



2018 Global Leakage Detection Systems
New Product Innovation Award



2018
BEST PRACTICES
AWARDS

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Background and Company Performance

Industry Challenges

The oil and gas (O&G) industry assesses oil pipeline integrity to reduce losses, decrease downtime, and increase return on investment. This trend is beginning to grow with an influx of investment and increasing exploration activity for innovative technologies.

At present, aging pipelines are a prime focus area and create opportunities for new technologies. Pipelines experience difficulty with leakage, cracks, flow, corrosion, and vibration. Transformational trends such as operational intelligence, infrastructure development, demand and supply, convergence, utilization of greener concept, and the new technologies emergence, are driving the need for enhanced and innovative sensing technologies in the O&G pipeline industry. Frost & Sullivan believes the companies need to identify the crucial elements of transformation faster and tailor strategies to accelerate novel sensing platforms adoption.¹

Nevertheless, since detecting and fixing of leaks is an expensive and challenging process, the market as a whole only devotes a few efforts and resources toward technological advancement. Consequently, commercializing innovative technical solutions in the leakage detection systems is lagging.

Existing failure detection systems are slow and inaccurate. Nevertheless, when it comes to change, the pipeline industry suffers from a conservative mindset. Pipeline operators are reluctant to adopt new solutions quickly and widely because of the high initial investment. The market is cautious to make decisions related to the innovative technologies adoption and implements only if required or when it leads to reduced downtime or cost.²

Frost & Sullivan believes it is essential to introduce innovative solutions enabling greater operational efficiency for the O&G industry while educating customers, investors, and operators about the benefits of these solutions and demonstrating the cost and energy savings that are achievable with these solutions; thus, creating a solid opportunity to invest.

New Product Attributes and Customer Impact of SensoLeak

A Game-changing Approach in the Leakage Detection

Headquartered in Houston, Texas, SensoLeak offers an unparalleled solution for predicting and diagnosing evolving failures in mechanical parts via its Early Leakage Detection System (ELDS). ELDS is a remarkable solution for the O&G industry that ensures real-time pipe monitoring system based on proprietary machine learning algorithms which analyze online data provided by the pipeline systems. When the algorithm receives data from a customer's existing sensors (from various sensors, e.g., acoustic, seismic, electromagnetic, mechanical, chemical, or

¹ *Sensors for Oil and Gas Pipeline Monitoring*, (Frost & Sullivan, April 2017)

² *Sensors for Oil and Gas Pipeline Monitoring*, (Frost & Sullivan, April 2017)

thermal), it calculates the “system health grade,” makes a decision concerning system normality and outputs alerts as necessary. These alerts come to the equipment’s operators in any form specified or required by the client.

This solution ensures the highest level of reliability and efficiency as it provides not only real-time leakage detection but also prevention. The system reports on evolving failures much before the formation of the real one—up to 49 days to date, but SensoLeak expects this to increase to provide even greater predictive results; as it monitors not only the diagnosed part but also a set of variables that influence it. The system continuously monitors the pressure and flow (correlation) and initially trains the algorithm to recognize the “normal” state of operations and alerts about any deviation from the norm; essentially making it scalable as it learns with little human intervention. Other algorithms-based solutions cannot detect defects that lead to leakages and provide early alerts about escalating minor failures.

SensoLeak’s real-time analyzing software detects the sudden or smallest and growing initial leakage immediately, even after only a few measurement cycles. Furthermore, ELDS ensures less than 1% of false alarms while some of the competing solutions report their existing leakage detection systems have 40% to 70% false alarms and can detect only 10% to 60% of leaks. Thus, ELDS enables customers considerable savings from day one of the installations, as insurance rates go down while the preventive measures are in place.

ELDS leverages scalable software without the need to install additional equipment. It creates value for operators by adapting to changes and does not require human intervention (in most cases) while ensuring 24/7 online monitoring and no need for calibration, even after unreported alterations in operational conditions. On the other hand, the existing competitive solutions cannot adapt to new operational modes and require calibration (or even additional hardware installation) every single time something changes in operations.

Bringing Customer Value

After an eight-year period of extensive research and development (R&D) activities, SensoLeak launched its innovative ELDS solution in the market. The company engages in continuous dialogues with its customers to advance its unique technology and plans to continue this open communication channel to ensure the highest level of service and support.

Today, the significant efforts in R&D allow the company to stay on the front line of innovation and provide its customers the best solutions, from both a technical and commercial point of view. The company incorporates the highest quality standards, latest technology, and competitiveness into every phase of its activities. Also, SensoLeak perfectly understands the valuable human capital importance; thus, gathering the team of passionate professionals and creating the exclusive working environment.

One of the most important goals of SensoLeak is to demonstrate a reliable, promising project to investors, providing them a safe yet lucrative opportunity to invest. The company expects that

its highly innovative and reliable technology will continue to attract considerable attention from investors and potential partners from various industries.

Although ELDS shows remarkable performance in the O&G industry, it holds a potential for various sectors (wind turbines, liquid pumps, pharmaceutical, petrochemical, and heavy machinery) with potentially endless applications—e.g., pipelines, pumps, compressors, turbines, engines, chemical reactions, heat exchangers, refineries, power stations, anything that provides real-time (or close to real-time) data.

SensoLeak maintains industry-leading standards in its solutions and provides excellent customer service. The company's commitment to innovation satisfies customers' demands and anticipates future expectations. The company is already present in North, Central, and South America, Europe, Australia, Southeast Asia, and Africa and still looking toward expansion, actively seeking new markets and opportunities and focusing on the US.

SensoLeak's efforts strengthen its global recognition and position in the market and quality confirms its reputation as an innovator in the leaking repair market. Frost & Sullivan believes that ELDS technology is bound to spread throughout the leakage detection sector in the next few years.

Conclusion

The oil and gas industry pays special attention to pipeline integrity to reduce losses caused by leakages. Responding to this challenge, SensoLeak introduced its powerful Early Leakage Detection System (ELDS) solution that provides remarkable advantages over other algorithms-based solutions. Leveraging a statistical algorithm that processes data obtained from sensors installed on the diagnosed mechanical parts, ELDS predicts and detects evolving failures. As the ELDS is layered atop of a strong understanding of physics, the solution ensures around-the-clock monitoring and operations with extremely low false alarm rate (less than 1%) and extraordinary accuracy rate; thus, creating proven value for customers.

With its commitment to innovation and its development of the revolutionary ELDS solution, SensoLeak earns Frost & Sullivan's 2018 Global New Product Innovation Award for its leakage detection system in the oil and gas industry.

Significance of New Product Innovation

Ultimately, growth in any organization depends upon continually introducing new products to the market and successfully commercializing those products. For these dual goals to occur, a company must be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.



Understanding New Product Innovation

Innovation is about finding a productive outlet for creativity—for consistently translating ideas into high-quality products that have a profound impact on the customer.

Key Benchmarking Criteria

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated two key factors—New Product Attributes and Customer Impact—according to the criteria identified below.

New Product Attributes

- Criterion 1: Match to Needs
- Criterion 2: Reliability
- Criterion 3: Quality
- Criterion 4: Positioning
- Criterion 5: Design

Customer Impact

- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

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

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

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

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS



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>.