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BEST PRACTICES

AWARDS

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2019

BEST
PRACTICES
AWARD



**2019 GLOBAL
TRANSFER SWITCH
NEW PRODUCT INNOVATION AWARD**

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Background and Company Performance

Industry Challenges

A transfer switch (TS) is an electrical device that facilitates the reliable transfer of electrical power between multiple power sources, including the primary utility power line and secondary power lines, such as back-up generators and DC to AC inverters. A TS permits critical loads to continue running with minimal or no outage and is an essential component of emergency and backup power systems, particularly indispensable in mission-critical applications, such as those in healthcare and data center settings.

Moreover, an automatic transfer switch (ATS) is usually a complex device that requires multiple connections in the form of sensors, controllers, switches, and operator interfaces, this often leads to a bulky device. A majority of ATS currently available in the market have a separate switching mechanism and controller interface, due to which a large number of connections are required making ATS devices complicated. This complexity can compromise reliability, which is unacceptable in mission-critical applications. Also, most manufacturers in the ATS space produce equipment with similar features and functionalities. This lack of product differentiation ultimately leads to the market becoming highly price sensitive, a factor that stagnates overall market growth.

Switzerland-based technology leader ABB has been active in the TS market for several decades, adding an ATS product into its portfolio over 10 years ago. The company's latest offering in the ATS space is its TruONE ATS, a highly efficient, convenient, and reliable solution that ensures safe operation in all working environments. The TruONE ATS is designed for easy installation and use, space efficiency, greater user flexibility in product configuration, and simplified connectivity.

New Product Attributes and Customer Impact

Match to Needs

ABB draws from its vast engineering expertise and immense technological leadership in switches and fusegear, as well as other sectors, utilizing its entire portfolio to develop solutions that meet customer needs. ABB's TruONE ATS is an all-in-one ATS unit developed to meet customer demand for added safety, reliability, and functionality in ATS equipment. This ATS is a consolidated device, the first of its kind to integrate sensors, controllers, switches, and operator interfaces into one seamless unit, including an integrated controller with detachable human machine interface (HMI). Integration of these features into a single package makes ATS installations faster, simpler, and more reliable. This integration also translates into easier configuration and maintenance for customers as there is only one point of contact for all equipment-based transactions. Additionally, TruONE ATS is IEC/UL/GB listed, which enables it to meet the various requirements of different regional markets with few changes to product designs. This ATS solution is available both with enclosure for off-the-shelf convenience as well as without enclosure to accommodate integration of the ATS into other equipment, thus ensuring diverse customer needs are met.

Recently, TruONE ATS was chosen by RK Power Generator Corp., the largest generator distributor and only generator manufacturer in the Caribbean, to be integrated into its generator sets. In fact, these integrated generator sets were used to restore power in Puerto Rico after Hurricane Maria. RK Power Generator Corp. selected TruONE ATS over other major competing ATS solutions due to its smaller size, easier maintenance, and higher reliability. TruONE weighs up to 75% less and cuts the amount of wiring required by 60 feet as compared to other ATS of similar specifications. Also, in emergency situations the TruONE ATS can be manually transferred while energized and supporting an electrical load. Moreover, ABB's trusted global brand along with the solution's easy assembly and commissioning were factors that influenced selection of the equipment.

Frost & Sullivan firmly believes TruONE's higher level of convenience, efficiency, and critical power reliability, along with ease of commissioning, installation, and operation ensure that evolving customer requirements are met.

Quality

ABB TruONE ATS's all-in-one design is factory-assembled and fully tested to exceed industry standards and thus ensures reliable power delivery in critical applications, even in the most challenging working environments. This device eliminates all wire harnesses, distributed electronics, voltage transformers, and external controllers by integrating all parts into one single package. This simplicity of product design not only reduces product footprint but also improves equipment reliability.

Frost & Sullivan is impressed that the TruONE ATS exceeds industry standard requirements, such as IEC and UL requirements for performance and reliability, to ensure optimum and safe operation of the device in all working conditions. Frost & Sullivan also believes the company's ATS solution is setting new industry standards for safety with its wholly isolated and detachable HMI, negating the need to connect potentially dangerous line voltage to the ATS enclosure door. Among conventional ATS equipment, TruONE is best-in-class for reliability and permits emergency manual operation while under load for power restoration in the case of equipment failure.

ABB's TruONE ATS is the first model in the market with built-in predictive maintenance and condition monitoring features that ensure optimal performance in all conditions. Also, TruONE is unique in its ability to ensure reliable operation under a wide variation of conditions, such as voltage (200-480 VAC with +/- 20% tolerance), vibration (according to IEC 60068-2-6), and shock (according to 60068-2-27).

Frost & Sullivan commends ABB for developing the industry's first all-in-one ATS solution with predictive maintenance capabilities and unique functionalities that set it apart from its top competitors' products.

Positioning

The TruONE ATS features several design and engineering improvements over conventional ATS devices, including more efficient load transfer as a result of innovative contact construction using new materials and geometries. This ATS solution makes critical power

management simpler with less wiring and more intelligence. TruONE ATS's unprecedented flexibility in configuration is one of the most defining characteristics of the product. Customers are afforded flexibility for future expansion with operator assignment of inputs and outputs replacing much of the need for hardware additions. The simplicity and functionality of the product are further enhanced by TruONE's accessorizing concept. The associated accessories positioned within the switch frame are mounted without tools as snap-on solutions.

ABB's TruONE ATS is a compact, lightweight, integrated ATS device that cuts the number of interconnects down to one. The reduced number of relay based accessories and wiring in this device ensures faster installation, and its pre-assembled format cuts down cabling and commissioning time. Plus, ABB's TruONE ATS device is easier to update and troubleshoot, simpler to maintain, and provides a fast in-phase open transition of power that minimizes any unexpected power loss. This state-of-the-art ATS device has multiple communication protocols along with software-based solutions from the ABB Ability digital platform, which enables remote diagnostics and cloud-based monitoring of critical power systems.

ABB distinguishes its TruONE ATS as a unique solution with distinctive features and functionalities that set it apart from competitors' products and successfully overcomes the challenge of low product differentiation currently slowing growth of the global ATS market.

Price/Performance Value

ABB's ATS solution offers the best value for price to customers through its innovative design that reduces the cost of installation and maintenance. TruONE's integrated, compact form factor reduces the time required for installation in OEM equipment by 80% in comparison to a conventional ATS. Ergonomic studies show that the integration of all components into a single unit cuts the cabling and commissioning timelines by up to 90%. Additionally, this ATS has built-in predictive maintenance and condition monitoring features that reduce the cost of operation and maintenance of the equipment. Owing to the wide voltage range from 200 to 480 VAC (+/- 20% tolerance) of the TruONE ATS product generator OEMs, which are the major consumers of ATS equipment, can simplify stocking, installation, and service while ensuring optimal reliability of the equipment, delivering cost savings throughout the process. On the performance side, the market leading short-time ratings of the offering further highlight the superior value delivered by this novel ATS design. TruONE ATS is anchored by the trusted ABB brand name that draws on customers' established confidence in it and adds value to the product.

Based on Frost & Sullivan analysis, ABB's TruONE ATS solution provides excellent value for price through its innovative design and predictive maintenance features.

Customer Experience

ABB maintains lasting relationships with its customers through its expansive support network, strong technical product expertise, and deep industry experience. The company's dedicated team of industry experts guides customers through system installation, setup, usage, and troubleshooting. ABB's ATS solution ensures customer satisfaction through the

significant reduction of service cost and downtime and simplification of service through features such as predictive maintenance, self-diagnostics, and customer-replaceable critical modules. Customers also benefit from ABB's global presence in over 100 countries and ready access to expansive customer support teams. For instance, ABB's acquisition of GE's Industrial Solutions business has enabled the company to strengthen its customer support base in the United States. This extensive customer support network ensures the company is well-placed to meet its customers' most challenging demands.

Frost & Sullivan commends ABB for using its global presence and industry expertise to help customers implement consistently high-quality and reliable ATS solutions.

Brand Equity

ABB is a global technology leader with a history spanning more than 130 years and a presence in over 100 countries. The company has consistently won numerous accolades and external accreditation including the 2019 Corporate Knights Global 100 Index and 2018 FTSE4Good Global Index. ABB's successful brand transformation has rendered the company's image into a customer-focused, digital-first, and people-driven identity. The company's rebranding and adoption of a single corporate brand strategy has led to the consolidation of more than 1000 brands under one umbrella. This brand unification has resulted in the homogenization of ABB's portfolio, enabling the company to showcase the full breadth and depth of its global offerings under one master brand. ABB's brand transformation has resulted in a 21% increase in brand equity since 2016. The company has built trust among its customers through consistently providing high quality, innovative, and customer-centric solutions along with excellent customer service; its dedication to providing best-in-class products and services has helped build brand loyalty over the years.

Frost & Sullivan believes ABB's trusted brand name and loyal customer base ensure it not only expands but retains its customer base, ensuring continued growth in the foreseeable future.

Conclusion

A Transfer Switch is a crucial component in any emergency power system to ensure smooth and reliable power transfer. In the ATS space, ABB successfully differentiates itself from its competitors with TruONE's unique product features and functionalities, including predictive maintenance and integrated control.

ABB's solution is the first ATS to integrate all necessary components into a single, seamless unit, thus ensuring improved reliability, safety, and efficiency of operation. TruONE's ability to address unmet customer needs with its unique set of functionalities that exceed industry standard requirements ensures ABB will continue experiencing increased uptake in the coming years.

For its strong overall performance, ABB is recognized with Frost & Sullivan's 2019 New Product Innovation Award in the global transfer switch industry.

Significance of New Product Innovation

Ultimately, growth in any organization depends on 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

Requirement: Customer needs directly influence and inspire the product's design and positioning.

Criterion 2: Reliability

Requirement: The product consistently meets or exceeds customer expectations for consistent performance during its entire life cycle.

Criterion 3: Quality

Requirement: Product offers best-in-class quality, with a full complement of features and functionalities.

Criterion 4: Positioning

Requirement: The product serves a unique, unmet need that competitors cannot easily replicate.

Criterion 5: Design

Requirement: The product features an innovative design, enhancing both visual appeal and ease of use.

Customer Impact

Criterion 1: Price/Performance Value

Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

Criterion 2: Customer Purchase Experience

Requirement: Customers feel they are buying the optimal solution that addresses both their unique needs and their unique constraints.

Criterion 3: Customer Ownership Experience

Requirement: Customers are proud to own the company's product or service and have a positive experience throughout the life of the product or service.

Criterion 4: Customer Service Experience

Requirement: Customer service is accessible, fast, stress-free, and of high quality.

Criterion 5: Brand Equity

Requirement: Customers have a positive view of the brand and exhibit high brand loyalty.

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 practices 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 world	<ul style="list-style-type: none"> • Conduct in-depth industry research • Identify emerging industries • Scan multiple regions 	Pipeline of candidates that potentially meet all best practices 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 practices 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 practices 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 practices 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 practices 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 practices criteria
9 Communicate recognition	Inform award recipient of 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 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 the 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, resulting in 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, helps clients 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 practices models to drive the generation, evaluation, and implementation of powerful growth strategies. Frost & Sullivan leverages nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan's Growth Partnership, visit <http://www.frost.com>.