A STEADY STREAM OF DATA IS COMING YOUR WAY

user perspective survey on steam flow measurement



michael faraday



Q2 2007



The **User Perspective** is the component of **Worldflow** that focuses on users of flowmeters in the process industries. Periodically, we conduct a survey of flowmeter users to track purchase intent, flowmeter applications, and unmet needs and make the results available to you.

We find out what customers are saying and report important information back to you. The User Perspective Surveys are intended as a supplement to our supplier-based studies. They are especially valuable in finding trends and in determining market direction. Our Surveys are designed to provide a better understanding of user decision making about flowmeters.

A Worldflow publication

Worldflow Monitoring Service



The *Worldflow Monitoring Service* is a package of resources designed to serve the information needs of flowmeter and instrumentation manufacturers, distributors, and end-users. Each component offers timely data, meaningful news, and insightful commentary on the markets it covers. Each complements and updates the studies that Flow Research regularly conducts in the same markets, and keeps readers informed of events and trends in their industry.

Worldflow, which was initiated in 2002, has four components:

Market Barometer (MB) (40–60 pages)

This quarterly publication focuses on the flowmeter industry. *MB* reports on important technology introductions, mergers and acquisitions, and application trends. "State of the Industry" highlights recent industry events and their meaning. And, in every issue, we review each flowmeter technology and interpret changes, giving you the information and ideas you need to implement winning product strategies and to make more informed decisions. Your subscription includes *Flash Reports*, a PDF file of each issue, and two printed and bound hardcopy volumes.

Energy Monitor (EM) (40–70 pages)

This quarterly publication focuses on the oil & gas, refining & petrochemical, and power and renewable industries in relation to flow and temperature measurement, and other instrumentation. Each issue surveys the energy scene to discover significant new events, trends, and opportunities. Every issue is packed with what you need to know. Your subscription includes *Flash Reports*, a PDF file of each issue, and two printed and bound hardcopy volumes.

Flash Reports (2–6 pages each)

Just as the *Worldflow Monitoring Service* informs during the interval between studies, *Flash Reports* activate as soon as important news breaks. *Flash Reports* include both the key facts and a "What it Means" section. Subjects of recent *Flash Reports* include Siemens' purchase of Controlotron, the API's formulation of standards for vortex flowmeters, and Nu-Flo's acquisition of Caldon.

Living Database (LD) (24/7 access)

This web-based tool is an instant library of information for anyone who wants to know everything from how to select a flowmeter to what flowmeters are available worldwide and from whom. A centralized database with subscriber access via user name and password, LD is the way to conveniently locate information from past reports and articles, and to keep current on new product applications. Better data = better decisions.

User Perspective Survey on Steam Flow Measurement

Flow Research, Inc.

Wakefield, Massachusetts

User Perspective Survey on Steam Flow Measurement Flow Research, Inc.

User Perspective Survey on Steam Flow Measurement

June 2007

Researched by:

Flow Research, Inc. 27 Water Street – Suite B7 Wakefield, MA 01880

781-245-3200 781-224-7552 (fax) www.flowresearch.com

Project Team Jesse Yoder, PhD. - Project Director Norman Weeks Richard Johnson Heather Carroll

Published by



June 2007

Copyright © 2007

Flow Research, Inc.

All data and information in this study is proprietary and copyrighted by Flow Research, Inc. No part of this study may be reproduced orally or in written form to anyone outside the internal organization of the client for five years from the date of this study without the prior written consent of Flow Research, Inc.

Disclaimer

While every effort has been made to insure that this study is accurate and complete, Flow Research, Inc. accepts no liability for consequences of any actions that are based on the findings in this study.

User Perspective Survey on Steam Flow Measurement Flow Research, Inc.

Table of Contents

Chapter One: Executive Summary

Overview	1-1
Topics Included in Survey	1-2
Line Sizes	
Applications	1-3
Drivers of Accuracy	

Figure Number

1-1	Industry Distribution of Participants	1-3
	Line Sizes	
1-3	Steam Flow Applications	1-5
1-4	Need for Accuracy	1-5

Chapter Two: Scope and Methodology

Overview	2-1
Topics Included in the Survey	2-2
Team History and Experience	2-3
Flow Research, Inc	
Flow Research Studies	2-4
Flow Research Instrumentation Articles	2-5
Custom Projects	

Figure Number

0			
2-1	New-Technology and Traditional Technology	ogy Flowmeters 2-9)
<u> </u>	reemology and reactional reemion	0gy 110 willeters 2)	

Chapter Three: Steam Flow End-User Survey

Overview	. 3-1
Line Sizes	. 3-1
Applications	. 3-2
Types of Steam and Steam Measurement	
Accuracy	. 3-4
Drivers of Accuracy	
Primary Elements	. 3-7
Particular Repair/Maintenance Issues	. 3-7
Change in Primary Element	. 3-9
Change to Another Flowmeter Type	. 3-9

3-1	Industry Distribution of Participants	. 3-12
3-2	Industry Distribution of Participants (Bar Chart)	. 3-13
3-3	Flowmeter Types in Use	. 3-14
3-4	Flowmeter Types in Use (Bar Chart)	. 3-15
3-5	Line Sizes.	3-16
3-6	Line Sizes (Bar Chart)	. 3-17
3-7	Steam Flow Applications	3-18
3-8	Steam Flow Applications (Bar Chart)	. 3-19
3-9	Steam Flow Types	3-20
3-10	Steam Flow Types (Bar Chart)	. 3-21
3-11	Steam Flow Measurement	. 3-22
3-12	Steam Flow Measurement (Bar Chart)	. 3-23
3-13	Use of Other Instrumentation	. 3-24
3-14	Use of Other Instrumentation (Bar Chart)	. 3-25
3-15	Accuracy of Measurement	3-26
3-16	Accuracy of Measurement (Bar Chart)	. 3-27
3-17	Need for Accuracy	. 3-28
3-18	Need for Accuracy (Bar Chart)	. 3-29
3-19	Use of Flow Computer	3-30
3-20	Use of Flow Computer (Bar Chart)	. 3-31
3-21	Use of Primary Elements	. 3-32
3-22	Use of Primary Elements (Bar Chart)	. 3-33
3-23	Maintenance / Repair Issues	. 3-34
3-24	Maintenance / Repair Issues (Bar Chart)	. 3-35
3-25	Potential for Change in Primary Elements	. 3-36
3-26	Potential for Change in Primary Elements (Bar Chart)	. 3-37
3-27	Potential for Change in Flowmeter Type	3-38
3-28	Potential for Change in Flowmeter Type (Bar Chart)	. 3-39
3-29	Purchase History for Primary Elements	
3-30	Purchase History for Primary Elements (Bar Chart)	. 3-41

Figure Number

Table of Contents

(continued)

Appendix

User Survey Questionnaire	A 1
User Survey Questionnaire	A-1

Flow Research Services

Flow Research E-Z Faxback Response Form

Worldflow Monitoring Service

User Perspective Survey on Steam Flow Measurement Flow Research, Inc.