oldest...

Approximately 85% of the flowmeter market are differential pressure meters with nearly half of those being more than 15 years old.

Source: LTM Research; n = 77
The majority of respondents are concerned about how installation and maintenance requirements impact ability to measure steam flow accurately.

80% are moderately-to-extremely concerned about installation and maintenance requirements.

**Proper Maintenance of Differential Pressure Meters is Especially Cost- and Time-Demanding**

> “...Monthly inspections check for properly connected and sealed pressure taps. During the annual inspections, check orifice diameter and edges for wear, roughness, or material buildup, clean and smooth all internal surfaces, and check for well-connected and sealed pressure taps.”


Source: LTM Research; n = 98-100
DIFFERENTIAL PRESSURE USERS STILL STRUGGLE WITH BASIC ISSUES THAT PREVENT OPTIMAL STEAM MEASUREMENT

Respondents report that current equipment restricts steam measurement potential

TOP 5 ISSUES

- WEAR OVER TIME
- LIMITED RANGEABILITY
- IMPULSE LINE ISSUES
- PRESSURE DROP
- INTERFERENCE WITH THE STEAM FLOW

Source: LTM Research; n = 57-64
TOP OPERATIONAL GOALS REFLECT NEED FOR MORE EFFICIENCY

Almost 70% of respondents state that improving equipment life and increasing power generation are key efficiency goals.

Source: LTM Research; n = 100
REDUCING MAINTENANCE AND IMPROVING PERFORMANCE ARE KEY OPPORTUNITIES FOR INCREASED EFFICIENCY

Utilities agree that improving flow meter upkeep, accuracy, and operational range would lead to greater overall efficiency.

90% SEE FLOW METER MAINTENANCE AS IMPORTANT TO OVERALL MAINTENANCE PROGRAM

TOP 3 STRATEGIES THAT WOULD IMPROVE PLANT EFFICIENCY

1. REDUCE MAINTENANCE AND CALIBRATION OF STEAM FLOW METERS
2. IMPROVE STEAM FLOW MEASUREMENT ACCURACY OR REPEATABILITY USING NEW TECHNOLOGY
3. EXPAND THE OPERATIONAL RANGE OF FLOW MEASUREMENT TECHNOLOGY

Source: LTM Research; n = 96-97
ACCURACY BETWEEN CALIBRATION IS A QUESTION

59% of respondents are unable to guarantee accuracy between differential pressure flowmeter calibrations.

ARE YOU ABLE TO GUARANTEE ACCURACY BETWEEN CALIBRATIONS?

59% YES

41% NO

“[ISO 9000] standards mandate that precision instrumentation needs to be validated or recalibrated as often as once a year.”

—5 METHODS OF IN-SITU CALIBRATION VALIDATION

However, professionals understand that it is impossible to guarantee the accuracy of measurements between calibrations of the flowmeters.

Source: LTM Research; n = 100
CYCLIC DEMAND INEVITABLY LEADS TO INCREASED MAINTENANCE

INCREASED MAINTENANCE

52% of respondents report that cyclic loads increase flowmeter maintenance from 20% to 60%.

THE CHANGE FROM CONSTANT OR CREEPING LOAD TO CYCLIC LOAD IMPOSES NEW REQUIREMENTS ON MAINTENANCE

These power stations are operated at partial load but may have to increase their energy production drastically at the blink of an eye, necessitating adjustments in the mechanical, process engineering and control systems. However, the primary consequence of these cyclic loads is their significant impact on materials, and thus on servicing and maintenance.

—Flexibility Brings New Maintenance Challenges for Thermal Power Plants
“The expected increased use of [Combined Cycle] plants in the future will place a premium on units that can be heavily cycled and quickly started... In most applications, significant life-cycle cost savings are possible for plants that can operate at part load with improved efficiency or that can start and reach base-load faster than conventional plants.”

—A MORE ACCURATE WAY TO CALCULATE THE COST OF ELECTRICITY
DISCOVER ALL THE BENEFITS OF THE OPTISONIC 8300 FROM KROHNE

CALIBRATE ONCE, MEASURE ACCURATELY FOR YEARS
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