FROST & SULLIVAN

ABB RECEIVES THE 2023 COMPANY OF THE YEAR AWARD

Identified as best in class in the global emission monitoring systems industry

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. ABB excels in many of the criteria in the global emission monitoring systems space.

Emission Reduction Regulations and Implementation Strategies Propel Market Growth

Sparked by the global shift towards net zero emissions to mitigate the ongoing climate crisis, carbon-intensive industries increasingly demand emissions management and reduction solutions, covering multiple manufacturing processes and involving various areas, such as power generation, incineration, cement, metal, pulp, and paper production. The maritime sector, a heavy user of fuel oils and liquefied natural gas, is also under pressure to consider environmental responsibility carefully.

International treaties and public-private partnerships facilitate stricter enforcement and advance accountability. For example, the Kyoto Protocol (1997) and the Sofia Protocol (1998) aim to control nitrogen oxide emissions, the Asia-Pacific Partnership on Clean Development and Climate (2005) focuses on greenhouse gas emissions, while the UN Minamata Convention (2013) raises awareness to the harmful effects of mercury emissions. In addition, the Global Methane Pledge (signed by 103 counties at COP26) directs governments to collectively reduce methane emissions as it carries 86 times more significant global warming potential than carbon dioxide. As progressively stringent regulations and ambitious regional commitments necessitate industrial players to track and report their carbon footprints, it further fuels the demand for emissions measurement, monitoring, and analytics solutions.

> *"ABB Measurement and Analytics partners with its customers, enabling them to measure process and greenhouse gas emissions, detect gas leaks, monitor water quality, and optimize production to drive cost-effective compliance and long-term sustainability. Backed by a support network of strategically located calibration laboratories, manufacturing sites, sales offices, and service centers, ABB Measurement and Analytics develops and deploys advanced digital solutions to save costs and improve plant availability."*
>
> ***- Mahesh Radhakrishnan***
> ***Senior Industry Analyst, Energy & Environment***

Similarly, industry-specific initiatives, such as the Climate and Clean Air Coalition-driven Oil & Gas Methane Partnership 2.0, increase demand for emissions management solutions through a gold-standard, measurement-based reporting framework to facilitate the oil and gas industry's methane emissions reduction efforts. In a landmark achievement to combat climate change, the Paris Agreement (2016), 196 countries agreed to report regularly on their implementation efforts to lower greenhouse gas emissions. For this reason, Frost & Sullivan anticipates robust growth in global demand for emissions measurement, monitoring, and analytics solutions in the coming years.

However, the lack of an integrated solution to address industrial customers' complete emissions measurement, monitoring, and analytics needs impedes widespread market adoption. Most providers offer only in-house consultancy services, leveraging third-party vendors for the requisite technology solutions. Moreover, many market participants rely on legacy technologies, resulting in slower and less efficient measurement and monitoring operations.

The fast-developing industrial Internet of Things opens new possibilities to deliver and maintain emission monitoring systems, addressing the issue of reduced site maintenance resources. The cost of developing and retaining skilled technicians further compels enterprises to leverage contracted services and digital software solutions to ease the burden on plant resources, keeping operations profitable and sustainable. For this reason, Frost & Sullivan reckons forward-looking companies with a portfolio of advanced, technology-powered solutions that support emissions monitoring systems will enjoy strong growth prospects.

ABB uniquely leverages its technical expertise and digital software solutions to meet these customer needs. It is well-positioned to capitalize on new growth opportunities, cementing its leadership in the emission monitoring systems space.

An Established Global Technology Innovator with a Rich Heritage

Headquartered in Zürich, Switzerland, ABB is a global technology leader that optimizes performance by integrating automation and digitalization into its extensive portfolio (i.e., electrification, motion, and manufacturing solutions) to secure a more sustainable and resource-efficient future. Its roots reach back to 1883, with predecessor companies that embraced innovation and advocated excellence. Sweden-based Allmänna Svenska Elektriska Aktiebolaget (ASEA) manufactured electrical lighting and generators. Brown, Boveri & Cie (BBC), a Swiss pioneer in transmitting high-voltage electric power, launched Europe's first-ever steam turbine. In 1988, ASEA and BBC joined forces to form the modern ABB. The organization drives innovation by introducing revolutionary products, such as eco-responsible gas-insulated switchgear (2015) and the ABB Ability™ solutions suite (2017) that brings factory equipment into the digital age.

> *"Unrivaled in its scope and application expertise, the company offers best-in-class instrumentation solutions. Its intelligent instrumentation and analyzers portfolio includes continuous emission monitoring systems (CEMS) for power generation, chemicals and refineries, waste incineration, co-combustion, and marine applications."*
>
> ***- Riana Barnard,***
> ***Best Practices Research Analyst***

Specifically, the ABB Measurement and Analytics division uses multiple technologies to serve the broadest industry sectors worldwide, including numerous non-stationary devices (such as drones and satellites). Unrivaled in its scope and application expertise, the company offers best-in-class instrumentation solutions. Its intelligent instrumentation and analyzers portfolio includes continuous emission monitoring systems (CEMS) for power generation, chemicals and refineries, waste incineration, co-combustion, and marine applications. ABB Measurement and Analytics partners with its customers, enabling them to measure process and greenhouse gas emissions, detect gas leaks, monitor water quality, and optimize production to drive cost-effective compliance and long-term sustainability. Backed by a support network of strategically located calibration laboratories, manufacturing sites, sales offices, and service centers, ABB Measurement and Analytics develops and deploys advanced digital solutions to save costs and improve plant availability.

State-of-the-art hardware is the bedrock of innovation at ABB Measurement and Analytics. As the most prominent supplier in the gas analytics market, the company consistently evolves its product offering to ensure that it meets customer needs. For example, its Advance Optima and **Easy Line product range**s bundles all the gas analyzers that a steam methane reformer operator requires, including oxygen, carbon monoxide, and nitrate dioxide (NO_2) measurements, for simplicity and cost-effectiveness. In addition, ABB Measurement and Analytics's robust **Limas UV gas analyzers** differentiate between nitrate monoxide (NO) and NO_2, which future-proof customers' capital expenditure and provide increased environmental emissions visibility. Furthermore, building its Uras26 infrared gas analyzers into its GAA610-M **marine CEMS system** simplifies operations while it reduces costs. Hence, ABB Measurement and Analytics's internal gas-filled calibration cells allow shipping operators to improve air quality in compliance with the IMO2020 regulations effortlessly.

Underpinning its suite of digital solutions, ABB Ability™, are technology developments such as augmented reality, cloud computing, and quick response (QR) codes. For example, customers can interact directly and remotely with an ABB expert on a handheld device, leveraging two-way video and voice augmented reality capabilities. With My Measurement Assistant, operator instrument technicians find instant feedback on training, maintenance, troubleshooting, and repairs. **Remote Assistance** relies on condition-monitoring sensors in gas analyzers and collaborative cloud-enabled operations. It allows ABB experts to diagnose replacement requirements or equipment faults, helping the local operations team to resolve issues quickly.

Moreover, ABB Measurement and Analytics integrates Dynamic QR codes into its standardized but flexible **Measurement Care Service** solution. It displays the most recent system configuration data and real-time analyzer status. Access to dynamic or changing information (e.g., current measured temperature, pressure, flow, and drift values) allows ABB's trained and certified technicians to offer immediate advice when necessary, reducing customer costs significantly. Helping to ensure the timely reporting of

measurement data to avoid penalties and shutdowns. These reactive remote support solutions are a testament to the company's commitment to innovation. With a deep-rooted history of purpose-fit innovation, ABB Measurement and Analytics shapes the industry's trends, impacting its role in the emissions monitoring systems market.

Customer Service Excellence: The Rosetta Stone

ABB Measurement and Analytics's holistic approach goes beyond its extensive expertise and best-in-class capabilities, with customer value as a strategic imperative. When investing in ABB's measurement solutions, customers expect intelligent and informed support throughout the product's lifecycle for up to 20 to 30 years. Because the company realizes that its customers rely on its solutions and services for critical competencies (such as process efficiency, plant availability, accurate measurements, and safety), it structures its decisions around a long-term relationship. Through the years, the company has earned a sterling reputation by satisfying customers' needs through the best technology, reliability, and service to make measurement easy and receive maximum return on investment. Its customer base includes leading enterprises and brands in the automation space, such as Bailey, Fischer & Porter, Hartmann & Braun, Kent, K-TEK, Schoppe & Faeser, Sensycon, and Taylor.

ABB Measurement and Analytics is a dedicated service provider with over 600 factory-certified professionals who maintain equipment in over 50 countries. With local teams in almost every country and backed by global experts, ABB Measurement and Analytics service engineers are either technology-orientated or industry-orientated. Also, its Manufacturer Certified Service program guarantees high maintenance standards throughout the product's lifecycle. The company assures quality through independent certification and provides all major international certificates for CEMS. The comprehensive service coverage ranges from product selection proposals, equipment installation, commissioning, and training to spare parts, consumables, maintenance, technical support, and repairs. With plant performance and availability as top priorities, service teams collaborate with customers to plan extensions, upgrades, and retrofits up-front, maximizing asset value and minimizing downtime.

Two proactive tools, ABB Ability™ Condition Monitoring and myABB Business portal, enhance the company's standardized maintenance strategy across customer's sites. The condition monitoring tool, developed as a secure on-premises software application, enables customers to identify equipment issues early and liaise with ABB experts for remote assessment and predictive analysis, thereby reducing the risk of unplanned downtime. The myABB online customer portal, with around-the-clock availability, allows users to view the installed base of a plant, fleet, or facility, download technical documentation, and get an overview of completed or planned service events while receiving device recommendations. A cloud-hosted fleet monitoring tool called **Genix Datalyzer** is also available which offers multi-site customers and ABB service teams the ability to remotely monitor the performance of a complete CEMS fleet from any location.

With its uncompromised customer-centric commitment, ABB Measurement and Analytics establishes ongoing customer trust for long-lasting relationships throughout the service lifecycle.

Positioned for Growth

Governments and legislative bodies are introducing stricter regulations to monitor and control a more significant number of emitting sources, requiring advanced systems to measure lower concentrations of pollutants as emission limits tighten or specific contaminants (e.g., mercury) move higher up the agenda. When emissions control and enforcement begin to translate into monetary value, measurement accuracy will become both an environmental and economic target. For this reason, ABB Measurement and Analytics's sterling reputation as a technology leader with unmatched scope and expertise positions it ideally for future growth.

Notably, ABB has been at the forefront of greenhouse gas sensing from space for over two decades. Recently, GHGSat launched ABB-built optical sensors aboard a SpaceX rocket to map methane emissions at a resolution that is 100 times higher than any other. This breakthrough enables the identification of the source of emissions, making it possible to take targeted action against climate change.[1]

To retain this competitive advantage, the company strategically invests in its people (i.e., improving the employee experience to retain top talent through training and development opportunities) and technology advancement initiatives (i.e., fostering partnerships with universities and research centers). For example, ABB Measurement and Analytics uses precise laboratory measurements developed by academics in controlled environments, applying them to real-life scenarios (such as satellites in space or harsh conditions in Arctic waters) to modify cutting-edge technologies for commercial use in an industrial environment. Furthermore, the ABB Analytical Measurement Startup Challenge offers support through SynerLeap, ABB's startup accelerator that provides mentorship and access to ABB's networks, clients, industry partners, and technology. The goal is to fast-track finalists' solutions and launch them to customers through the ABB Ability Marketplace™.[2]

Also, ABB recently participated in a pilot study to address the problem of leaking orphan oil and gas wells in the United States (US). The company's high-sensitivity analyzers using OA-ICOS™ laser-based technology, transported to the site by vehicle (using ABB Ability™ MobileGuard™), drone (HoverGuard™), or backpack (MicroGuard™), can detect methane emissions down to one part per billion.

Frost & Sullivan believes ABB Measurement and Analytics is well-positioned to drive the continuous emissions monitoring system space into its next growth phase, capturing market share and sustaining its leadership in the coming years.

[1] https://new.abb.com/news/detail/73355/abb-sensor-onboard-spacex-rocket-to-detect-greenhouse-gas-emissions (Accessed in May 2023)
[2] https://new.abb.com/news/detail/98381/driving-innovation-through-inspiration-passion-engagement-abb-announces-winners-of-measurement-startup-challenge (Accessed in May 2023)

Conclusion

Due to stringent regulations and regional commitments, carbon-intensive industries are under increasing pressure to manage and reduce their emissions. Companies must track and report their carbon footprints, while international treaties and partnerships drive compliance and accountability. Overall, ABB Measurement and Analytics addresses this unmet need with a strong leadership focus that incorporates customer-centric strategies and exemplifies best practice implementation. It delivers high-quality, digitally-enabled measurement products and solutions supported by local and global service engineers that ensure unrivaled reliability to provide hassle-free compliance while optimizing plant availability and profitability. With the broadest selection of measuring principles, the company consistently evolves its product range to meet customer needs. Furthermore, it continues to invest in human capital and technology advancement initiatives to retain its competitive advantage. ABB Measurement and Analytics remains a trusted partner, earning a reputation for offering the overall best in the emission management systems industry.

For its strong overall performance, ABB earns Frost & Sullivan's 2023 Global Company of the Year Award in the emission monitoring systems industry.

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What You Need to Know about the Company of the Year Recognition

Frost & Sullivan's Company of the Year Award is its top honor and recognizes the market participant that exemplifies visionary innovation, market-leading performance, and unmatched customer care.

Best Practices Award Analysis

For the Company of the Year Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Visionary Innovation & Performance

Addressing Unmet Needs: Customers' unmet or under-served needs are unearthed and addressed by a robust solution development process

Visionary Scenarios Through Mega Trends: Long-range, macro-level scenarios are incorporated into the innovation strategy through the use of Mega Trends, thereby enabling first-to-market solutions and new growth opportunities

Leadership Focus: Company focuses on building a leadership position in core markets and on creating stiff barriers to entry for new competitors

Best Practices Implementation: Best-in-class implementation is characterized by processes, tools, or activities that generate a consistent and repeatable level of success

Financial Performance: Strong overall business performance is achieved in terms of revenue, revenue growth, operating margin, and other key financial metrics

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly 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 high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

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About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at http://www.frost.com.

The Growth Pipeline Engine™

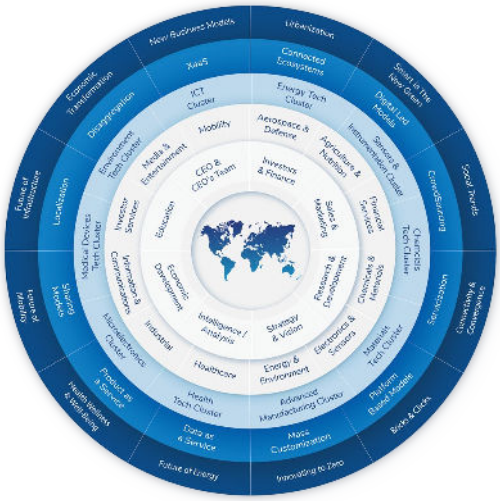
Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.
Learn more.

Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*

The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.



Analytical Perspectives:

- Mega Trend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)