Assure

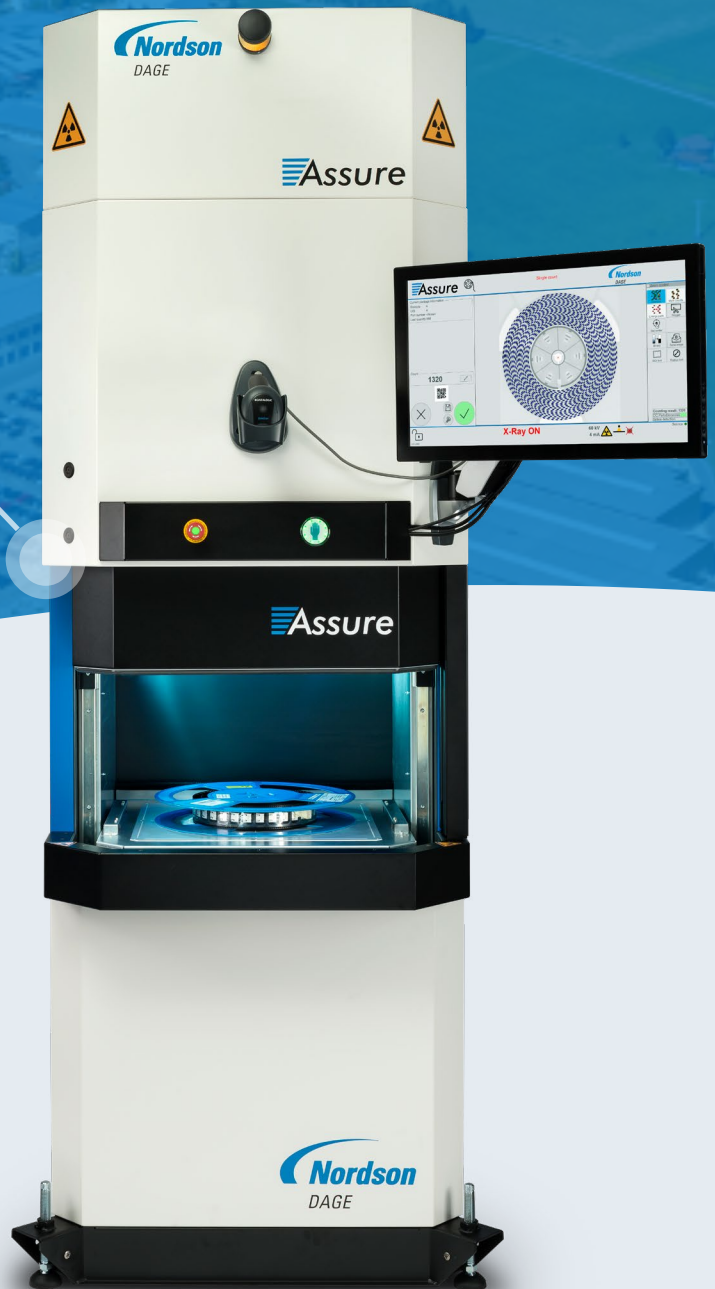## X-ray Component Counter

Zollner Elektronik is one of the top 15 EMS providers in the industry.

Fully Automatic X-ray Scanner with individual system integration – Contactless Component Counter as integral part of industry 4.0

Nordson
ELECTRONICS SOLUTIONS

Zandt, Deutschland – February 2020

EMS provider Zollner Elektronik is one of the top 15 providers in the industry. The company's story began 50 years ago, leading from a one-man operation in a rural region to a global corporation with 20 locations in four continents. Today Zollner takes over complete development tasks - consulting, development support as well as the overall responsibility for development projects and Industry 4.0 strategy.

In 1965 Manfred Zollner founded an electrical shop in the East Bavarian community of Zandt. Step by step repairs, sale and installation of fitted kitchens and consumer electronics were added. A little later Zollner founded an electrotechnical factory and manufactured winding goods. Initially still in manual labour, the first automatic winding machine was used to wind the coils automatically.

The company continued to develop steadily and recognized early on the importance of consistent quality in order to establish lasting customer partnerships. Therefore, a test equipment planning and test equipment construction was introduced. The range of services at that time included component assembly, manual assembly on semi-automatic assembly tables, drag bath soldering, electronic testing and manual visual inspection. Customer requirements, a higher added value as well as quality and flexibility then required an expansion of the range of services.

Increasing customer demand required the implementation of a wide variety of procedures and processes, which led to an expansion of business relations with the clients. To underpin its pioneering position, Zollner introduced SMD technology in 1985. Zollner was one of the first companies to invest in SMT pick and place machines from Siemens, today's ASM Assembly Systems. This was quickly followed by hollow wave soldering and nitrogen soldering technology.

Johann Weber, CEO of Zollner Elektronik, traces the path to success:

" A constant expansion of performance combined with high investments in state-of-the-art equipment and processes was always a must. Because we have to be prepared today for what our customers will expect from us tomorrow".

Virtually everything that contains electronics is developed and manufactured: payment terminals, check-in terminals, ticket machines, parcel stations and car headlights. And also elevator controls, medical components in magnetic resonance tomographs or currently also drives for electric cars.

Zollner Headquater in Zandt. Zollner

This was another reason why Zollner was able to differentiate itself from its competitors. "We see the broad positioning in different industries as our strength", emphasizes CEO Weber. "The individual support of our customers is in the foreground. An example of this is the award of the E²MS Award 2013 for our development work on a medical device".

The E²MS Award is considered a valuable distinction for outstanding achievements in the EMS business and is one of many awards Zollner has received so far. "Development yes! - own products no!" is the iron rule. "We develop for our customers", emphasizes Johann Weber.

In the beginning, the individual departments took over development services for the customers, since 1998 this has been done in the Development Division. "To be involved in development in the early product creation phase and to accompany customers from the beginning of the product life cycle is what we understand as long-term customer loyalty, access to the latest technologies and an increase in added value," explains Weber.

Nordson
ELECTRONICS SOLUTIONS

Pioneer in quality management and industry 4.0

The EMS provider recognized the importance of a process-oriented quality management system very early on. The company received its first certificate for quality management as early as 1993. At that time, Siemens also significantly accelerated its investment in an in-circuit tester. Since miniaturization and the increase in quality level always required new test procedures, 3D X-ray inspection was introduced in 2001, as well as powerful systems for automatic optical inspection (AOI). Since then, quality management has been continuously developed and implemented into the company philosophy.

"Our customers receive tailor-made solutions, regardless of whether they are individual parts, modules, devices or complex systems. Therefore, their requirements also decide how far our process depth goes. We therefore have to master the entire lifecycle of a product, from hardware and software development, DFX, NPI and engineering, material and obsolescence management to repair, refurbishment, test/quality and holistic traceability and Industry 4.0," emphasizes Weber and continues: "We have been working intensively on Industry 4.0 for some time now, because this is where the opportunity of this decade lies. Just imagine, plants, machines and individual workpieces continuously exchange digital information. Production and logistics processes can be digitally networked and integrated across companies. Processes are coordinated over large distances in real time. All this offers improved consistency, transparency and controllability of the processes".


Marina Fechter, head of goods logistics at Altenmarkt explains the automatic component counter. Harald Wollstadt

For production processes, the EMS provider also relies on AI, which has now become a key factor. "We have programmed our own software to display the concrete

Overall Equipment Effectiveness, OEE for short, of the entire SMT line. This enables us to map the OEE in real time across the entire line," he confirms.

Zollner's Industry 4.0 strategy does not only concern production, but also extends to internal logistics and becomes the intelligent transport of materials from the goods receipt to the machine as well as manual assembly. "Our parts management is already running automatically. Each container is weighed, the supplier is automatically informed about the difference quantity and which goods they have to deliver later. This is also part of an Industry 4.0 strategy," Weber emphasizes. For this reason, Zollner not only installed an automated storage system for SMT production some time ago, but also a non-contact component counter.
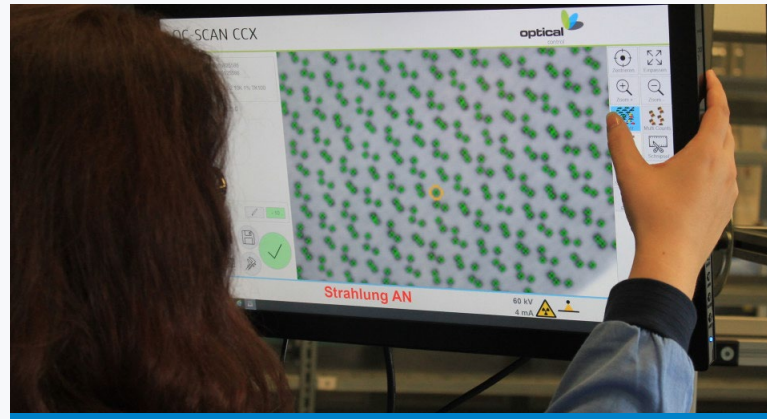
Key date inventory or interim inventory are no longer costly counting marathons. Editorial office Productronic / Harald Wollstadt

This makes a decisive contribution to process optimization, because unplanned downtimes on the SMT lines must not occur in production under any circumstances. "The Assure automatic component counter from Nordson ELECTRONICS SOLUTIONS provides exact information on the actual stocks of individual SMT components in the packages. This not only helps us avoid downtime on the SMT lines, but also eliminates the need for multiple set-ups," says Marina Fechter, head of goods logistics at the Altenmarkt plant, who was responsible for installing the electronic component counter. "Safety stocks are now a thing of the past. Of course, this also means that less material has to be scrapped if too much has been stored and the shelf life of the highly sensitive components has been exceeded".

Nordson
ELECTRONICS SOLUTIONS

Seamless system integration

When selecting systems, it is crucial that they can be fully integrated into the Zollner system landscape. Today, the data of a product is almost as valuable as the product itself. Therefore it is important to have a reliable data basis at any time during the product development process. In addition to the process data, the material data, especially the correct number of components on a roll or tray, is also important. This data is not only used in MES to trigger the respective processes. The chain is continuous all the way into the ERP system.

The applications range from splice messages in the SMT placement machines to the posting of material consumption in the SAP system. "Up to now, we always knew exactly how many components the machine consumed during placement or how many components were discarded because they did not meet the quality requirements," explains Marina Fechter. Up to now, the removal of the rolls from the pick and place machines was always a grey area, so that the number of components in the warehouse was not 100 percent accurate to the piece. "This is where the Assure X-ray scanner has taken us an important step forward in terms of inventory security. Nowadays, no machine stands still because the stock on the roll is not correct and the material is running out too early...

" This is where the Assure X-ray scanner has taken us an important step forward in terms of inventory security. Nowadays, no machine stands still because the stock on the roll is not correct and the material is running out too early," Marina Fechter emphasizes.

In addition to many years of experience in counting components, the connection of the component counting system to Zollner's MES and SAP system was the decisive factor in the selection of the supplier. "In 2019 we will have assembled about 5.5 billion SMT components. Since we have production facilities with high mix/low volume at some locations and a reel is upgraded several times, this can sometimes mean many counting operations. Here the X-ray scanner offers significant added value thanks to short cycle times, a very good component library and the simple addition of component shapes," assures Fechter.

Topics such as annual or interim inventory are no longer a time-consuming counting marathon subject to human error: "Thanks to the data integration into our systems, it has become a routine task." At two locations, the component counting system has now been integrated into automatic storage systems. As a result, the staff is no longer occupied with simple tasks, she assures: "We can use them for higher-value activities and thus compensate somewhat for the lack of skilled workers". Meanwhile nine machines have been installed in the Zollner group of companies at eight locations in the warehouse and production area. In Altenmarkt and USA with connection to an automatic storage system, in Furth, Untergschwandt, Zandt, Romania and Hungary as a single system.

Fully automatic counting needs 10 seconds for every kind of bundle. Nordson Dage

Fully automated storage systems and the fully automated Assure X-ray scanner complement each other and offer the highest possible efficiency in logistics for components in modern electronics manufacturing. The manual handling of SMD containers in the storage and counting process is thus no longer necessary and piece-precise inventory management is possible at very low cost.

Nordson
ELECTRONICS SOLUTIONS

≡Assure X-ray Component Counter

Exact inventory knowledge is a necessary prerequisite for the optimal utilization of storage capacities and the uninterrupted utilization of the SMD lines. The Assure is the only fully automatic counting system available on the market with the necessary accuracy and speed to be integrated into the production process to increase efficiency. With a footprint of only 0.67 m², the X-ray scanner can be integrated directly into such a storage system. The component counter operates without contact, which is ideal for the sensitive components and complements well with a dry storage system. Moisture remains outside during counting and storage.

For future applications, Nordson ELECTRONICS SOLUTIONS will continue to follow its strategy: Think with the customer's head. The development team and customers are in active communication, comments and inquiries are reviewed, processed and integrated. Individual solutions are a special challenge that require close contact with the customer. Zollner supported the development of automatic component counting from the very beginning and has found a partner in Nordson ELECTRONICS SOLUTIONS to implement Smart Factory step by step into reality.

Standard for Industry 4.0

In July 2019, Optical Control was acquired by Nordson Corporation, ideally complementing Nordson's test and inspection systems and expanding the company's product portfolio towards a best-in-class X-ray product portfolio for the electronics industry. optical control, based in Nuremberg, Germany, specializes in non-destructive, imaging quality assessment in industrial environments and has been involved in electronic components and non-contact X-ray-based component counting for several years. The first fully automatic component counter OC-Scan CCX was introduced in 2013 as a world first. The system significantly and measurably simplifies materials management in the electronics industry. Productivity increase, cost reduction, component safety and effort reduction can be implemented efficiently. In the meantime, with today's Assure, the system has established itself worldwide as standard equipment in SMT production.

Nordson
ELECTRONICS SOLUTIONS