

F R O S T & S U L L I V A N

Endress+Hauser



People for Process Automation

# 2017 Global Magnetic Flowmeters Market Leadership Award

F R O S T & S U L L I V A N

BEST  
2017 PRACTICES  
AWARD

GLOBAL MAGNETIC FLOWMETERS  
MARKET LEADERSHIP AWARD

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## Background and Company Performance

### *Industry Challenges*

To remain competitive in the maturing magnetic flowmeters market, companies must constantly develop new products with advanced capabilities, along with a comprehensive suite of support services, to meet customers' diverse liquid flow measurement needs successfully. Offering customers the flexibility to customize products, without having to purchase a new flowmeter that meets their changing measurement needs, will likely win more customers because they can expect a high return on investment (ROI), without the need for heavy investments.

Hygiene applications demand magnetic flowmeters to comply with safety standards, such as 3-A Sanitary Standards Inc (SSI) and European Hygienic Engineering and Design Group (EHEDG). Compliance with such standards translates into a hassle-free and pleasing customer purchase experience.

Process monitoring is gaining increasing importance as customers look to optimize their operations without exceeding their budgets; conform to stringent standards; and build high-quality, best-of-breed solutions, to remain competitive.

Therefore, magnetic flowmeter manufacturers must develop advanced magnetic flowmeters with multi-variable flow measurement capabilities to expedite monitoring and verifying processes as well as record high margins.

### *Market Leadership of Endress+Hauser*

#### **Growth Strategy Excellence**

Boasting the largest installed base of more than two million units of electromagnetic flowmeters (which is unmatched in the market), Endress+Hauser leads the global magnetic flowmeters market clearly showing how well the company's electromagnetic flowmeters have resonated with customers.

Endress+Hauser's success can be attributed to its customer-centric approach and its drive for continuous product innovation, which have led to the development of a comprehensive range of magnetic flowmeters to meet various customer needs. Committed to fulfilling customers' liquid flow measurement needs, Endress+Hauser invests heavily in research and development (R&D) to develop new capabilities that will transform customers' quality of experience (QoE).

In line with its mission of helping customers achieve zero-fault production, Endress+Hauser designs its magnetic flowmeters in its certified, global manufacturing facilities, with quality management systems in place to comply with standard certifications, such as ISO/IEC

17025:2005, ATEX/CSA, Technischer Überwachungsverein (TÜV), and Functional Safety SIL.

The company's new-generation series of Proline transmitters features advanced technologies, such as the Heartbeat Technology that transforms customers' process monitoring experience, without compromising on measurement accuracy.

Endress+Hauser holds a leading position in the market with an estimated market share of over 23% share of the global hygienic magnetic flowmeters market. Endress+Hauser's Dosimag electromagnetic flowmeter has a line size as low as 5/32 of an inch that can be extended to one inch. The Promag H series of transmitters (100, 300, and 500) that suits hygienic application needs has range of diameter nominal (DN) 1/12 of an inch to 6 inches, which is the smallest line size in the industry, clearly indicating how Endress+Hauser has strategically positioned its broad product portfolio to meet all types of changing customer needs.

In addition to hygienic applications, Endress+Hauser offers a wide product portfolio into water/wastewater, chemical, primaries and metals applications with the Promag W, Promag L, Promag P and Promag S series.

Furthermore, Endress+Hauser is looking forward to achieving the three million mark of installed base units in the near future.

### **Product Differentiation**

Fit for dosing and high-speed conductive liquid filling and bottling applications for the food and beverage and pharmaceutical industries, Endress+Hauser's Dosimag stands out in the market because of its ability to guarantee unprecedented repeatability, despite its ultra-compact form factor. In addition, the solution's ability to resist changes in level, viscosity, density, pressure, and temperature allows it to measure flow volume and repeatability precisely in the shortest filling time, without recording any dip in pressure or production level.

Featuring no movable parts, which subsequently nearly nullifies maintenance cost, Dosimag ensures high-precision measurement. Varying in size from 5/32 of an inch to one inch, Dosimag can gauge flow rates at a speed of 33 feet per second, which has yet to be achieved by competing magnetic flowmeters of the same size. Dosimag works on the electromagnetic principle of liquid flow measurement and has stainless steel housing that makes it fit for hygienic applications, in compliance with 3-A and EHEDG and according to the US Food and Drug Administration (FDA).

Covering a minimal diameter in the range of DN 4 (5/32 of an inch), 8 (5/16 of an inch), 15 (one half inch), and 25 (one inch), this FDA-approved transmitter ensures the highest

process safety in compliance with industry standards, such as ATEX, IECEx, cCSAus, and IP66/67 (type 4X enclosure), as well as CIP and SIP regulations.

Reduced overfills and cleaning times, along with the need for considerably fewer cleaners, translate into significant cost savings.

### **Technology Leverage**

Customers' increasing demand for plant process safety in compliance with stringent safety parameters, such as SIL, 3-A, and EHEDG, requires regular proof-tests that will not impact process uptime.

Recalibrating flowmeters or inspecting and confirming flow measurement points by interrupting processes that always need to be operational in industries (e.g., water) is practically impossible. Calibrating process-critical measurement systems using conventional techniques interrupts ongoing processes and is time consuming, in addition to being costly. Furthermore, the possibility of cross contamination as devices come in open contact with sterile process loops can compromise performance efficiency. With customers looking to decrease their operational expenses because of budgetary constraints, the need for an advanced, robust technique that can reduce process interruptions while enhancing production efficiency is imperative.

Endress+Hauser's innovative Heartbeat Technology simplifies in-line device verification in areas that are either marked by harsh environmental conditions or difficult to reach. The technology can perform in-depth process monitoring by itself on a continuous basis for diagnosing failures, even before they actually happen. Additionally, verification reports generated comply with standards, such as IEC 61511-1 that confirms operational safety of industrial processes as well as ISO 9001 for auditory purposes.

Compliant with standards, such as IEC 61508 that guarantees functional safety of electronic safety-related systems and TÜV that ensures metrologically traceable verification while in operation, Endress+Hauser's Heartbeat Technology can verify device performance at any time, without halting the process for calibrating/monitoring and measuring/verifying purposes.

Embedded into the measuring electronics of Proline flowmeters, this non-contact technology ensures 95% test coverage, which brings down the possibility of device failure, while eliminating the need for calibration for the next 5 years. The ability to avert the risk of sudden device malfunctions and the resulting downtime enables customers to stay competitive in their domains of operation as they witness a significant rise in their productivity levels. In addition, the technique is transparent because verification reports can be stored, published, and retrieved, thereby allowing customers to access reports at any time to compare performance data.

## Price/Performance Value

With its customer-centric approach, Endress+Hauser aims to improve customers' operational processes in terms of performance quality, safety, and plant availability. The company is the only manufacturer of electromagnetic flowmeters that supports EtherNet/IP™ and PROFINET®. These communication protocols make information easily available and accessible for smart decision making to enhance the productivity of business processes.

For instance, Endress+Hauser's Promag H series of magnetic flowmeters enables conductivity probing and offers repeatable conductivity. Furthermore, the technology can be scaled for temperature probing and combined with other probes to create several data points, such as flow rate, total flow, conductivity, temperature, diagnostics, and monitoring, out of a single flowmeter by leveraging a digital communication protocol such the aforementioned industrial ethernet technologies.

None of Endress+Hauser's peers offer a multi-functional magnetic flowmeter with such advanced capabilities. The WLAN access point that comes with the Proline 300/500 platforms simplifies users' interfacing with flowmeters by establishing a connection between the embedded web server and the device, without requiring human interference. The Web-enabled server simplifies the transfer of information that is accessible from any standard connected device, such as smartphones, laptops and tablets, as well as offers device configuration without the need for any particular tool.

Endress+Hauser follows a strategy of segmentation by technology/sensor/transmitter and then by gives is a manual check to ensure the selection of the right flowmeter for fulfilling a customer's specific application need and delivering a superior value proposition. Offering a broad portfolio of sensors and transmitters for its magnetic flowmeters enables Endress+Hauser to meet customers' unique needs. In addition, while the company's base offerings are extremely price competitive, pricing depends on advanced capabilities built into the product as per customers' flow measurement needs.

## Unique Characteristics

Endress+Hauser's magnetic flowmeter range has certain unique differentiators. For example, this range installs different types of liners, such as polyamide, polytetrafluoroethylene (PTFE), perfluoroalkoxy alkanes (PFA), polyurethane, hard rubber and soft rubber, within the magnetic flowmeters and connects pipes to meet a wide range of operational temperature applications. These special liners enable increased process efficiency with high precision to meet extreme temperatures and harsh process environments.

In the pharmaceutical industry, quality risk management has become a mandatory regulatory requirement for pharmaceutical and drug manufacturers. Endress+Hauser's

Proline Promag, and Dosimag comply with the US FDA's principles and practices as well as the European Medicines Agency (EMA)'s Annex 15, which offers input to help drug manufacturers manage instrumentation correctly.

High-quality flowmeters are installed with self-testing as an integral part of the flowmeter device. Endress+Hauser was the first to develop the Heartbeat Technology, which is incorporated in its new range of Proline flowmeters. This technology ensures that embedded diagnostics in all flowmeter technologies operate continuously and in accordance with NAMUR NE107. Self-testing and traceable verification checks the sensor output through the entire signal chain.

### **Customer Ownership Experience**

Customers take pride in associating with Endress+Hauser, which is known for its market-leading electromagnetic flowmeters with cutting-edge capabilities. The positive attitude that the company's sales personnel and marketing representatives exude provides a highly pleasing interactive experience for customers.

Endress+Hauser engages with customers from the initial stage of product design to the operation phase. By working closely with Endress+Hauser's engineering consultants and design experts, customers obtain the opportunity to be an integral part of innovation by lending their personal touch to product design through inputs. The combination of cutting-edge electromagnetic flowmeters and the wide array of customer support services that Endress+Hauser offers translates into a highly satisfying customer ownership experience.

The advantages that customers enjoy through various technologies, such as WLAN, Ethernet IP, and the Heartbeat Technology, enhance device uptime and productivity of their business processes as well as saves on operating expenses. These advantages lower the total cost of ownership (TCO) that customers incur, while still meeting their process and performance monitoring needs, without exceeding their budgets.

In addition, Endress+Hauser's calibration services are in line with standards such as ISO/IEC 17025:2005, enabling customers to conform to compliance requirements and avoid legal hassles in the form of penalties or fines because of noncompliance.

What makes Endress+Hauser an attractive partner is its ability to calibrate other vendors' equipment, thereby enabling the company to deliver best-in-class after-sales service in compliance with quality standards. Furthermore, customers highly appreciate the company's speedy, free, and 24/7 technical support.

### **Customer Service Experience**

Recognizing how end users' sensitivity toward flow accuracy and safety influences their purchase decisions, Endress+Hauser offers a broad array of support, classified under

Supporting, Servicing, and Optimizing services, to improve customers' QoE after purchasing its cutting-edge electromagnetic flowmeters.

The company offers on-site calibration, diagnostics, repair, engineering, commissioning, and maintenance services to optimize customers' performance processes and ensure top-quality production outcomes.

Combining theoretical courses with practical and classroom training sessions helps Endress+Hauser ensure its customers enjoy operational efficiency and a high ROI. Enriched by the imparted knowledge, customers' manufacturing and maintenance personnel can customize and build products that deliver better performance and are safer to use than conventional competing offerings available in the market.

Endress+Hauser's certified personnel from customers' manufacturing and maintenance teams can easily predict issues before they occur or fix issues by timely implementing corrective actions. In addition, Endress+Hauser's online W@M Portal plays a dynamic role in simplifying customers' asset data management throughout the asset's life cycle. This portal provides customers with 24/7 access to process updates and the ability to identify which personnel can proactively schedule customized maintenance and repair events to avert the risk of potential process/equipment downtime.

Endress+Hauser's interactive feedback mechanism allows customers to share their experiences with its electromagnetic flowmeters and customer service executives. The company's global sales and marketing representatives and resellers directly converse with customers on a local level to understand their expectations and perceptions of the company's products.

Having 1,000 representatives in strategic locations worldwide ensures a fast response to customer needs. Even though representatives can remotely diagnose customers' issues, being locally based provides the advantage of visiting customer sites during emergencies to resolve issues quickly and optimize customers' operating expenses.

Insightful customer feedback helps Endress+Hauser formulate and execute effective strategies to boost customers' QoE continuously. In addition, using Salesforce.com simplifies customer relationship management in the short and long run. This platform empowers Endress+Hauser to listen to and resolve customer issues across production and processes as well as across services, sales, and marketing, by proactively implementing corrective actions. Working closely with customers as partners translates into a positive customer experience.

## Conclusion

Known for its market-leading electromagnetic flowmeters that are quality certified, Endress+Hauser follows a strategy of constant innovation supported by heavy R&D investments to expand its product portfolio and meet customers' diverse, unfulfilled needs.

The company has already sold two million units of magnetic flowmeters, which is unmatched in the industry, and the futuristic Proline series of transmitters transforms customers' process monitoring experience, without affecting the measurement accuracy of liquid flow rates. Endress+Hauser has designed its electromagnetic flowmeters by leveraging cutting-edge technologies, such as Heartbeat Technology and WLAN access point, as well as by supporting communication protocols, such as EtherNet/IP and PROFINET, thereby facilitating smart business decision making.

Endress+Hauser's strategy of segmentation by technology/sensor/transmitter and then by Applicator and Configurator tools as a key part of its customer value enhancement strategy empowers the company to choose the most befitting product that meets a customer's specific application need.

The company's range of magnetic flowmeters guarantees unmatched repeatability in the shortest filling time as well as precision in measuring flow volume, without impacting pressure levels or production processions. The value-added benefits that customers enjoy in the form of reduced downtime and enhanced productivity of their business processes translate into a reduced TCO. All of these aforementioned aspects highlight Endress+Hauser's commitment to enhancing customers' QoE through its broad range of products. Furthermore, the company expects to cross the three million mark of installed magnetic flowmeters in the near future.

With its strong overall performance, Endress+Hauser has achieved a leadership position in the global magnetic flowmeters market, with a market share of about 17 to 18%, and has earned Frost & Sullivan's 2017 Market Leadership Award.

## Significance of Market Leadership

Ultimately, growth in any organization depends upon customers purchasing from a company, and then making the decision to return time and again. Loyal customers become brand advocates; brand advocates recruit new customers; the company grows; and then it attains market leadership. To achieve and maintain market leadership, an organization must strive to be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.



## Understanding Market Leadership

Driving demand, strengthening the brand, and differentiating from the competition all play a critical role in a company's path to market leadership. This three-fold focus, however, is only the beginning of the journey and must be complemented by an equally rigorous focus on the customer experience. Best-practice organizations, therefore, commit to the customer at each stage of the buying cycle and continue to nurture the relationship once the customer has made a purchase. In this way, they build a loyal, ever-growing customer base and methodically add to their market share over time.

## Key Performance Criteria

For the Market Leadership Award, Frost & Sullivan Analysts focused on specific criteria to determine the areas of performance excellence that led to the company's leadership position. The criteria considered include (although not limited to) the following:

Criterion	Requirement
Growth Strategy Excellence	Demonstrated ability to consistently identify, prioritize, and pursue emerging growth opportunities
Implementation Excellence	Processes support the efficient and consistent implementation of tactics designed to support the strategy
Brand Strength	The possession of a brand that is respected, recognized, and remembered
Product Quality	The product or service receives high marks for performance, functionality, and reliability at every stage of the life cycle
Product Differentiation	The product or service has carved out a market niche, whether based on price, quality, or uniqueness of offering (or some combination of the three) that another company cannot easily duplicate
Technology Leverage	Demonstrated commitment to incorporating leading-edge technologies into product offerings, for greater product performance and value
Price/Performance Value	Products or services offer the best value for the price, compared to similar offerings in the market
Customer Purchase Experience	Customers feel they are buying the most optimal solution that addresses both their unique needs and their unique constraints
Customer Ownership Experience	Customers are proud to own the company's product or service, and have a positive experience throughout the life of the product or service
Customer Service Experience	Customer service is accessible, fast, stress-free, and of high quality

## Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan Awards follow a 10-step process to evaluate Award candidates and assess their fit with best practice criteria. The reputation and integrity of the Awards are based on close adherence to this process.

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1 <b>Monitor, target, and screen</b>	Identify Award recipient candidates from around the globe	<ul style="list-style-type: none"> <li>• Conduct in-depth industry research</li> <li>• Identify emerging sectors</li> <li>• Scan multiple geographies</li> </ul>	Pipeline of candidates who potentially meet all best-practice criteria
2 <b>Perform 360-degree research</b>	Perform comprehensive, 360-degree research on all candidates in the pipeline	<ul style="list-style-type: none"> <li>• Interview thought leaders and industry practitioners</li> <li>• Assess candidates' fit with best-practice criteria</li> <li>• Rank all candidates</li> </ul>	Matrix positioning of all candidates' performance relative to one another
3 <b>Invite thought leadership in best practices</b>	Perform in-depth examination of all candidates	<ul style="list-style-type: none"> <li>• Confirm best-practice criteria</li> <li>• Examine eligibility of all candidates</li> <li>• Identify any information gaps</li> </ul>	Detailed profiles of all ranked candidates
4 <b>Initiate research director review</b>	Conduct an unbiased evaluation of all candidate profiles	<ul style="list-style-type: none"> <li>• Brainstorm ranking options</li> <li>• Invite multiple perspectives on candidates' performance</li> <li>• Update candidate profiles</li> </ul>	Final prioritization of all eligible candidates and companion best-practice positioning paper
5 <b>Assemble panel of industry experts</b>	Present findings to an expert panel of industry thought leaders	<ul style="list-style-type: none"> <li>• Share findings</li> <li>• Strengthen cases for candidate eligibility</li> <li>• Prioritize candidates</li> </ul>	Refined list of prioritized Award candidates
6 <b>Conduct global industry review</b>	Build consensus on Award candidates' eligibility	<ul style="list-style-type: none"> <li>• Hold global team meeting to review all candidates</li> <li>• Pressure-test fit with criteria</li> <li>• Confirm inclusion of all eligible candidates</li> </ul>	Final list of eligible Award candidates, representing success stories worldwide
7 <b>Perform quality check</b>	Develop official Award consideration materials	<ul style="list-style-type: none"> <li>• Perform final performance benchmarking activities</li> <li>• Write nominations</li> <li>• Perform quality review</li> </ul>	High-quality, accurate, and creative presentation of nominees' successes
8 <b>Reconnect with panel of industry experts</b>	Finalize the selection of the best-practice Award recipient	<ul style="list-style-type: none"> <li>• Review analysis with panel</li> <li>• Build consensus</li> <li>• Select recipient</li> </ul>	Decision on which company performs best against all best-practice criteria
9 <b>Communicate recognition</b>	Inform Award recipient of Award recognition	<ul style="list-style-type: none"> <li>• Present Award to the CEO</li> <li>• Inspire the organization for continued success</li> <li>• Celebrate the recipient's performance</li> </ul>	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10 <b>Take strategic action</b>	Upon licensing, company is able to share Award news with stakeholders and customers	<ul style="list-style-type: none"> <li>• Coordinate media outreach</li> <li>• Design a marketing plan</li> <li>• Assess Award's role in future strategic planning</li> </ul>	Widespread awareness of recipient's Award status among investors, media personnel, and employees

## The Intersection between 360-Degree Research and Best Practices Awards

### Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree-view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.



### About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages more than 50 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on six continents. To join our Growth Partnership, please visit <http://www.frost.com>.