A Fireside Chat: CyberOptics' Dennis Rutherford

PD&D Staff

Founded in 1984, CyberOptics has been providing advanced optical sensors and inspection systems to the electronics assembly equipment market for 28 years. Headquartered in Minneapolis, MN, CyberOptics conducts operations in North America, Singapore, China, Japan, and Europe. With more than 150,000 sensors and over 3000 systems in the field, the company's expertise in designing and manufacturing sensors and inspection systems is constantly growing. Today, hundreds of manufacturing plants around the world use CyberOptics' sensors and inspection systems to measure solder paste and other components to eliminate defects — providing the critical edge to their customers.

PD&D caught up with Dennis Rutherford, CyberOptics' General Manager and Vice President of Systems Global Sales and Marketing, to learn more about the company's current focus and what it is planning for 2013.

***PD&D*:** With offices in North America, Singapore, China, Japan, and Europe, CyberOptics Corporation seems to have a strong global presence. How does the company plan to continue expanding its global customer base and what specific advantages will this bring to your customers, both existing and potential?

Dennis Rutherford: We have designed a hassle-free upgrade path for our existing customers who wish to migrate to our latest product offerings. Existing SPI customers will be able to upgrade to the SE500ULTRA system with 30 percent speed improvement and optional dual illumination sensor. For AOI customers, the QX600 upgrade option with improved lighting and higher resolution sensor is an ideal choice for 01005 inspection. Existing customers also can choose to only upgrade their software to take advantage of the latest features. The QX600-L large

board (20x20") version and the SE600 equipped with a dual illumination sensor and all-new user experience also will be available next year.

Sales efforts will be focused primarily on global accounts along with continued expansion and refinement of Global Sales channels to expand reach and provide closer support to customers.

PD&D: In an industry inundated with inspection companies, how does CyberOptics do so well?

Rutherford: We, at CyberOptics, believe in continually refining our systems to synchronize with our customers' changing requirements while exploring options that enable value-added inspection throughout the electronics assembly process. To achieve this, we listen intently to what our customers want, through an active, established roadmap and VOC process and align our release plan to sync with the requirements. New product releases are planned annually based on our roadmap strategy. At the same time, we embark on various feasibility studies to set the direction for our long-term product vision.

Global customer support is one of our top priorities, which is evident from our worldwide network of channel partners at 72 locations in 35 countries (and counting). To support this, an effective issue management system managed by a global product specialist team has been established to log, review, track and resolve issues.

***PD&D*:** Being an inspection company that provides both SPI and AOI inspection equipment, how does CyberOptics successfully position itself in the market?

Rutherford: CyberOptics invests a substantial amount of time and resources on constantly improving the core

performance of its products to deliver quality and robust inspection solutions. Inspection speed and GR&R improvements, a new user experience, reduced programming time, improved 01005 inspection capability are all part of our key initiative programs to ensure accurate, repeatable results in the shortest time possible. Bundled with this are our closed-loop feedback/feed forward and correlation analysis projects focused on improving yields.

***PD&D*:** We understand that CyberOptics is also committed to further enhancing user experience, resulting in the company developing several advanced software technologies that simplify programming and reduce programming time. What led to this step and what advantages does this bring to CyberOptics?

Rutherford: Continuous user experience enhancement is crucial for the success of a product and programming forms a big chunk of the overall user experience spectrum. Our key initiative programs focus on keeping programming simple and easy to "learn & use" while reducing the time it takes to complete a program.

CyberOptics' SAM (Statistical Appearance Modeling) vision technology offers incredibly simple programming with no algorithms to choose or lighting parameters to be set up. Programming is as simple as it can get — just draw a box, train SAM with a few good examples and it is ready to inspect any component, solder joint or other features.

With AI^2 (Autonomous Image Interpretation), next-generation image analysis technique, programming gets even faster — with a 90 percent reduction in examples and simpler — with full support for unsupervised and semiautomatic model training so that users can set up models effortlessly. AI^2 also improves inspection performance with better sensitivity to defects, resulting in more precise discrimination even with excessive variance.

ePM-SPI/AOI, another key programming initiative from CyberOptics, enables program setup in a flash with its one-step programming approach that can generate both SPI and AOI programs at one go.

***PD&D*:** How does your product platform of sensors, systems, and software help electronics manufacturers provide the critical edge to their customers?

Rutherford: The sensors on our SPI and AOI systems are designed and built by CyberOptics and engineered to be absolutely calibration-free. The Strobed Inspection Module (SIM) mounted on our AOI systems requires zero in-the-field calibration and illuminates only when necessary, lowering the overall cost of ownership. The SPI sensor is manufactured as an integrated assembly with no moving parts completely eliminating machine-to-machine variation across production lines.

CyberOptics' inspection systems are designed to provide accurate inspection results at the highest speed using on-the-fly inspection. Our product suite comprises of a wide range of inspection solutions: tabletop and inline, standard board and large board versions, single lane and dual lane, premium and entry-level systems along

with a host of useful options that you can add on to perfectly match your requirements. Our software is designed to be compatible with all systems within a product family, enabling flexible upgrading/migration from one system to another. Multiple initiative programs are underway to further simplify programming, make it easier to deploy and use and reduce overall programming time.

***PD&D*:** Can you explain how CyberOptics provides the process control that increases productivity and product quality, enabling electronics manufacturers to deliver the highest value to their customers?

Rutherford: CyberOptics' Process Monitor SPC software offers a complete range of real-time monitoring and historical data analysis tools. With its drill-down capability for deep-dive analysis and flexible reporting, you can identify and analyze trends with ease. CyberConnect™, an AOI-SPI correlation analysis technique enables effective traceability of defects between AOI and SPI systems. With this unique solution, you can select the panel data, select the machine(s) and defect types you are interested in and Process Monitor gets you all the RIGHT data displayed in just the RIGHT way for you to analyze and take action. Correlating helps you pinpoint exactly what went wrong and take corrective action, reducing rework costs and improving overall line yield. All this simply means quicker turnaround and enhanced product quality.

Our SPI systems fully support feedback and feed forward capability with leading solder paste printer and SMT mounter vendors in the market. With the closed-loop feedback feature, the results from SPI can be used to optimize the screen printing process, achieve stencil cleaning cycles, and fine-tune screen printer setup and monitor process drift. All this results in significant yield improvement with reduction in rework costs and increase in production throughput.

***PD&D*:** To remain successful in today's economy, companies have had to change their traditional ways of doing business. What are some examples of how CyberOptics Corporation has had to think smarter to stay ahead of competition?

Rutherford: Our keen focus on going beyond inspection to provide value-add solutions to our customers plays an important role in setting our products apart. Be it through closed-loop feedback analysis or AOI-SPI correlation analysis techniques, customers are provided useful, relevant data that can be used to identify defects early and take corrective actions before the defects reach downstream minimizing scrap and rework. Our multi-dimensional approach to improve programming in terms of usability, simplicity and of time reduction makes a major impact to enhancing the user experience of our products.

We also keep ourselves abreast with the latest technologies and trends to adapt our products and software to the changing needs of the SMT market. Internally, our regular quality review meetings provide a good insight on areas of focus for our different product roadmaps. Our regular VOC campaign gives us valuable feedback on our existing products as well as sets the outline for future product development.

***PD&D*:** In spite of lingering uncertainty due to the current global economic

situation, CyberOptics continues to innovate. Can you provide us with a brief recap of your newest products as well as give us a glimpse in any upcoming launches?

Rutherford: 2013 will be an exciting year for CyberOptics as we have a great lineup of new products and value-add solutions to offer. On the AOI front, the QX600 will offer an all-new strobed inspection module (SIM) with enhanced illumination using LED lighting that will improve solder joint and gold finger inspection while reducing reflection and shadow effects. And, a higher sensor resolution at 12 µm captures brilliant and crisp quality images that are crucial for effective defect review analysis. A large board version, QX600-L, which supports 20x20" boards, also will be offered. On the SPI front, the SE500ULTRA system is designed with an all-new, Ultra-fast sensor and an optional dual illumination sensor to further enhance repeatability and reproducibility on the very smallest of paste deposits. The Ultra-fast sensor combined with the 'all-in-one' scan algorithm (combining the fiducial, barcode and range scans into one, seamless inspection scan sequence) positions the SE500ULTRA at 30 percent faster speed.

CyberConnect feature on our SPC software offers AOI-SPI correlation analysis that enables advanced process control with defect traceability between AOI and SPI systems. Using the correlation data, you can identify the root cause of a defect and take timely corrective actions. Over time, it can make a significant impact on the overall yield and product quality.

For more information, please visit www.cyberoptics.com *[1].*

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