

The World Market for Ultrasonic Flowmeters, 4th Edition

Module A: The World Market for Clamp-on and Insertion Ultrasonic Flowmeters

Flow Research, Inc.

Wakefield, Massachusetts

June 2012

Researched by:

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

+1 781-245-3200

+1 781-7552 (fax)

info@flowresearch.com

www.flowresearch.com

www.flowultrasonic.com

Project Team

Jesse Yoder, PhD – Publisher and Executive Editor

Belinda Burum

Norman Weeks

Leslie Buchanan

Christina Glaser

Nicole Riordan

Published by



June 2012

Copyright © 2012

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.

TABLE OF CONTENTS

One	Executive Summary	1-1
	Study Objectives	1-1
	Overview.....	1-2
	Methodology.....	1-2
	Clamp-on and Insertion Ultrasonic Flowmeter Product and Technology Analysis	1-5
	Growth Factors for the Clamp-on and Insertion Ultrasonic Flowmeter Market.....	1-5
	Factors Limiting the Growth of Clamp-on and Insertion Ultrasonic Flowmeters	1-5
	Growth in the Clamp-on Ultrasonic Flowmeter Market.....	1-5
	Growth in the Insertion Ultrasonic Flowmeter Market.....	1-6
	Shipments of Clamp-on Ultrasonic Flowmeters Worldwide by Region: Figures 1-1 to 1-3	1-7
	Shipments of Clamp-on Ultrasonic Flowmeters Worldwide by Technology: Figure 1-4.....	1-8
	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Region: Figures 1-5 to 1-7	1-8
	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Technology: Figure 1-8.....	1-8
	Market Shares for the Leading Clamp-on Ultrasonic Flowmeter Suppliers Worldwide: Figure 1-9.....	1-8
	Market Shares for the Leading Insertion Ultrasonic Flowmeter Suppliers Worldwide: Figure 1-10.....	1-9
	Consider the Present and Future Versatility of Multipath Insertion Types.....	1-9
Two	Scope and Method	2-1
	Overview.....	2-1
	A Complete Analysis of the Flowmeter Market.....	2-2
	The Role of Viewpoint Pluralism	2-3
	Leading Suppliers vs. All Suppliers.....	2-5
	Study Objectives	2-5
	Methodology.....	2-6
	Geographic Regions of the World	2-8
	Definitions.....	2-18

Clamp-On Ultrasonic Flowmeters	2-18
Three Types of Clamp-On Ultrasonic Flowmeters.....	2-18
Clamp-on Ultrasonic Flowmeters by Fluid Type	2-18
End-User Industries for Clamp-On Ultrasonic Flowmeters	2-18
Clamp-on and Insertion Ultrasonic Flowmeters	2-19
Distribution Channels for Clamp-on and Insertion Ultrasonic Flowmeters	2-19
Customer Types Channels for Clamp-on and Insertion Ultrasonic Flowmeters	2-20
Insertion Type Ultrasonic Flowmeters.....	2-21
Insertion Ultrasonic Flowmeter Types.....	2-21
Insertion Ultrasonic Flowmeters by Fluid Type	2-21
End-User Industries for Insertion Ultrasonic Flowmeters	2-22
Flow Research, Inc.....	2-23
Flow Research Studies	2-24
Custom Projects	2-25
Worldflow Monitoring Service.....	2-26
Flow Research Instrumentation Articles.....	2-26
Three	
 Ultrasonic Flowmeter Product and Technology Analysis	3-1
Overview.....	3-1
New-Technology Flowmeters.....	3-2
Ultrasonic Flowmeters	3-3
Coriolis Flowmeters.....	3-4
Magnetic Flowmeters.....	3-6
Vortex Flowmeters.....	3-7
Thermal Flowmeters	3-7
Paradigm Case Selection Method	3-13
Traditional Technology Flowmeters.....	3-15
Familiarity Breeds Respect.....	3-16
Switching Technologies Has a Cost	3-17
Differential Pressure	3-17
Positive Displacement.....	3-19
Turbine.....	3-19
Open Channel.....	3-20
Variable Area	3-20
Selecting a Flowmeter.....	3-21
Ultrasonic Flowmeter Product Analysis	3-22

Elis Plzeň a.s.....	3-27
Elster Group SE	3-28
Endress+Hauser Holding AG	3-30
FLEXIM GmbH.....	3-32
Fuji Electric Company, Ltd.....	3-34
General Electric	3-35
IDEX Corporation.....	3-37
Accusonic.....	3-37
Faure Herman.....	3-38
Krohne Messtechnik GmbH & Co. KG.....	3-38
Micronics Ltd.....	3-40
Racine Federated Inc., Dynasonics.....	3-41
SICK AG.....	3-42
Siemens AG	3-44
Tokyo Keiki Co., Inc	3-45
Ultraflux	3-46

Four	Market Size and Growth Forecast for Clamp-on Ultrasonic Flowmeters	4-1
	Overview.....	4-1
	Growth Factors for the Ultrasonic Flowmeter Market	4-5
	Greater Appreciation of the Advantages and Improvements.....	4-5
	Acceptance as the Highest Accuracy Gas Technology.....	4-6
	Barriers to Growth for the Ultrasonic Flowmeter Market	4-6
	Growth in the Clamp-on Ultrasonic Flowmeter Market.....	4-6
	Market Size and Growth Forecasts	4-8
	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide	
	by Region: Figures 4-1 to 4-6	4-8
	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide	
	by Technology: Figures 4-7 to 4-25.....	4-9
	Average Selling Prices of Clamp-On Ultrasonic Flowmeters	
	by Region by Technology: Figures 4-26 to 4-30	4-9
	Shipments of Single and Dual Path Transit Time Clamp-on Ultrasonic Flowmeters Worldwide: Figures 4-31 to 4-37	4-10
	Shipments of Doppler Clamp-on Ultrasonic Flowmeters Worldwide: Figures 4-38 to 4-44.....	4-10
	Shipments of Hybrid Clamp-on Ultrasonic Flowmeters Worldwide: Figures 4-45 to 4-51	4-11

Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Mounting Type: Figures 4-52 to 4-61	4-11
Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Fluid Type: Figures 4-62 to 4-71	4-12
Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Industry: Figures 4-72 to 4-80	4-12
Shipments of Clamp-On and Insertion Ultrasonic Flowmeters Worldwide by Distribution Channel: Figures 4-81 to 4-85	4-13
Shipments of Clamp-On and Insertion Ultrasonic Flowmeters Worldwide by Customer Type: Figures 4-86 to 4-90	4-13
Five	
Market Size and Growth Forecast for Insertion Ultrasonic Flowmeters	5-1
Overview	5-1
Growth Factors for the Ultrasonic Flowmeter Market	5-5
Greater Appreciation of the Advantages and Improvements	5-5
Acceptance as the Highest Accuracy Gas Technology	5-6
Barriers to Growth for the Ultrasonic Flowmeter Market	5-6
Growth in the Insertion Ultrasonic Flowmeter Market	5-7
Market Size and Growth Forecasts	5-7
Shipments of Insertion Ultrasonic Flowmeters Worldwide: Figures 5-1 to 5-6	5-8
Shipments of Insertion Ultrasonic Flowmeters Worldwide by Technology: Figures 5-7 to 5-25	5-9
Average Selling Prices of Insertion Ultrasonic Flowmeters by Region: Figures 5-26 to 5-30	5-9
Shipments of Single and Dual Path Transit Time Insertion Ultrasonic Flowmeters Worldwide: Figures 5-31 to 5-37	5-10
Shipments of Multipath Transit Time Insertion Ultrasonic Flowmeters Worldwide: Figures 5-38 to 5-44	5-10
Shipments of Doppler Insertion Ultrasonic Flowmeters Worldwide: Figures 5-45 to 5-51	5-10
Shipments of Hybrid Insertion Ultrasonic Flowmeters Worldwide: Figures 5-52 to 5-58	5-11
Shipments of Insertion Ultrasonic Flowmeters Worldwide by Fluid Type: Figures 5-59 to 5-68	5-11

	Shipments of Insertion Ultrasonic Flowmeters Worldwide	
	by Industry: Figures 5-69 to 5-77	5-11
	Distribution Channels and Customer Types	5-12
Six	Clamp-On and Insertion Ultrasonic Flowmeter	
	Supplier Market Shares	6-1
	Overview.....	6-1
	Market Shares for the Leading Suppliers of Clamp-On Ultrasonic	
	Flowmeters Worldwide: Figures 6-1 to 6-9	6-1
	Market Shares for the Leading Suppliers of Insertion Ultrasonic	
	Flowmeters Worldwide: Figure 6-10 to 6-18	6-6
Seven	Strategies for Success	7-1
	Overview.....	7-1
	Survey End-Users Regularly, and Listen to What They Say.....	7-1
	Emphasize the Reliability of Ultrasonic Flowmeters	7-3
	Consider the Present and Future Versatility of Multipath	
	Insertion Types.....	7-3
	Fixed Clamp-On Still Tops Portable Units for Reliability	
	and Accuracy	7-4
	Pursue the Market for Steam Applications	7-4
	Become a Broad-line Supplier	7-5
	Form Alliances with Other Companies.....	7-6
	When Consolidating Product Lines, Provide a Migration Path for	
	End-Users to Current Technology	7-7
	Create a Coherent and Understandable Product Naming System.....	7-8
	Build a Great Website, and Keep it Up-to-Date	7-10
	Educate Your Customers about Ultrasonic Flow Technology	7-11
	Invest in Smart Flowmeters, and in Communication Protocols	7-12
Eight	Supplier Profiles	8-1
	Elis Plzen	8-3
	Elster Group SE	8-5
	Elster-Instromet GmbH.....	8-5
	Elster-Instromet N.V.....	8-5
	Elster American Meter	8-5
	Elster Instromet (Elster Gas North America).....	8-5
	Endress+Hauser Holding AG	8-12

Endress+Hauser USA	8-12
FLEXIM GmbH.....	8-19
FLEXIM Americas Corporation.....	8-19
Fuji Electric Company, Ltd.	8-23
Fuji Electric Corp of America. Ltd.	8-23
GE (Headquarters)	8-29
GE Measurement and Control Solutions	8-29
IDEX.....	8-33
Accusonic.....	8-36
Faure Herman.....	8-37
KROHNE Nederland B.V.....	8-39
KROHNE Messtechnik GmbH & Co. KG.....	8-39
KROHNE, Inc.....	8-39
Micronics Ltd.....	8-44
Racine Federated Inc.....	8-46
SICK AG.....	8-53
SICK Flow Solutions	8-48
SICK Inc	8-48
Siemens AG	8-57
Siemens Energy and Automation.....	8-57
Siemens AS.....	8-57
Spirax/Sarco (EMCO Flow Systems).....	8-65
Tokyo Keiki, Inc	8-72
Tokyo Keiki USA, Inc.	8-72
Ultraflux.....	8-75

LIST OF FIGURES

Figure

1-1	Total Shipments of Clamp-on Ultrasonic Flowmeters Worldwide	1-11
1-2	Total Shipments of Clamp-on Ultrasonic Flowmeters Worldwide	1-12
1-3	Shipments of Clamp-on Ultrasonic Flowmeters by Region	1-13
1-4	Shipments of Clamp-on Ultrasonic Flowmeters Worldwide by Technology	1-14
1-5	Total Shipments of Insertion Ultrasonic Flowmeters Worldwide	1-15
1-6	Total Shipments of Insertion Ultrasonic Flowmeters Worldwide	1-16
1-7	Shipments of Insertion Ultrasonic Flowmeters by Region	1-17
1-8	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Technology .	1-18
1-9	Market Shares for the Leading Suppliers of Clamp-on Ultrasonic Flowmeters Worldwide.....	1-19
1-10	Market Shares for the Leading Suppliers of Insertion Ultrasonic Flowmeters Worldwide.....	1-20
4-1	Total Shipments of Clamp-On Ultrasonic Flowmeters Worldwide	4-15
4-2	Total Shipments of Clamp-On Ultrasonic Flowmeters Worldwide	4-16
4-3	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Region	4-17
4-4	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Region	4-18
4-5	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Region	4-19
4-6	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Region	4-20
4-7	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Technology	4-21
4-8	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Technology	4-22
4-9	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Technology	4-23
4-10	Shipments of Clamp-On Ultrasonic Flowmeters in North America by Technology	4-24
4-11	Shipments of Clamp-On Ultrasonic Flowmeters in North America by Technology	4-25
4-12	Shipments of Clamp-On Ultrasonic Flowmeters in Western Europe by Technology	4-26
4-13	Shipments of Clamp-On Ultrasonic Flowmeters in Western Europe by Technology	4-27

4-14	Shipments of Clamp-On Ultrasonic Flowmeters in Eastern Europe/FSU by Technology	4-28
4-15	Shipments of Clamp-On Ultrasonic Flowmeters in Eastern Europe/FSU by Technology	4-29
4-16	Shipments of Clamp-On Ultrasonic Flowmeters in Mideast/Africa by Technology	4-30
4-17	Shipments of Clamp-On Ultrasonic Flowmeters in Mideast/Africa by Technology	4-31
4-18	Shipments of Clamp-On Ultrasonic Flowmeters in Japan by Technology ...	4-32
4-19	Shipments of Clamp-On Ultrasonic Flowmeters in Japan by Technology ...	4-33
4-20	Shipments of Clamp-On Ultrasonic Flowmeters in China by Technology ...	4-34
4-21	Shipments of Clamp-On Ultrasonic Flowmeters in China by Technology ...	4-35
4-22	Shipments of Clamp-On Ultrasonic Flowmeters in Rest of Asia by Technology	4-36
4-23	Shipments of Clamp-On Ultrasonic Flowmeters in Rest of Asia by Technology	4-37
4-24	Shipments of Clamp-On Ultrasonic Flowmeters in Latin America by Technology	4-38
4-25	Shipments of Clamp-On Ultrasonic Flowmeters in Latin America by Technology	4-39
4-26	Average Selling Prices of Clamp-On Ultrasonic Flowmeters by Region	4-40
4-27	Average Selling Prices of Clamp-On Ultrasonic Flowmeters by Region by Technology	4-41
4-28	Average Selling Prices of Clamp-On Ultrasonic Flowmeters by Region by Technology	4-42
4-29	Average Selling Prices of Clamp-On Ultrasonic Flowmeters by Region by Technology	4-43
4-30	Average Selling Prices of Clamp-On Ultrasonic Flowmeters by Region by Technology	4-44
4-31	Shipments of Single and Dual Path Transit Time Clamp-on Ultrasonic Flowmeters Worldwide.....	4-45
4-32	Shipments of Single and Dual Path Transit Time Clamp-on Ultrasonic Flowmeters Worldwide.....	4-46
4-33	Shipments of Single and Dual Path Transit Time Clamp-on Ultrasonic Flowmeters Worldwide.....	4-47
4-34	Shipments of Single and Dual Path Transit Time Clamp-on Ultrasonic Flowmeters Worldwide.....	4-48

4-35	Shipments of Single and Dual Path Transit Time Clamp-on Ultrasonic Flowmeters Worldwide.....	4-49
4-36	Shipments of Single and Dual Path Transit Time Clamp-on Ultrasonic Flowmeters Worldwide.....	4-50
4-37	Shipments of Single and Dual Path Transit Time Clamp-on Ultrasonic Flowmeters Worldwide.....	4-51
4-38	Shipments of Doppler Clamp-on Ultrasonic Flowmeters Worldwide.....	4-52
4-39	Shipments of Doppler Clamp-on Ultrasonic Flowmeters Worldwide.....	4-53
4-40	Shipments of Doppler Clamp-on Ultrasonic Flowmeters Worldwide.....	4-54
4-41	Shipments of Doppler Clamp-on Ultrasonic Flowmeters Worldwide.....	4-55
4-42	Shipments of Doppler Clamp-on Ultrasonic Flowmeters Worldwide.....	4-56
4-43	Shipments of Doppler Clamp-on Ultrasonic Flowmeters Worldwide.....	4-57
4-44	Shipments of Doppler Clamp-on Ultrasonic Flowmeters Worldwide.....	4-58
4-45	Shipments of Hybrid Clamp-on Ultrasonic Flowmeters Worldwide	4-59
4-46	Shipments of Hybrid Clamp-on Ultrasonic Flowmeters Worldwide	4-60
4-47	Shipments of Hybrid Clamp-on Ultrasonic Flowmeters Worldwide	4-61
4-48	Shipments of Hybrid Clamp-on Ultrasonic Flowmeters Worldwide	4-62
4-49	Shipments of Hybrid Clamp-on Ultrasonic Flowmeters Worldwide	4-63
4-50	Shipments of Hybrid Clamp-on Ultrasonic Flowmeters Worldwide	4-64
4-51	Shipments of Hybrid Clamp-on Ultrasonic Flowmeters Worldwide	4-65
4-52	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Mounting Type.....	4-66
4-53	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Mounting Type.....	4-67
4-54	Shipments of Clamp-On Ultrasonic Flowmeters in North America by Mounting Type.....	4-68
4-55	Shipments of Clamp-On Ultrasonic Flowmeters in Western Europe by Mounting Type.....	4-69
4-56	Shipments of Clamp-On Ultrasonic Flowmeters in Eastern Europe/FSU by Mounting Type.....	4-70
4-57	Shipments of Clamp-On Ultrasonic Flowmeters in Mideast/Africa by Mounting Type.....	4-71
4-58	Shipments of Clamp-On Ultrasonic Flowmeters in Japan by Mounting Type.....	4-72
4-59	Shipments of Clamp-On Ultrasonic Flowmeters in China by Mounting Type.....	4-73
4-60	Shipments of Clamp-On Ultrasonic Flowmeters in Rest of Asia by Mounting Type.....	4-74

4-61	Shipments of Clamp-On Ultrasonic Flowmeters in Latin America by Mounting Type.....	4-75
4-62	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Fluid Type.....	4-76
4-63	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Fluid Type.....	4-77
4-64	Shipments of Clamp-On Ultrasonic Flowmeters in North America by Fluid Type.....	4-78
4-65	Shipments of Clamp-On Ultrasonic Flowmeters in Western Europe by Fluid Type.....	4-79
4-66	Shipments of Clamp-On Ultrasonic Flowmeters in Eastern Europe/FSU by Fluid Type.....	4-80
4-67	Shipments of Clamp-On Ultrasonic Flowmeters in Mideast/Africa by Fluid Type.....	4-81
4-68	Shipments of Clamp-On Ultrasonic Flowmeters in Japan by Fluid Type.....	4-82
4-69	Shipments of Clamp-On Ultrasonic Flowmeters in China by Fluid Type	4-83
4-70	Shipments of Clamp-On Ultrasonic Flowmeters in Rest of Asia by Fluid Type.....	4-84
4-71	Shipments of Clamp-On Ultrasonic Flowmeters in Latin America by Fluid Type.....	4-85
4-72	Shipments of Clamp-On Ultrasonic Flowmeters Worldwide by Industry	4-86
4-73	Shipments of Clamp-On Ultrasonic Flowmeters in North America by Industry	4-87
4-74	Shipments of Clamp-On Ultrasonic Flowmeters in Western Europe by Industry	4-88
4-75	Shipments of Clamp-On Ultrasonic Flowmeters in Eastern Europe/FSU by Industry	4-89
4-76	Shipments of Clamp-On Ultrasonic Flowmeters in Mideast/Africa by Industry	4-90
4-77	Shipments of Clamp-On Ultrasonic Flowmeters in Japan by Industry	4-91
4-78	Shipments of Clamp-On Ultrasonic Flowmeters in China by Industry.....	4-92
4-79	Shipments of Clamp-On Ultrasonic Flowmeters in Rest of Asia by Industry	4-93
4-80	Shipments of Clamp-On Ultrasonic Flowmeters in Latin America by Industry.....	4-94

4-81	Shipments of Clamp-On and Insertion Ultrasonic Flowmeters Worldwide by Distribution Channel.....	4-95
4-82	Shipments of Clamp-On and Insertion Ultrasonic Flowmeters by Region by Distribution Channel	4-96
4-83	Shipments of Clamp-On and Insertion Ultrasonic Flowmeters by Region by Distribution Channel	4-97
4-84	Shipments of Clamp-On and Insertion Ultrasonic Flowmeters by Region by Distribution Channel	4-98
4-85	Shipments of Clamp-On and Insertion Ultrasonic Flowmeters by Region by Distribution Channel	4-99
4-86	Shipments of Clamp-On and Insertion Ultrasonic Flowmeters Worldwide by Customer Type.....	4-100
4-87	Shipments of Clamp-On and Insertion Ultrasonic Flowmeters by Region by Customer Type	4-101
4-88	Shipments of Clamp-On and Insertion Ultrasonic Flowmeters by Region by Customer Type	4-102
4-89	Shipments of Clamp-On and Insertion Ultrasonic Flowmeters by Region by Customer Type	4-103
4-90	Shipments of Clamp-On and Insertion Ultrasonic Flowmeters by Region by Customer Type	4-104
5-1	Total Shipments of Insertion Ultrasonic Flowmeters Worldwide.....	5-13
5-2	Total Shipments of Insertion Ultrasonic Flowmeters Worldwide.....	5-14
5-3	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Region.....	5-15
5-4	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Region.....	5-16
5-5	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Region.....	5-17
5-6	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Region.....	5-18
5-7	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Technology	5-19
5-8	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Technology	5-20
5-9	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Technology	5-21
5-10	Shipments of Insertion Ultrasonic Flowmeters in North America by Technology	5-22
5-11	Shipments of Insertion Ultrasonic Flowmeters in North America by Technology	5-23

5-12	Shipments of Insertion Ultrasonic Flowmeters in Western Europe by Technology	5-24
5-13	Shipments of Insertion Ultrasonic Flowmeters in Western Europe by Technology	5-25
5-14	Shipments of Insertion Ultrasonic Flowmeters in Eastern Europe/FSU by Technology	5-26
5-15	Shipments of Insertion Ultrasonic Flowmeters in Eastern Europe/FSU by Technology	5-27
5-16	Shipments of Insertion Ultrasonic Flowmeters in Mideast/Africa by Technology	5-28
5-17	Shipments of Insertion Ultrasonic Flowmeters in Mideast/Africa by Technology	5-29
5-18	Shipments of Insertion Ultrasonic Flowmeters in Japan by Technology	5-30
5-19	Shipments of Insertion Ultrasonic Flowmeters in Japan by Technology	5-31
5-20	Shipments of Insertion Ultrasonic Flowmeters in China by Technology	5-32
5-21	Shipments of Insertion Ultrasonic Flowmeters in China by Technology	5-33
5-22	Shipments of Insertion Ultrasonic Flowmeters in Rest of Asia by Technology	5-34
5-23	Shipments of Insertion Ultrasonic Flowmeters in Rest of Asia by Technology	5-35
5-24	Shipments of Insertion Ultrasonic Flowmeters in Latin America by Technology	5-36
5-25	Shipments of Insertion Ultrasonic Flowmeters in Latin America by Technology	5-37
5-26	Average Selling Prices of Insertion Ultrasonic Flowmeters by Region	5-38
5-27	Average Selling Prices of Insertion Ultrasonic Flowmeters by Region by Technology	5-39
5-28	Average Selling Prices of Insertion Ultrasonic Flowmeters by Region by Technology	5-40
5-29	Average Selling Prices of Insertion Ultrasonic Flowmeters by Region by Technology	5-41
5-30	Average Selling Prices of Insertion Ultrasonic Flowmeters by Region by Technology	5-42
5-31	Shipments of Single and Dual Path Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-43
5-32	Shipments of Single and Dual Path Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-44

5-33	Shipments of Single and Dual Path Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-45
5-34	Shipments of Single and Dual Path Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-46
5-35	Shipments of Single and Dual Path Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-47
5-36	Shipments of Single and Dual Path Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-48
5-37	Shipments of Single and Dual Path Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-49
5-38	Shipments of Multipath Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-50
5-39	Shipments of Multipath Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-51
5-40	Shipments of Multipath Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-52
5-41	Shipments of Multipath Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-53
5-42	Shipments of Multipath Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-54
5-43	Shipments of Multipath Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-55
5-44	Shipments of Multipath Transit Time Insertion Ultrasonic Flowmeters Worldwide.....	5-56
5-45	Shipments of Doppler Insertion Ultrasonic Flowmeters Worldwide	5-57
5-46	Shipments of Doppler Insertion Ultrasonic Flowmeters Worldwide	5-58
5-47	Shipments of Doppler Insertion Ultrasonic Flowmeters Worldwide	5-59
5-48	Shipments of Doppler Insertion Ultrasonic Flowmeters Worldwide	5-60
5-49	Shipments of Doppler Insertion Ultrasonic Flowmeters Worldwide	5-61
5-50	Shipments of Doppler Insertion Ultrasonic Flowmeters Worldwide	5-62
5-51	Shipments of Doppler Insertion Ultrasonic Flowmeters Worldwide	5-63
5-52	Shipments of Hybrid Insertion Ultrasonic Flowmeters Worldwide	5-64
5-53	Shipments of Hybrid Insertion Ultrasonic Flowmeters Worldwide	5-65
5-54	Shipments of Hybrid Insertion Ultrasonic Flowmeters Worldwide	5-66
5-55	Shipments of Hybrid Insertion Ultrasonic Flowmeters Worldwide	5-67
5-56	Shipments of Hybrid Insertion Ultrasonic Flowmeters Worldwide	5-68
5-57	Shipments of Hybrid Insertion Ultrasonic Flowmeters Worldwide	5-69
5-58	Shipments of Hybrid Insertion Ultrasonic Flowmeters Worldwide	5-70

5-59	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Fluid Type.....	5-71
5-60	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Fluid Type.....	5-72
5-61	Shipments of Insertion Ultrasonic Flowmeters in North America by Fluid Type.....	5-73
5-62	Shipments of Insertion Ultrasonic Flowmeters in Western Europe by Fluid Type.....	5-74
5-63	Shipments of Insertion Ultrasonic Flowmeters in Eastern Europe/FSU by Fluid Type.....	5-75
5-64	Shipments of Insertion Ultrasonic Flowmeters in Mideast/Africa by Fluid Type.....	5-76
5-65	Shipments of Insertion Ultrasonic Flowmeters in Japan by Fluid Type.....	5-77
5-66	Shipments of Insertion Ultrasonic Flowmeters in China by Fluid Type.....	5-78
5-67	Shipments of Insertion Ultrasonic Flowmeters in Rest of Asia by Fluid Type.....	5-79
5-68	Shipments of Insertion Ultrasonic Flowmeters in Latin America by Fluid Type.....	5-80
5-69	Shipments of Insertion Ultrasonic Flowmeters Worldwide by Industry.....	5-81
5-70	Shipments of Insertion Ultrasonic Flowmeters in North America by Industry.....	5-82
5-71	Shipments of Insertion Ultrasonic Flowmeters in Western Europe by Industry.....	5-83
5-72	Shipments of Insertion Ultrasonic Flowmeters in Eastern Europe/FSU by Industry.....	5-84
5-73	Shipments of Insertion Ultrasonic Flowmeters in Mideast/Africa by Industry.....	5-85
5-74	Shipments of Insertion Ultrasonic Flowmeters in Japan by Industry.....	5-86
5-75	Shipments of Insertion Ultrasonic Flowmeters in China by Industry.....	5-87
5-76	Shipments of Insertion Ultrasonic Flowmeters in Rest of Asia by Industry.....	5-88
5-77	Shipments of Insertion Ultrasonic Flowmeters in Latin America by Industry.....	5-89

6-1	Market Shares for the Leading Suppliers of Clamp-On Ultrasonic Flowmeters Worldwide.....	6-11
6-2	Market Shares for the Leading Suppliers of Clamp-On Ultrasonic Flowmeters in North America	6-12
6-3	Market Shares for the Leading Suppliers of Clamp-On Ultrasonic Flowmeters in Western Europe.....	6-13
6-4	Market Shares for the Leading Suppliers of Clamp-On Ultrasonic Flowmeters in Eastern Europe/FSU.....	6-14
6-5	Market Shares for the Leading Suppliers of Clamp-On Ultrasonic Flowmeters in Mideast/Africa	6-15
6-6	Market Shares for the Leading Suppliers of Clamp-On Ultrasonic Flowmeters in Japan	6-16
6-7	Market Shares for the Leading Suppliers of Clamp-On Ultrasonic Flowmeters in China	6-17
6-8	Market Shares for the Leading Suppliers of Clamp-On Ultrasonic Flowmeters in Rest of Asia.....	6-18
6-9	Market Shares for the Leading Suppliers of Clamp-On Ultrasonic Flowmeters in Latin America	6-19
6-10	Market Shares for the Leading Suppliers of Insertion Ultrasonic Flowmeters Worldwide.....	6-20
6-11	Market Shares for the Leading Suppliers of Insertion Ultrasonic Flowmeters in North America	6-21
6-12	Market Shares for the Leading Suppliers of Insertion Ultrasonic Flowmeters in Western Europe.....	6-22
6-13	Market Shares for the Leading Suppliers of Insertion Ultrasonic Flowmeters in Eastern Europe/FSU.....	6-23
6-14	Market Shares for the Leading Suppliers of Insertion Ultrasonic Flowmeters Mideast/Africa	6-24
6-15	Market Shares for the Leading Suppliers of Insertion Ultrasonic Flowmeters in Japan	6-25
6-16	Market Shares for the Leading Suppliers of Insertion Ultrasonic Flowmeters in China	6-26
6-17	Market Shares for the Leading Suppliers of Insertion Ultrasonic Flowmeters in Rest of Asia.....	6-27
6-18	Market Shares for the Leading Suppliers of Insertion Ultrasonic Flowmeters in Latin America	6-28

LIST OF TABLES

Table

2-1	New-Technology and Traditional Technology Flowmeters.....	2-36
2-2	Emerging Technology Flowmeters.....	2-36
2-3	New-Technology Flowmeters Approved by the Fieldbus Foundation.....	2-37
3-1	Advantages and Disadvantages of DP and New-Technology Flowmeters ...	3-10
3-2	New-Technology and DP Flowmeter Principles of Operation.....	3-12
3-3	Paradigm Case Conditions for New-Technology Flowmeters	3-15
3-4	Where Traditional Technology Flowmeters Excel.....	3-23
3-5	Advantages and Disadvantages of PD Flowmeters	3-24
3-6	Mergers and Acquisitions in Traditional Technology Flowmeter Suppliers	3-31
3-7	Types of Ultrasonic Clamp-on and Insertion Flowmeters by Supplier	3-35

LIST OF MAPS

Map

2-1	World	2-9
2-2	World by Region.....	2-10
2-3	Asia	2-10
2-4	Europe and Russia	2-11
2-5	The Russian Federation	2-11
2-6	China.....	2-12
2-7	Japan	2-12
2-8	India.....	2-13
2-9	Indonesia.....	2-13
2-10	Europe, Mideast, and Africa (EMEA).....	2-14
2-11	The Mideast	2-15
2-12	Commonwealth of Independent States and Asia.....	2-15
2-13	South America	2-16
2-14	Central America.....	2-16
2-15	The United States.....	2-17
2-16	Canada	2-17

Appendix A: Proposal for *The World Market for Ultrasonic Flowmeters, 4th Edition*..... A-1

Appendix B: Supplier Directory B-1