MYNews

A magazine from Mycronic

2023.01

3D AOI through new vision technology

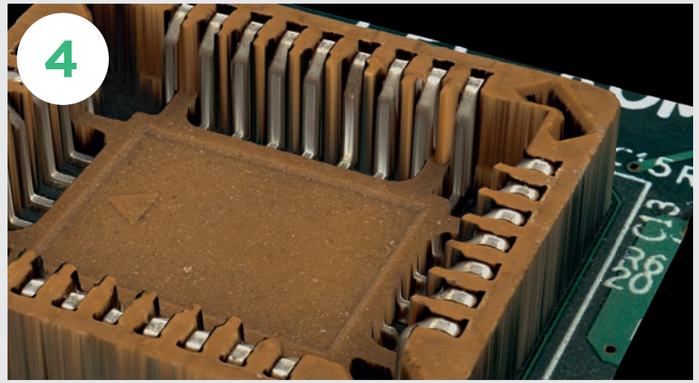
Faster. Sharper. Smarter.

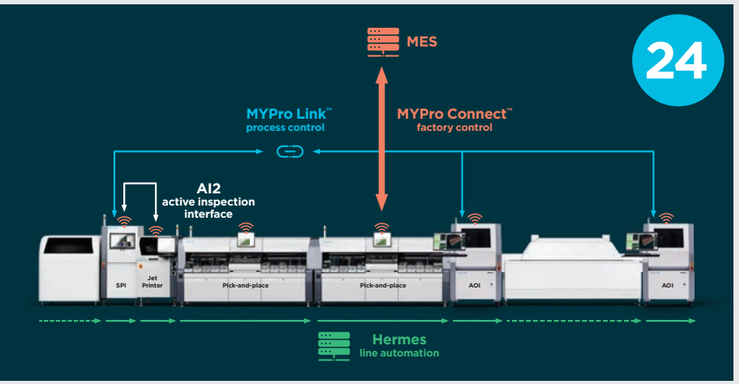
GAINING MOMENTUM AND VERSATILITY

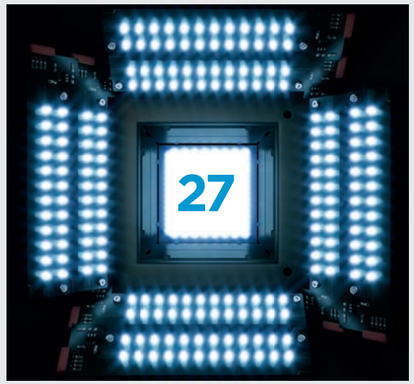
Solder paste perfection at jet speed

MYPro Connect™

FULL FACTORY CONNECTIVITY







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MYCRONIC

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Consistency is a virtue, particularly in these volatile times of global material shortages and geopolitical change. That's why I'm especially proud of Mycronic's dedication to customers over the past year.

In sales and service, delivery times have remained strong and reliable. Operationally, our growth continues into Eastern Europe and the Americas. Meanwhile, R&D has proceeded at full pace, with new connectivity and inspection solutions just the most recently launched examples of customer-driven innovations. Given the current global situation, maintaining performance this consistent is no simple task.

Recently, Mycronic extended its reach in Eastern Europe and established a new sales and service organization in Mexico. Our MYSmart range of dispensing and coating equipment is in many ways driving demand for more local presence in these markets, as Mycronic is now the world's largest electronics assembly dispensing equipment provider. In response to both reshoring and strong market demand in Mexico's domestic market, we look forward to working even more closely with a wide range of innovative players in this highly dynamic region for automotive, medical and industrial electronics manufacturing.

Our latest product releases are also experiencing strong customer demand. Following successful long-term collaboration with tier-one manufacturers of automotive, aeronautic and medical electronics, the new MYPro I series sets a new benchmark for speed and quality in 3D inspection. Thanks to its state-of-the-art 3D vision technology, the MYPro I51 enables significantly faster line takt times while ensuring the industry's highest accuracy and coverage. As manufacturers seek to accelerate their production of high-reliability electronics, they could hardly be better prepared for the future.

At the same time, MYPro Connect came as welcome news for customers aiming to further improve factory-wide automation and process control. The new connectivity software eliminates the need for custom integration, making integration of Mycronic assembly equipment into MES systems faster and more cost-efficient than ever before. This commitment to open standards will continue as we move forward in support of all our customers' automation strategies, no matter what mixed-vendor environment they choose to operate.

Material handling solutions, such as our high-capacity component storage towers, are also experiencing continued growth. Part of a modular kitting and storage concept, these solutions are proving highly adaptable to the growing need for better traceability and stock control at the lowest cost per component reel.

Together, all this progress amounts to a solid foundation for future collaboration. Thanks to closer market presence, new technical innovations and a responsive global team, we have weathered quite a storm of challenging conditions — and emerged stronger than ever. The opportunities for high-quality agile manufacturing have never been brighter. We look forward to seizing them together with you.

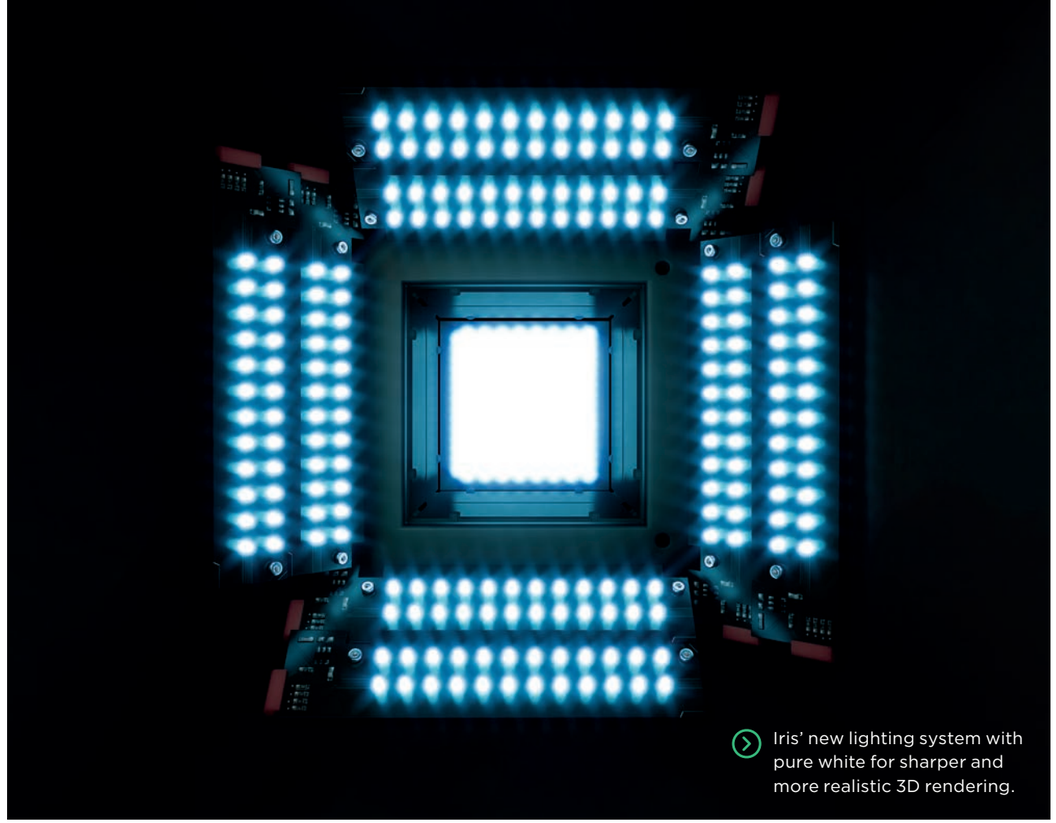
// Clemens Jargon
Senior Vice President, High Flex

Faster. Sharper. Smarter.

— how new Iris™ vision technology is bringing faster cycle times and higher resolution to 3D AOI

With rapid electrification comes massive change. From electric vehicles to industrial robotics to power control systems, the world is witnessing the rollout of advanced electronics by the billions. Each more complex and more specialized than the last. And each requiring the highest levels of quality and reliability. How will manufacturers of electronics seize this growing opportunity? The latest vision technology from Mycronic points toward a faster, sharper, and smarter path forward.

TEXT: GRANT BALDRIDGE **PHOTO:** MYCRONIC



Iris' new lighting system with pure white for sharper and more realistic 3D rendering.

ACCELERATING ELECTRONICS INSPECTION

Clearly, the pressure is on for electronics manufacturers to produce a wider variety of products at higher volumes than ever before. Often while managing a global component shortage that places extreme demands on flexibility and reduction of waste. At the end of the day, the manufacturers of today's most vital electronics have little choice but to find new ways to improve inspection performance and cycle times without compromising on quality. Mycronic's latest contribution to this effort is aimed at the heart of one of their key limiting factors: the speed and accuracy of 3D AOI inspection.

SPEED AND RESOLUTION WITH ZERO COMPROMISES

With the new Iris 3D AOI vision technology from Mycronic, it's now possible to achieve the industry's highest resolution 3D image capture at cycle times up to 30 percent faster than with previous inspection systems. "To be clear," explains Alexia Vey, Product Manager at Mycronic, "this is a speed increase of thirty percent for the full inspection cycle, from image acquisition to processing. Considering the system also handles nearly twice as many pixels, this is quite a remarkable performance improvement."

THE NEXT GENERATION IN 3D IMAGING

Key to enabling the next-generation Iris technology is a range of best-in-class laser scanners, image sensors, lighting and computing systems. To expand the system's field of view by 33 percent, a faster 3D laser sensor has been combined with improved telecentric optics. When it comes to resolution, the Iris system includes a new image sensor capable of capturing pixel sizes of 13.7µm, resulting in an astounding 3.45µm XY measurement resolution using sub-pixel technology. Together, these and other enhancements amount to a combination of speed, accuracy and coverage that is unmatched by any other system on the market.

SMARTER COMPUTING

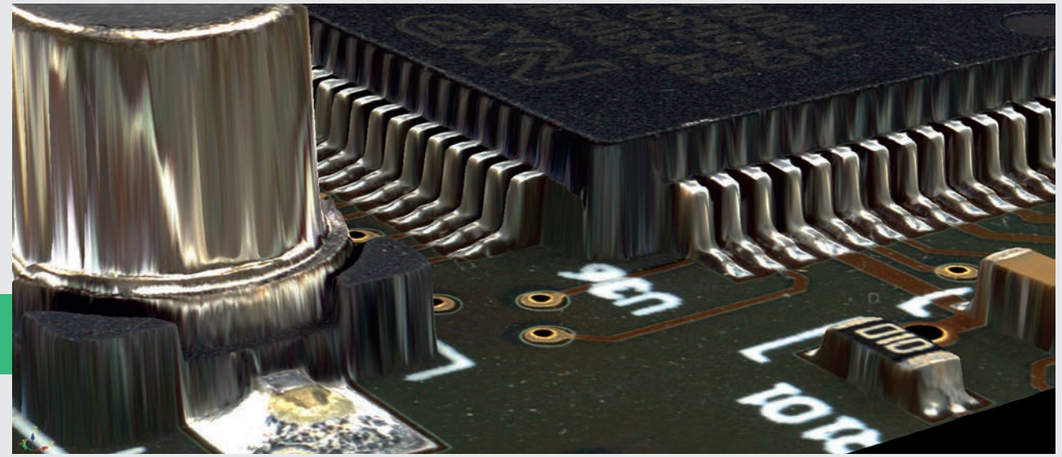
Capturing 3D files of this size and resolution is one thing. Processing them at manufacturing takt time is quite another. This is why Iris integrates a new generation of more powerful graphic processors together with more efficient 3D construction algorithms. As a result, the new imaging technology is able to achieve both wider test coverage and enhanced review images for components as small as 008004/0201M — all while significantly accelerating processing speed.

AVAILABLE FOR MYPRO I SERIES AND K SERIES SYSTEMS

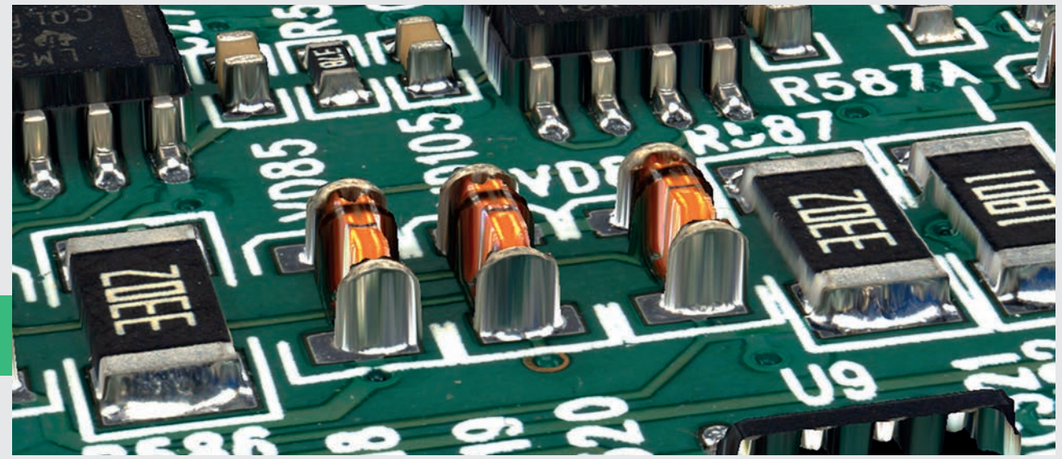
Iris 3D AOI vision technology is available as standard on all new MYPro I series 3D AOI systems. It is also available as a retrofit kit for existing K series 2D AOIs in need of an upgrade to 3D, as well as for K series 3D AOIs that demand improved processing speed.

WORKING TOGETHER TOWARD ZERO DEFECTS

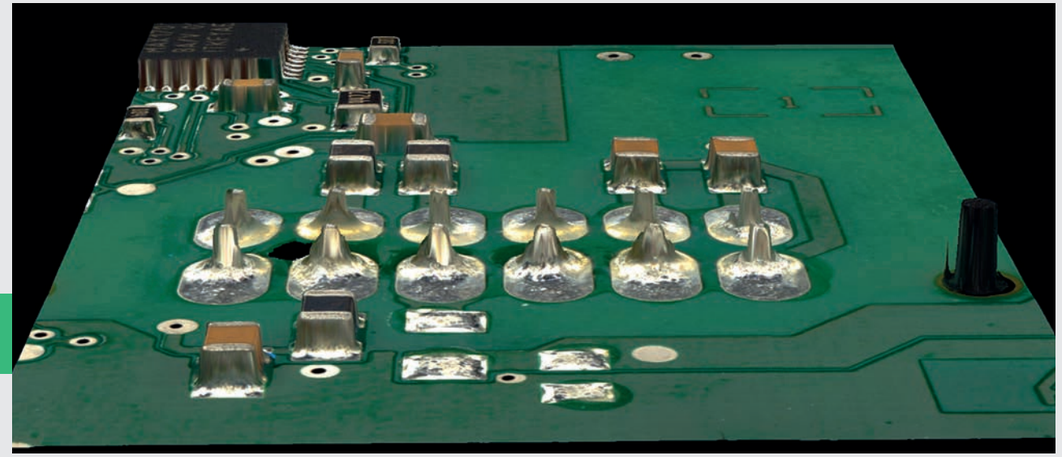
According to Clemens Jargon, Senior Vice President, High Flex at Mycronic, the development of the groundbreaking Iris technology is part of a long-term collaboration with tier-one EMSs and OEMs in automotive, aeronautic, industrial, and medical electronics. “These are extremely high-reliability electronics, so we share a common vision with these customers to enable zero-defect PCB manufacturing,” says Clemens. “Iris is a clear example of how we can work together successfully to continuously improve production quality, productivity, and efficiency. It’s proof that we can answer the needs of the most demanding production processes today while giving manufacturers a competitive edge for the future.”



Enhanced review with high resolution images.



Glass diodes have never been so sharp.



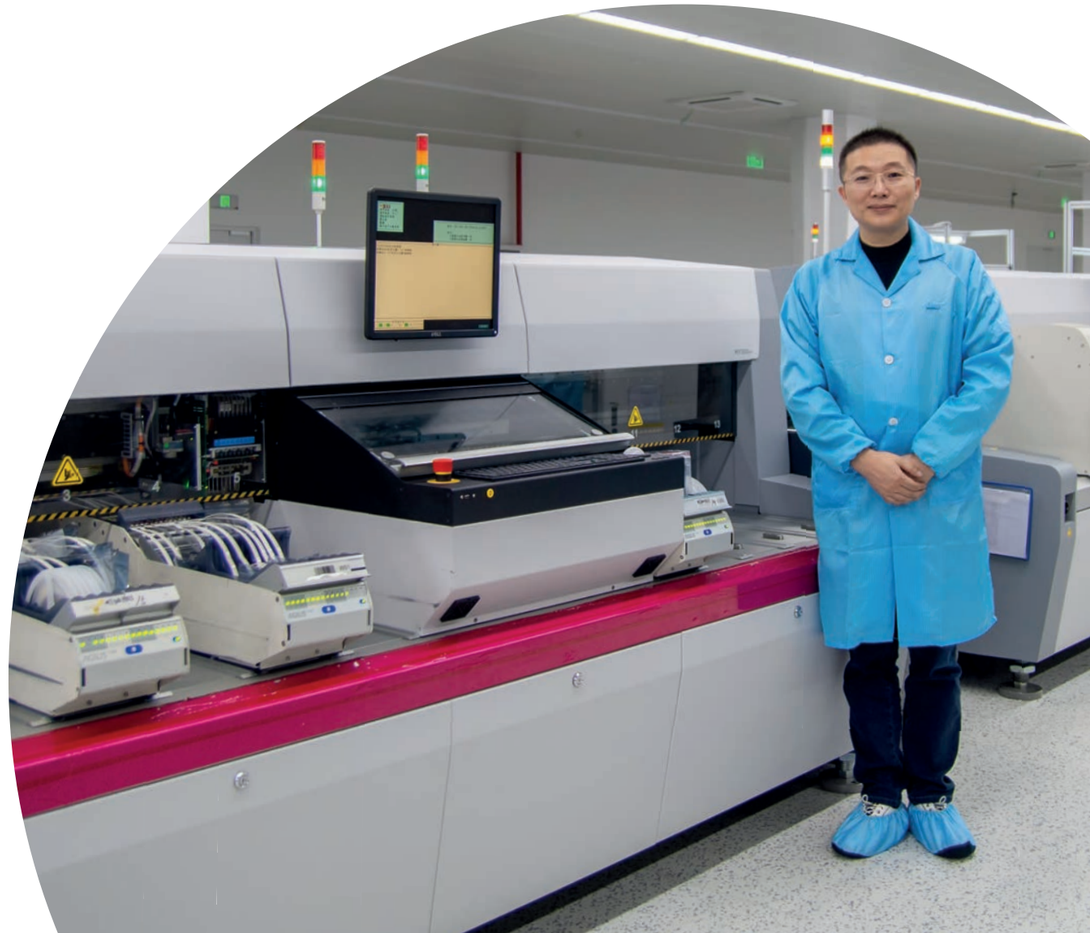
Accurate THT and press-fit component inspection.

Thinking outside the line

— how Wuxi Good Electronics is pushing the frontiers of flexible assembly

Mr. Liu Haifeng has never been one to stick with the status quo. As General Manager of Wuxi Good Electronics Co., Ltd., he is always on the hunt for the latest production technologies, new manufacturing concepts and better ways to serve his customers. The company's current production setup shows just how far the right technologies — and an innovative mind — can push flexible assembly into new frontiers.

TEXT: GRANT BALDRIDGE **PHOTO:** WUXI GOOD ELECTRONICS CO., LTD



Enter the world of a manufacturing pioneer. Step into Wuxi Good Electronics today and you'll see a highly agile production environment configured specifically to handle the variety and quality of some of China's most advanced electronics assemblies. This is an environment built to handle more than 10,000 types of high-value components, where any assembly might be the first of its kind, and where excess material and board defects are simply not accepted. It's no coincidence, then, that the world's first 5G motherboard prototype was produced here more than a decade ago — a testament to the company's reputation for pioneering groundbreaking technologies.

From the very beginning, Wuxi Good Electronics was set up specifically to cater to the prototyping needs of China's fast-growing high-tech industries. This made Mycronic a perfect fit, largely due to the ability of its pick-and-place equipment to handle all types of tape-strip components with automatic feeder recognition. "About one-third of our production batches are a single board, and another third consists of small prototype batches of two to five boards," explains Liu Haifeng. "This is really our niche: to help accelerate our customers' R&D by producing their prototypes as fast as possible, without sacrificing quality. We recognized years ago that Mycronic shared this focus, and our partnership has really paid off with a significant increase in prototype orders from the very start."

An overview of an innovator

Company: Wuxi Good Electronics Co., Ltd.
Location: Wuxi, China
Profile: High-tech manufacturer of small-batch, high-reliability electronics (IPC Class 3 or higher)
Mycronic products: Mycronic customer since 2011, now with production including jet printing technology, flexible pick-and-place equipment and automated component storage solutions from Mycronic

EXPANDING THE CONCEPT OF FLEXIBILITY

Like many of the products it manufactures, the factory's setup is one-of-a-kind. Alongside a more conventional line for series production, one machine in particular stands out: the PCB buffer tower, a customized, multi-track intelligent board conveying system. From here, all bare boards entering the factory are automatically registered and conveyed — via the screen printer, Mycronic Jet Printer and SPI — to the most efficient of five independent pick-and-place machines.

Depending on the actual product and the completeness of the material preparation, five different products from the PCB buffer tower might be routed to five different MY200 and MY300 pick-and-place machines simultaneously. For another product, two or more machines might combine in-line to complete a single assembly. In either case, the machines automatically identify all online materials, making the best use of the flexibility and production efficiency of each piece of equipment.

MORE COMPONENTS, LESS WORK

Because a single MY300 can accommodate and process more than 200 kinds of bulk and odd-shaped components at a time, the handling of short-tape and unpackaged components has been vastly simplified. "The ability to handle small pieces of reels or tapes, and the freedom to place the feeder in any free position, is absolutely essential to our flexibility," says Liu Haifeng. "The Agilis feeders make it so easy, with no maintenance or calibration required. And because packaged materials can be loaded offline, without an operator on the line to carry out online editing and confirmation, the MY300 has improved our work efficiency for an extremely wide range of materials."

Finally, alongside the higher-volume production line, two MYTower component storage systems are combined into an intelligent material handling solution, to ensure easy access and proactive replenishment. Initially, Mr. Liu motivated the investment by his ambition to assure customers that their material would be handled with the industry's highest standards, including strict access security, comprehensive traceability and state-of-the-art environmental controls. Over time, however, the towers have delivered on another promise: a significant increase in labor efficiency. "The intelligence of the material handling systems, together with the flexibility of the jetting and placement systems, has helped us double the number of changeovers we can handle with the same production staff," says Liu Haifeng. Similar gains have been achieved in the kitting area, where just one operator performs a job that once occupied as many as three full-time staff.

The MY300 has improved our work efficiency for an extremely wide range of materials.

FASTER PROGRAMMING, BETTER QUALITY

Today Wuxi Good Electronics has achieved such high levels of automation that every product is now produced to manufacturing standards of IPC Class 3 or higher without a single operator touching a board. Offline programming speed has improved significantly, and since all components are automatically matched according to the panel and machine-mounted, the number of misplaced components has been vastly reduced.

Of course, in the challenging world of rapid prototyping, experienced operators remain essential to high productivity. For particularly difficult components, operators utilize an assisted mount feature, which allows them to guide the pick-and-place machine for a particular component placement, thereby avoiding the full vision programming process. By enabling low-force control, for example when mounting thin and sensitive components, this process has also enabled production staff to virtually eliminate lead re-soldering.

PROVING THE SHORTEST DISTANCE ISN'T A SINGLE LINE

Along with all these quality and efficiency gains is an extremely high level of production flexibility. From batch-size-one prototype, to small-batch production through to series of hundreds of boards, the entire system is programmed to dynamically adapt, allocate production and combine pick-and-place capacity from the second the first bare board is scanned.

Step into Wuxi Good Electronics today and you'll see a highly agile production environment configured specifically to handle the variety and quality of some of China's most advanced electronics assemblies.

"Our high-flexibility production line layout has truly realized the rapid switching of small batches and multiple varieties," explains Liu Haifeng. "It's solved the stubborn problem of low production line utilization, and it's greatly improved our production capacity and efficiency. It involved a lot of hard work, but this non-linear combination of five pick-and-place machines has really improved our equipment utilization and reduced the input cost of the production line."

As a result of the company's strength in rapid prototyping, Liu Haifeng's team is seeing in-. creasing integration with the customer's R&D teams. To support this development, a design-for-manufacturing (DFM) system was recently connected to the Mycronic equipment and MYCenter software. "We continue to make progress in reducing the reserve cycle for our customers," says Liu Haifeng. "We can do more changeovers and get more output, so that customers can now get their prototype while they're waiting at the factory. We like to say that we do 'prototypes-to-go'," he says with a smile.

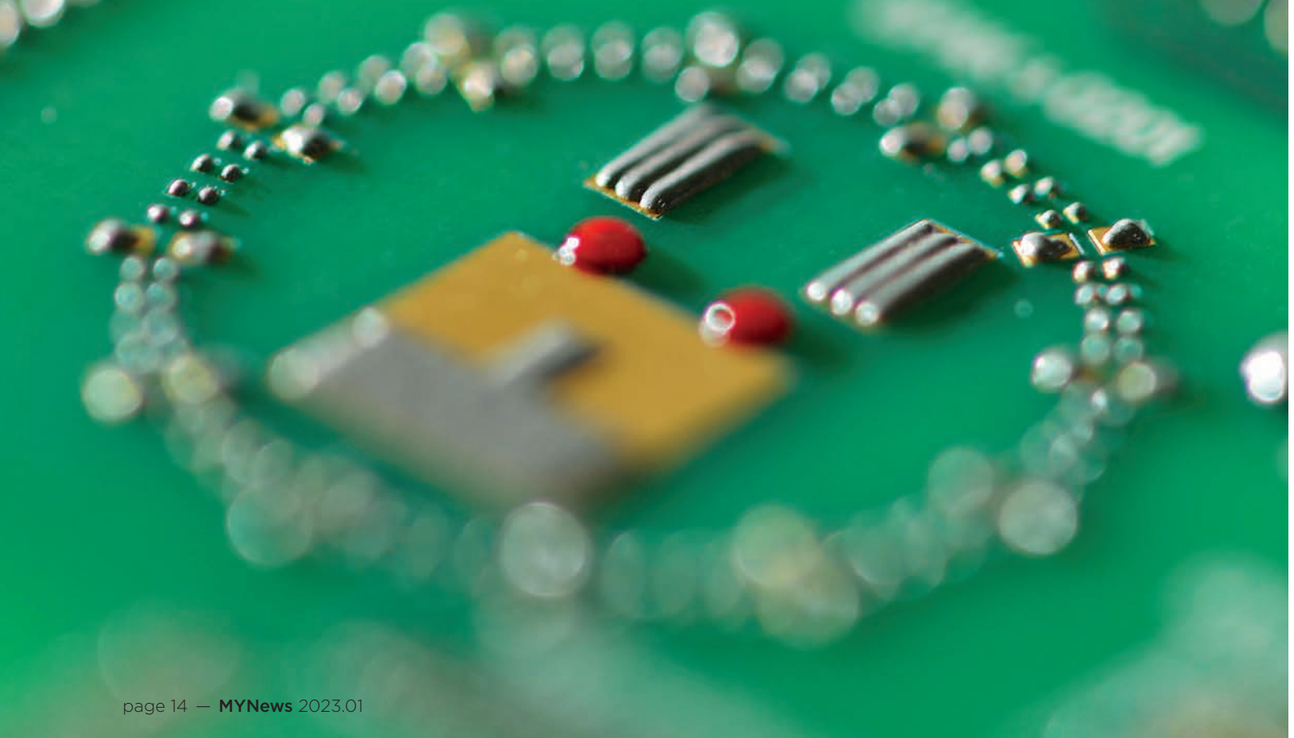
PARTNERSHIP FOR THE FUTURE

"A lot of this success is due to the great collaboration between ourselves and Mycronic," he continues. "We share similar ambitions, we learn together, and their salespeople and application engineers are all familiar with our business. I consider the local Mycronic team as my colleagues since the interaction and communication have been so great. Now, as long as we stay focused on our niche business and move forward together, it doesn't matter what our higher-volume competitors do."

Solder paste perfection at jet speed
— how jet printing is gaining momentum and versatility

Since its introduction over a decade ago, solder paste jet printing has continued to improve the quality and versatility of electronics manufacturers worldwide. This is especially true in the world of high-mix electronics, where the high accuracy and high flexibility of software-driven assembly processes are crucial to competitiveness. Now, with faster jetting speeds, a wider range of compatible solder pastes and tightly integrated Solder Paste Inspection (SPI) capabilities, jet printing has matured into a powerful platform for increased production efficiency and improved first-pass yield.

TEXT: YAN MANISSADJIAN **PHOTO:** MYCRONIC



THE NEXT GENERATION OF FLEXIBILITY

Every day, manufacturers who have adopted jet printing as a replacement for stencil printing confirm their operational, financial and commercial gains. By eliminating lead times and costs associated with sourcing and managing stencils throughout the manufacturer's product lifecycle — from cleaning and storage to redesign and replacement — jet printing reduces production costs, shortens delivery times and enhances responsiveness to unexpected changes in production schedules.

And as PCBs grow more complex with increasingly miniaturized components, the ability to jet perfect deposits as fine as 210µm makes it possible to achieve extreme precision while maintaining the highest levels of quality and performance. Using the same shopfloor skills and resources, jet printing makes suppliers more capable, more responsive and more attractive in the face of fast-changing customer demands.

DOZENS OF PASTES. ONE EJECTOR STANDARD.

Along with leading PCB producers, solder paste manufacturers have grown well aware of the advantages offered by the MY700 Jet Printer. Today, leading manufacturers such as Senju, Koki, Tamura, AIM, Almit, Alpha, Henkel, Indium and others collaborate closely with Mycronic to adapt not only their best-sellers, but also paste references with special properties for more specific applications. As a result, dozens of the market's most-used solder pastes are compatible with Mycronic jet printing technology, including low-temperature pastes and, most recently, the latest water-soluble paste, along with a growing range of other specialized pastes.

The versatility of its standard ejectors makes the MY700 particularly unique. The outcome of years of investments in advanced R&D, the ejectors' multi-patented standard design is directly responsible for the accuracy and repeatability of each deposit, ensuring the highest levels of speed and robustness while supporting the industry's widest variety of solder pastes using standard ejectors.

A brief intro to jet printing

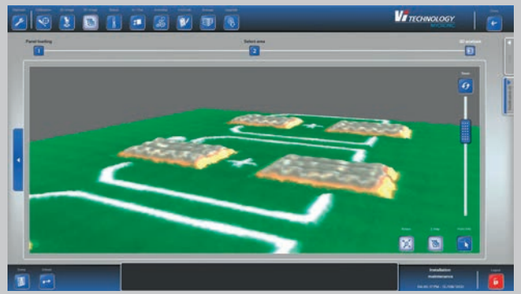
As quality requirements increase, batch sizes shrink and component complexity grows, jet printing of solder paste has become a reliable alternative to screen printing for manufacturers concerned about PCB defects.

Mycronic jet printing technology makes it possible to dispense solder paste for the most challenging circuit boards and components with micrometer accuracy, maximum speed and perfect quality solder joints.

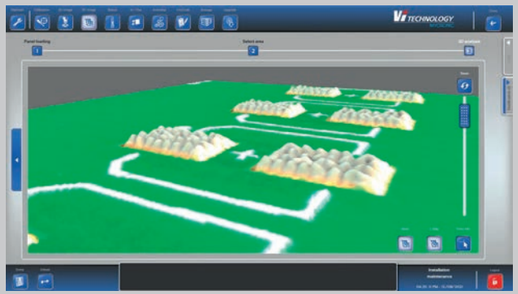
Thanks to unique ejector technologies, the MY700 Jet Printer's performance speaks for itself: up to more than one million dots per hour, with a 35 µm repeatability at 3σ and with dot diameter as small as 210 µm, and down to 1.9 nanoliter in volume.

Fully software-driven and stencil-free, with complete solder paste volume control, the MY700 Jet Printer ensures consistently perfect quality solder joints. From pin-in-paste to package-on-package, flexible substrates and board cavities, the MY700 handles all these jobs and more with total control of solder paste deposit size, volume, shape and position.

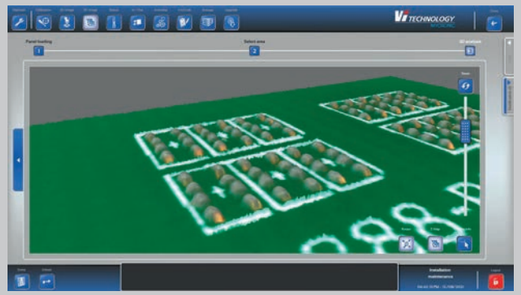
Effect of solder paste type on the paste deposit shape



Using standard solder paste



Same deposits using water-soluble paste



Using standard solder paste

Same deposits using water-soluble paste

ADVANCED INSPECTION MEETS FLEXIBLE JET PRINTING

In high reliability industries — whether medical, automotive or aerospace applying the perfect solder paste deposits is only part of the challenge. Since each deposit must also be controlled, measured, tracked and traced, 3D Solder Paste Inspection (SPI) technology is also absolutely essential. Not only is PCB assembly production required to, at a bare minimum, meet the requirements of IPC-A-610 Class 3, but the geometry of each solder paste deposit must also be recorded. These high quality and traceability standards include precise requirements for particular test points at specific stages of production as well as the information to be recorded and traceable for each product serial number.

Mycronic's PI series 3D SPI systems are known for their highly accurate and repeatable 3D inspection performance. Their 360° Moiré technology, enabled by a unique combination of hardware and software features that compensate for any board warpage, allows the system to take the actual surface of each copper pad as the height reference point (z=0), regardless of solder mask thickness. The exact volume of paste present on each individual pad can therefore be measured with height measurements as accurate as 0.04µm in resolution.

INSPECT SCREEN- OR JET-PRINTED PCBS WITH EQUAL ACCURACY

The technology is so precise that it can inspect both stencil- and jet-printed deposits with equal accuracy, even for deposits on 01005 pads or smaller. The deposit profiles generated by these two technologies vary widely, since jet printing tends to create flatter deposits than stencil printing, when an equal volume of paste is transferred. However, since Mycronic's SPI technology uses the surface of the copper pad as its height reference, without any approximation or interpolation in measuring the actual volume of a deposit, the measurements are equally accurate regardless of the printing methods and solder paste used.

1 **FOR HIGH-MIX PRODUCTION**
Repair information sent backward to jet-printer.

2 **FOR HIGH-VOLUME PRODUCTION**
Jet printer processes solder paste add-ons together with repair if needed. A second SPI can be implemented after jet printing to inspect stencil and jet printing at once.

Repair information

Repair and add-on information

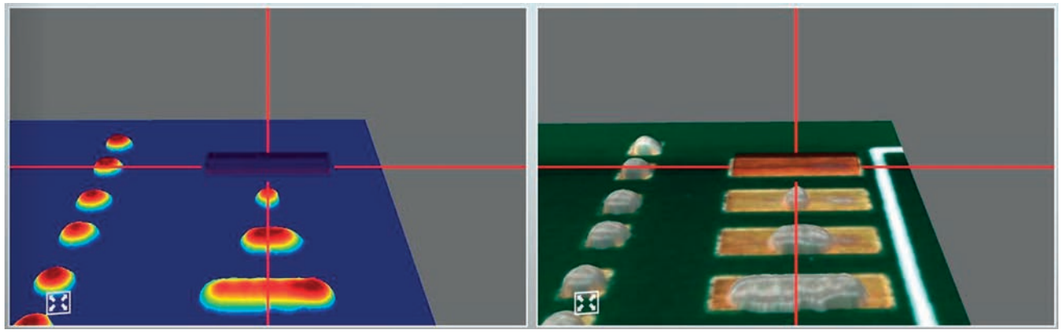
While it is clearly crucial to be able to calculate the volume and shape of a deposit as accurately as possible, in the world of inspection it is equally necessary to be able to compare these calculations with expected results. This comparison, between the actual and expected results, is the only reliable method to determine whether each deposit is, in fact, compliant. For stencil-printed deposits, this is often done by calculating the expected volume of a stencil printed deposit based on programming data: a combination of stencil aperture Gerber data and stencil thickness. But with jet printing, reduction ratios are applied according to pad dimensions and packages, making it much more complicated to calculate the expected volume for jet-printed deposits. Therefore, instead of using stencil Gerber data, the PI series 3D SPI imports the final program from the MY700, making it the only inspection system capable of calculating the true expected volumes of paste printed by the MY700, whether used alone or in addition to a stencil printer.

AN ALL-MATERIAL INSPECTION SYSTEM

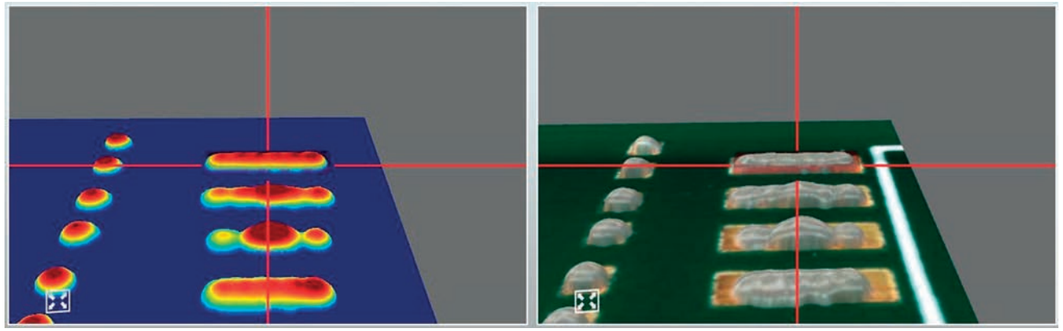
Additionally, the SMT process must take into consideration the unique viscosity and mechanical behavior associated with each type of solder paste. The screenshots below show how the shape of the deposits varies depending on the type of paste used. To maintain flexibility and efficiency, it is essential that the SPI system is able to inspect all types of jet-printed solder paste, despite their varying behaviors, with the same level of accuracy and repeatability.

Because of the integration between the MY700 and PI series SPI 3D, which allows for processing distinctions between, for instance, the widely varying characteristics of water-soluble, leaded and lead-free pastes, all types of MY700 compatible solder paste can be inspected by the PI series SPI — even when combined on a single PCB.

Before repair



After repair



BRINGING THE REPAIR LOOP FULL CIRCLE

The exchange of information between the PI series 3D SPI and the MY700 enables fully automated control of print quality, regardless of the solder paste deposit process — whether stencil printing, jet printing, or a combination of the two. Wherever the PI series detects a lack of solder paste, the MY700 can automatically compensate with additional deposits. The SPI simply informs the jet printer about which board needs to be repaired using the PCB's unique ID code, and sends the information about the location and volume of paste to be added. The result is a dramatic reduction of repair costs, improving first-pass yield and production efficiency. Depending on the environment and production constraints, two configurations can be implemented to target the zero-defect printing process.

TOWARDS A ZERO-DEFECT FUTURE

Whatever the printing method, solder paste type or production environment, these wide-ranging capabilities make jet printing the natural choice for any type of high-quality, high-flexibility manufacturing environment. Fully software-driven and powered by advanced inspection data, the MY700 continues to close even the most challenging quality gaps where the majority of PCB defects tend to emerge: the solder paste printing process.

Flawless flow

Accelerating material throughput with automated storage

When the world's top manufacturer of lifting columns needed to streamline its material flows, MYTower made it possible.

TEXT: GRANT BALDRIDGE **PHOTO:** LINAK DENMARK A/S

HEAVY LIFTING

Linak, the world's leading manufacturer of actuators for tractors, vehicles and hospital beds, produces complete assemblies across its five global sites. Most of their electronics, however, are prototyped at a single factory in Denmark, where an outdated manual storage system had begun to weigh down the factory's productivity.

"We had an old paternoster system with boxes of components and no digital tracking," explains Gregers C. Dybdal, Senior Production Engineer. "There would inevitably be mix-ups or hard-to-find components, so we started looking for a system that would enable faster, fail-safe kitting preparation and material retrieval."

To solve the problem, six MYTower storage units were installed to store most of the factory's more than 800 component types. The remainder are stored either on cardboard reels in dry cabinets, or on Agilis pallets, where the heaviest components weighing as much as 2.5 kilos are safely stored.

"Another system we looked at couldn't handle these heavier components," says Gregers, "and we liked the fact that the MYTower accepts single reels, without unnecessary boxes or trays. This system just takes up less space, and it's really a no-brainer to use."

TWICE THE EFFICIENCY

Today, some 120 new prototypes are produced every year at a rate of up to three changeovers per day. Compared to the old system, Gregers estimates that the MYTowers have cut kitting times in half. It now takes just one minute from material request to loaded feeder, compared to three minutes previously.

"To be completely honest, before we installed the towers I was skeptical whether the investment would pay off," admits Gregor. "But the productivity improvements were immediate, which was a really pleasant surprise." Together with a MY300 pick-and-place line, the system has enabled a doubling of production throughput, while two prior kitting personnel have been reallocated to more valuable tasks.

"We're still in the learning phase right now, but our material flows are already far more efficient and error-free," concludes Gregers. "And the best part is that everyone can use these towers so easily — from the warehouse to the kitting staff and the re-work specialists — with no training required. It's really that simple."

> Everyone can use these towers so easily … with no training required. It's really that simple.

Components on demand

Saving time and boosting output with smarter storage

How do you quantify the benefits of automation? 20 percent higher production volume with the same number of operators is a good start.

TEXT: GRANT BALDRIDGE **PHOTO:** ELECTRONIC ENGINEERING SERVICE, EES S.P.A.

> When we prepare a new job, material handling is no longer a factor.

NO TIME TO WASTE

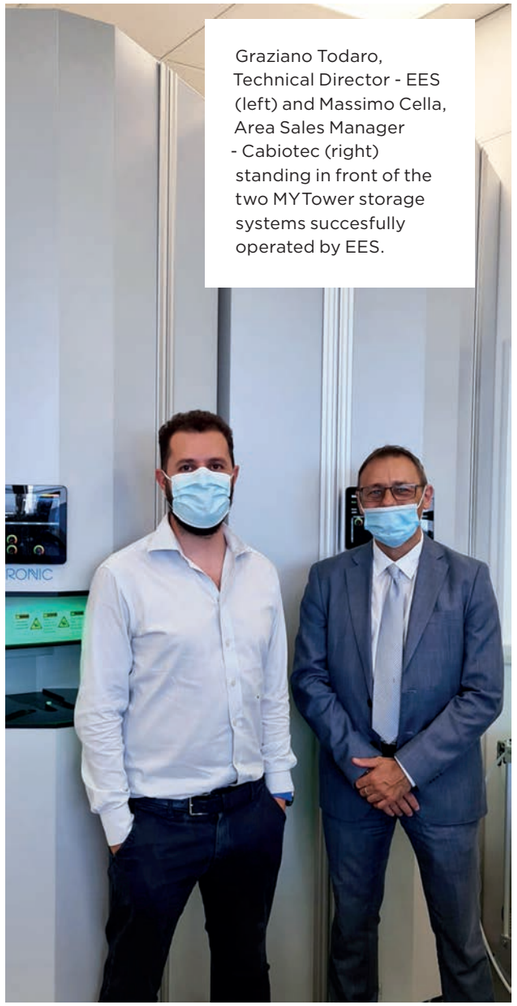
Electronic Engineering Service, a rapid prototyping and design firm in northwestern Italy, has built its reputation on highly skilled engineers and excellent service. This means delivering prototypes for a wide range of high-reliability sectors within 2—3 days, at a rate of up to one thousand new prototypes per year. Simply put, there's no time or talent to waste.

"We usually have four or five planned changeovers a day and a stock of about fifty thousand components," explains Graziano Todaro, Technical Director, EES. "So we really needed better control over our most commonly used components, which is why we decided to install two MYTower storage systems."

20% HIGHER OUTPUT

Even in the first months of use, with the towers filled to just fifty percent capacity, the results have been impressive. EES has been able to take on more business, increasing production output by an estimated twenty percent with the same number of operators. Component location, quantity, humidity and temperature are all fully traceable, and kitting staff experience less unnecessary stress on a daily basis.

"It's really a huge difference when we don't have to track anything manually," says Graziano Todaro. "When we prepare a new job, material handling is no longer a factor. We just focus on the current job and take for granted that the components will be where we need them, when we need them."



Graziano Todaro, Technical Director - EES (left) and Massimo Cella, Area Sales Manager - Cabiotec (right) standing in front of the two MYTower storage systems succesfully operated by EES.

AUTOMATED INVENTORY CONTROL

Thanks to easy integration with the factory's Mycronic pick-and-place machines, getting the new system up and running was relatively simple. Operators received just an hour of training, the Towers are intuitive to use and, together with the MYCenter software, traceability takes care of itself.

"At the end of the day, our customers have full control over their components, our operators are less stressed and our delivery times have improved," says Fabiana Marras, Head of Customer Care at EES. "It's exactly what we aimed to achieve."

Full factory connectivity
Zero custom integration

Factory connectivity has never been simpler. With MYPro Connect, you can connect any MYPro series SMT equipment to any enterprise system while keeping costs fully in your control. No in-house programming. No lengthy implementation. And no future disruptions. Just a single standard CFX-based interface that's ready to plug and play, whatever your Industry 4.0 strategy may be.

TEXT: DANIEL WESTIN **PHOTO:** MYCRONIC

IPC CFX—TOMORROW'S STANDARD FOR FACTORY CONNECTIVITY

With MYPro Connect, Mycronic eliminates the need for specialized software interfaces by bringing IPC-CFX standards to all assembly equipment.

REDUCE COSTS AND COMPLEXITY

The MYPro Connect platform enables plug-and-play connectivity with all leading CFX-compatible MES and ERP systems. Your integration time and cost are optimized as all Mycronic equipment are seamlessly interconnected with your business management systems.

STABLE, RELIABLE CONNECTIVITY

Whether your ambition is to improve monitoring and traceability, plan and manage changeovers or streamline board flows, MYPro Connect's standard data exchange ensures stable connectivity for a wide range of machine-to-business and business-to-machine functions.

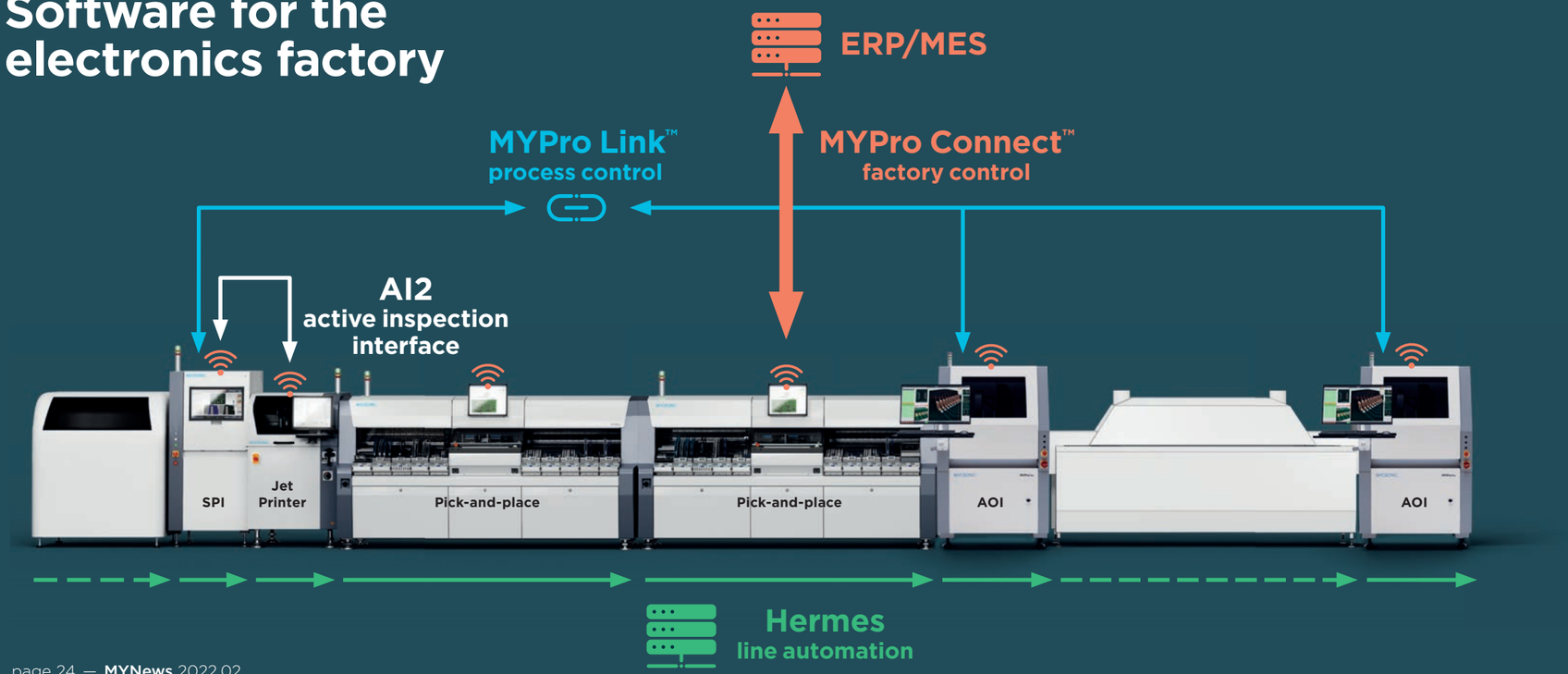
MYPro Connect enables:

Monitoring and traceability
Enables export of data from SMT assembly line(s) to calculate production KPIs (OEE, FPY, etc), WIP tracking, and factory-wide traceability.

Changeovers
Remotely manages recipes, handles changeovers and prevents errors in program selection, especially when switching between variants.

Interlocking
Interlocking allows the state of each board to be validated before continued processing, automatically verifying incoming PCB ID with the program loaded on the next equipment.

Software for the electronics factory

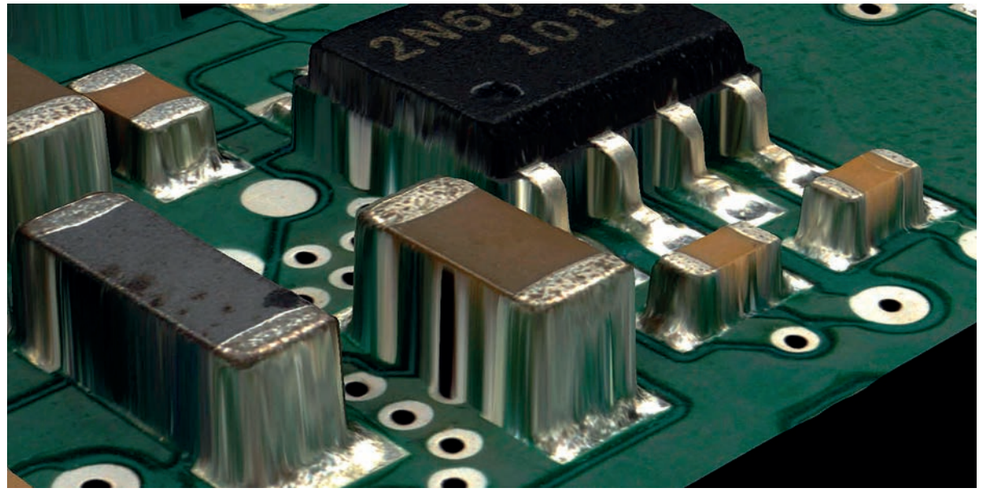


• **MYPro Connect** follows IPC-CFX standards and offers easy factory integration of any MYPro series SMT equipment to any enterprise system while keeping integration costs fully in control.

• The **MYPro Link** process control software suite is a real-time web-based interface for unified SPI and AOI data, its rapid data correlation and analysis delivers powerful possibilities for measuring, controlling and anticipating process variations.

• The **Hermes standard** (IPC-HERMES-9852) is a modern, open, non-proprietary and vendor-independent protocol for machine-to-machine communication in SMT assembly lines. It provides flexible data structures to seamlessly exchange all essential types of board related and is a key enabler of a controlled and transparent board flow management.

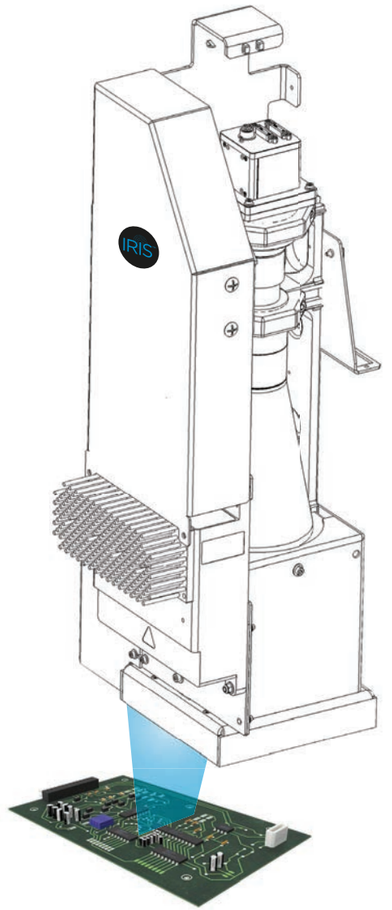
• The **exchange of information (AI2)** between the PI series 3D SPI and the MY700 Jet Printer enables fully automated control of print quality. The SPI simply informs the jet printer about which board needs to be repaired using the PCB's unique ID code, and sends the information about the location and volume of paste to be added.



Iris™ retrofit for 2D or 3D AOI

Iris™, the recently released 3D AOI vision technology from Mycronic, not only captures images with the highest quality with twice the number of pixels, but also enables an inspection cycle that is up to 30 percent faster than previous 3D scanning generation.

In addition to being available on new 3D AOI equipment, Iris is also offered as a retrofit kit for existing K series 2D AOIs in need of an upgrade to 3D, as well as for K series 3D AOIs that demand improved processing speed or higher accuracy.



Change is coming.
Is your factory prepared?

More process data. Faster innovation cycles. Smarter factory systems. As the pace of change accelerates, we're convinced that tomorrow's PCB assembly environment should be a simpler place. A place where no build schedule is too complex. No defect goes unprevented. And no production is left standing still. From naked board to coated board — and everything in between.

Bring us your bottlenecks, your quality issues and your integration challenges. And put our process experts to the test. Together, we can build the future of electronics assembly.

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