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FROST & SULLIVAN BEST PRACTICES AWARD

FIBER OPTIC TEST EQUIPMENT - GLOBAL

Competitive Strategy Innovation & Leadership 2019

VeEX
The Verification Experts

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Contents

Background and Company Performance

Industry Challenges

Frost & Sullivan research expects demand for the fiber optic test equipment (FOTE) market to emerge from the expanding footprint of the fiber cable network worldwide, both in long haul and local deployments. While fiber offers the cleanest and fastest wide-area network available, the installation, periodic re-amplification, and real-time operation demand regular testing of insertion loss and bandwidth to facilitate services efficiently. Consequently, the future of fiber deployments will generate immense opportunities for the FOTE market.

The FOTE market consists of the following product segments: optical time domain reflectometer (OTDR), optical light source (OLS), optical power meter (OPM), optical loss test set (OLTS) fiber inspection probe, remote fiber test system (RFTS), optical spectrum analyzer (OSA) tunable laser, polarization mode dispersion (PMD) test equipment, coarse wavelength division multiplexing (CWDM), dense wave division multiplexing (DWDM), and chromatic dispersion.[1]

Today, Web 2.0 is driving the way users consume Internet traffic. There is an increase in the use of data for network analysis, and this, in turn, requires proper data traffic analysis in the networks. Large enterprises and over the top providers such as Microsoft, Facebook, Amazon, Google, and Netflix are reshaping the game around massive amounts of data traffic. In general, all the data traffic generated with Web 2.0 and dynamic changes in the Internet arena require FOTE to ensure proper network functioning.

With cloud storage, it has become easy for vendors to facilitate collecting and analyzing mountains of Big Data for end users. Storing Big Data has become much easier with cloud-based services, which can retrieve the data for future analysis from a centralized location. Hence, vendors who offer Big Data and cloud-based storage services are in a position to increase their customer base by selling more FOTE.

Also, mobile devices depend on wireless connections for voice, video, and data communications. With cell towers using fiber cables instead of coax cables, the need for fiber to the antenna (FTTA) is growing. More antennas are required to increase the coverage to support the higher frequencies of 4G/LTE and future telecommunications standards such as 5G. Wireless data center and wireless backhaul, for example, are growing areas driving FTTA deployments and FOTE demand.[2]

From a technological advancement perspective, with 40 gigabyte and 100 gigabyte Ethernet deployments on the rise and pushing the need for high fiber optic performance, Frost & Sullivan forecasts a boost in sales of FOTE. With new technologies, the test equipment is also getting smarter and priced at a premium than the basic instruments.

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[1] *Global Fiber Optic Test Equipment Market, Forecast to 2022*, (Frost & Sullivan, February 2017)
[2] Ibidem

Frost & Sullivan expects the FOTE market to grow at a compound annual growth rate of 6.1% from 2015 to 2022 and to reach $989.4 million by 2022.[3]

Frost & Sullivan believes vendors that can offer a variety of benchtop and portable instruments will be able to balance their portfolios to address the array of end-user applications and serve customer needs accordingly. Furthermore, though the fiber optic equipment market is growing substantially, a lack of awareness among customers hampers the growth of the market. Therefore, it is crucial for vendors to build a strong relationship with customers while educating them on the value of innovative FOTE solutions.

Strategy Innovation and Customer Impact

Showing Leading Performance in the FOTE Market

Headquartered in Fremont, California, VeEX® is the leading provider of innovative test and measurement solutions for next-generation networks. The company's unique product portfolio includes easy-to-use, high-performance, and reliable OTDR solutions optimized for today's optical fiber networks. The FX series acts as a solid solution for the challenging outside plant environment and strengthens the existing VeEX Transmission and Ethernet testing solutions.

Notably, VeEX provides the FX80—an in-line optical power meter geared for FTTx/PON service activation. It can simultaneously measure downstream signals to the ONT and upstream signals to the OLT. Another powerful solution is VS-500—a digital fiber inspection microscope that features a single-finger focusing knob, brightness control, and a digital sensor with a detectable resolution to 0.5 micrometers while providing excellent image viewing and analysis. One of the company's innovations is an improved FX150+ mini OTDR that leverages 256,000 data points and 3 centimeters resolution for the installation, maintenance, and troubleshooting of FTTx, mobile fronthaul/backhaul and metro fiber networks. The company also provides OPX-BOXe—an ultra-compact OTDR designed to operate remotely using Fiberizer™ software.

One of the remarkable things that differentiates VeEX from its competitors is in the cloud management and analysis of test results; the company leads the way utilizing this technique. VeEX provides its Fiberizer applications for desktop, cloud, and mobile. Fiberizer Desktop Plus is a standalone PC software application to analyze OTDR traces. It enables editing traces manually, creating event tables, and generating reports with built-in templates. Fiberizer Cloud is a centralized web-based fiber test data management system, which is a part of the VeEX VeSion™ Eco-System. It allows working from anywhere, at any time because it is a fully online web service. Furthermore, Fiberizer is the only cloud platform that allows uploading and analyzing test results online. Fiberizer Mobile ensures users can remotely control the OPX-BOXe OTDR and supports VeEX

[3] *Global Fiber Optic Test Equipment Market, Forecast to 2022*, (Frost & Sullivan, February 2017)

fiberscopes; it is the only OTDR that a customer can function remotely from a tablet or phone.

Another significant point that differentiates VeEX in the industry is its spectrum of hybrid products. The company provides a transport tester and an Ethernet tester or a transport tester combined with an OTDR in a single instrument, which is modular; making it unique in the market.

Bringing Value to Customers

To ensure an exceptional ownership experience for customers, VeEX offers high-quality FOTE solutions that provide optimal performance for long durations. Furthermore, industry-leading solutions are strengthened with powerful software along with technical support for the product's entire lifetime.

VeEX leverages an impressive worldwide footprint: Latin America, the United States, Canada, Mexico, Europe—with main country-specific markets like France, Germany, Spain, Italy, UK, and Ireland. The company is also present in Russia, Asia, Australia, and in a range of African countries such as South Africa, Namibia, Botswana, all the way to North Africa, Egypt, Morocco, and Algeria.

While leveraging its global footprint and focus on providing reliable customer support, the company ensures around-the-clock technical support for customers. This support portal acts as a powerful knowledge base and is an effective tool for communication with customers, which allows them to share feedback on feature enhancements and proposals for further product development.

VeEX successfully executed an acquisition strategy after acquiring Agizer and Optixsoft, Optical Physical Layer testing companies in July 2014. Nevertheless, the company leverages its do-it-yourself culture and would rather build innovations from the ground up and put the VeEX stamp of approval on it. This approach has been the company's culture and a reason for its success since the beginning.

VeEX pays particular attention to "on the ground" industry needs and creates awareness about its solutions. Therefore, the company actively participates in the most significant industry events and conferences around the globe while also maintaining effective relations with customer and partner verticals.

The company strives to increase its global presence in different regions while bringing value to customers by providing robust, reliable, and innovative solutions as well as speeding up its research and development efforts. Also, the company is working on scaling its solutions while constantly improving the capabilities of its solutions to satisfy customers' evolving requirements.

Conclusion

The increasing complexity of high-bandwidth data traffic and networking demands the development of fiber optic test equipment with easy-to-use and highly accurate functionality. Responding to these needs, VeEX takes a strong position in the market by providing a spectrum of high-performance solutions optimized for today's optical fiber networks. Notably, the company provides remarkable solutions for cloud management and analysis of test results with its Fiberizer applications. Notably, Fiberizer is the only cloud platform that allows uploading and analyzing test results online. The company's focus on continuous development is strengthened with deep expertise and exemplary customer service.

For its commitment to continued technological development and innovation, coupled with its strong overall performance, VeEX earns Frost & Sullivan's 2019 Global Competitive Strategy Innovation and Leadership Award in the fiber optic test equipment market.

Significance of Competitive Strategy Innovation and Leadership

Any successful approach to achieving top-line growth must (1) take into account what competitors are, and are not, doing; (2) meet customer demand with a comprehensive, value-driven product or service portfolio; and (3) establish a brand that resonates deeply with customers and stands apart from other providers. Companies must succeed in these three areas—brand, demand, and positioning—to achieve best-practice levels in competitive strategy.

Understanding Competitive Strategy Innovation and Leadership

As discussed above, driving demand, brand strength, and competitive differentiation all play a critical role in delivering unique value to customers. This three-fold focus, however, must ideally be complemented by an equally rigorous focus on Strategy Innovation and Customer Impact.

Key Benchmarking Criteria

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

Strategy Innovation

Criterion 1: Strategy Effectiveness
Requirement: Strategy effectively balances short-term performance needs with long-term aspirations and vision for the company.

Criterion 2: Strategy Execution
Requirement: Adoption of best-in-class processes supports the efficient and consistent implementation of business strategy.

Criterion 3: Competitive Differentiation
Requirement: Unique competitive advantages with regard to solution or product are clearly articulated and well accepted within the industry.

Criterion 4: Executive Team Alignment
Requirement: The executive team is aligned along the organization's mission, vision, strategy, and execution.

Criterion 5: Stakeholder Integration
Requirement: Strategy reflects the needs or circumstances of all industry stakeholders, including competitors, customers, investors, and employees.

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 most 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 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	• 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	• Interview thought leaders and industry practitioners • Assess candidates' fit with best-practice criteria • Rank all candidates	Matrix positioning all candidates' performance relative to one another
3	**Invite thought leadership in best practices**	Perform in-depth examination of all candidates	• 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	• 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	• 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	• 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	• 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	• 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	• 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 may share Award news with stakeholders and customers	• 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.