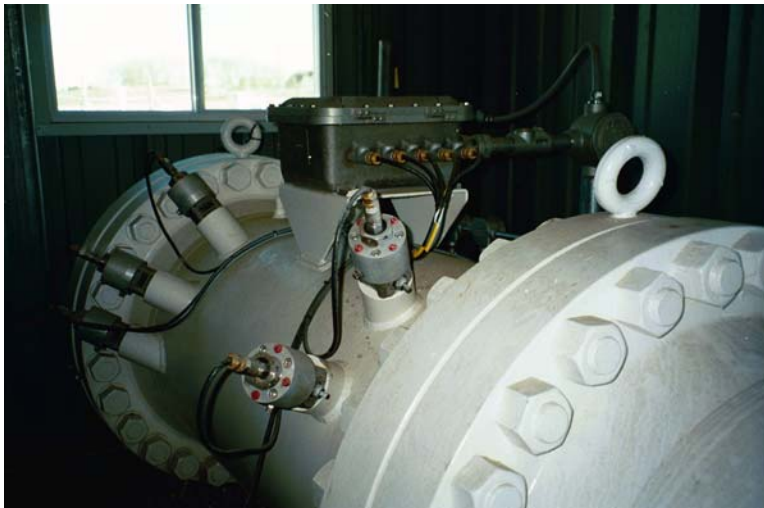


The World Market for Ultrasonic Flowmeters

For the past three years, ultrasonic flowmeters have been the fastest growing type of flowmeter, even exceeding the growth rate of Coriolis flowmeters. This is still true today, fueled in part by dramatic growth in the use of ultrasonic meters for custody transfer of natural gas. Ultrasonic meters are nonintrusive, and they have no pressure drop. Clamp-on meters offer the ability to measure flow in various locations without interfering in any way with the process. While clamp-on meters have mainly been used for liquids, they are also beginning to be used to measure gas flow.

Operating Principle: The Silent Wave

Ultrasonic flowmeters use ultrasonic waves to measure flowrate in closed pipes and open channels.



An ultrasonic meter onsite at CEESI Iowa

Ultrasonic waves are beyond the frequencies that humans can hear. Most people can hear sound waves between 20 and 20,000 cycles per second. Ultrasonic waves are above 20,000 cycles per second, making them inaudible to human beings. Ultrasonic flowmeters contain transducers that send and receive these ultrasonic waves.

Ultrasonic flowmeters rely on the fact that ultrasonic waves travel more quickly when they travel with the flowstream than when they travel against it. Ultrasonic flowmeters send ultrasonic waves across the flowstream and measure the time it takes for the wave to cross from one side of the pipe to the other. Using this information, the flowmeter can calculate flowrate. Ultrasonic flowmeters are used to measure both liquid and gas flow.

Paradigm Case Applications

The paradigm case application for ultrasonic flowmeters is for clean, swirl-free liquids and gases of known profile. Operating on clean fluids is the most important constraint on ultrasonic meters, although today's transit time meters can handle some impurities. Doppler meters are made to measure dirty liquids, since they bounce their signals off the impurities in the flowstream. Multipath meters are more accurate, since they use more than one ultrasonic signal to calculate flowrate.

Study Highlights

As part of our effort to define the worldwide flowmeter market, Flow Research has contacted every known supplier of ultrasonic flowmeters worldwide. We have gathered detailed information about these suppliers and compiled the result into a complete description of the worldwide ultrasonic flowmeter market. Highlights of the study include:

- Market size by geographic region
- Market shares by geographic region
- Transit time vs. Doppler vs. Hybrid meters
- Shipments by liquid vs. gas vs. steam
- Smart vs. conventional ultrasonic meters
- Shipments by communication protocol
- Shipments by industry
- Shipments by distribution channel
- Shipments by customer type
- Market strategies for ultrasonic suppliers
- Growth forecasts through 2007
- Company profiles of ultrasonic flowmeter suppliers

Explosive Growth



The fast-growing use of ultrasonic flowmeters to measure natural gas flow receives special attention in this study. This is the fastest-growing segment of the flowmeter market. The approval of the American Gas Association report (AGA-9) on the use of ultrasonic flowmeters to measure natural gas flow gave a major boost to this market. This approval occurred in June 1998. Since that time, new suppliers have entered the field and new products have been introduced. This is one of the most exciting and dynamic segments of the entire flowmeter market.

The ultrasonic market is experiencing explosive growth. There are more ultrasonic flowmeter manufacturers than for any other new technology flowmeter. One reason for the explosive growth is the number of new companies entering the market. While the leading suppliers are enjoying significant growth, the new companies in the market that

are a major force in expanding total market size. As users become more aware of the advantages of ultrasonic meters, and more familiar with the technology, they are more likely to replace their traditional meters with ultrasonic meters.

Companies Profiled

Companies profiled in this study are as follows:

American Sigma
Automated Sonix Corp.
Brinck
Caldon
Controlotron
Danfoss
D-Flow
Datam Flutec
Durag Group
Dynasonics
Eastech Flow Controls
Eastern Energy Service
Elis Plzen
EMCO
Emerson Daniel
Endress & Hauser
Flexim
Flotec UK
Fluenta
FMC Energy Systems
Fuji Electric
GE Panametrics
Greyline
Honda Electronics
Instromet
Kaijo
Krohne
Laaser
Matelco
Mesa Labs
Micronics
Quality Control Equipment
Rittmeyer
Sick
Siemens
Solartron Mobrey
Sparling
Tekesco
Thermo MeasureTech

Thermo Polysonics
Tokimec
Tokyo Keiso
Ultraflux
Ultrasound Research Center
Yokogawa

Contact Flow Research for more details about this exciting new study. **The World Market for Ultrasonic Flowmeters** is available for immediate delivery.