



Total Solutions for SMT

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Foreword

Dear reader,

Since our last Newsletter last November, inflation and higher interest rates have caused consumers and businesses to cut spending. The consumer market is still the largest market for chips, but the demand for chips from the industry is increasing rapidly. The electrification of cars and the transition to sustainable energy are fast-growing markets that can partly absorb the slump in demand from the consumer market.

In addition, the sanction imposed by the Dutch government on ASML to stop supplying to China has fortunately not had much negative impact. In addition, ASML notices little of the so-called "chip dip" as a result of disappointing sales forecasts from their largest customer TSMC. ASML's order book is so large that it has become more of a story of "joining the back"!

Recently ASML has signed a letter of intent with The Eindhoven University of Technology to invest hundreds of millions in a research program on their Technology Campus. More than 500 researchers will work here in plasma physics, artificial intelligence, mechatronics and semiconductor lithography. With this broader collaboration, it strengthens the Brainport region as the leading center of science and technology.

From Tuesday May 9th until May 12th, the well-known German trade fair SMTConnect will be organized again in Nurnberg.

From May 23rd till May 25th, a conference entitled Electronics in Harsh Environments will take place at the Park Plaza Amsterdam Airport Hotel. The conference focuses on building reliable electronics used in power electronics and harsh environments. A number of important suppliers of Partnertec will be present.

In this new Newsletter we have included a new section called Newsflash. Here you will find various news updates from our suppliers with reference to their website for more information in this regard.



Enjoy reading our Newsletter.

Maurits van der Laken
Managing Director Partnertec

ASMPT WORKS Process Expert

Optimization along the entire SMT line

Modern Pick & Place and Inspection machines, such as SPI and AOI, collect a countless amount of quality related data.

Presenting such data to engineers and operators in a useful manner is very challenging. Judging and using it for efficient corrective actions shortly after the information is collected is even harder.

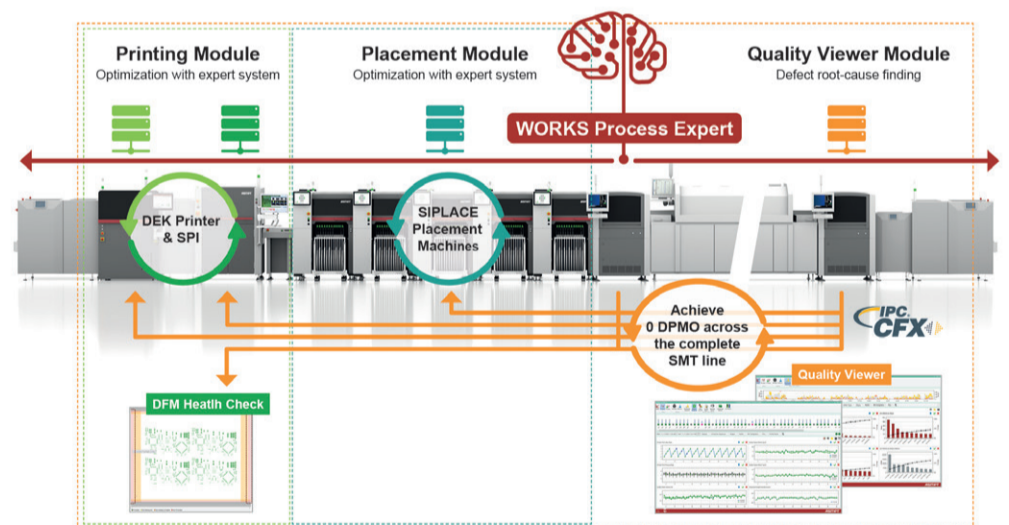
ASMPT's WORKS Process Expert software is the world's first self-learning, in-line and close-loop, process improvement system for SMT lines, that can act instantly and accurately.

Process Expert was introduced about 7 years ago and was initially designed for close-loop optimizing DEK stencil printing processes, using measurements collected by the accurate ASMPT Process Lens Solder Paste Inspection system.

Process Expert uses an advanced self-learning algorithm, in combination with a smart knowledge database containing information about how all Stencil printer settings effect the solder deposit. Based on a unique Design of Experiment concept, it takes close-loop corrective actions to optimize the printing process entirely. It even offers an integrated DFM tool (Design for Manufacturing), to check the robustness of the stencil design and recommend on initial machine settings and required tooling, prior to starting the real printing process.

Recently ASMPT has expanded the functionality of WORKS Process Expert and opened up the system for data import from third party measurement systems.

The latest version can now also collect data from end-of-line AOI systems and ASMPT P&P machines and supports the optimization of the placement process by driving the operators to the tasks with the highest positive impact on the process. With its connection to SPI and AOI systems, it supports process- and quality engineers in identifying the defect root-cause across the entire SMT line.



Seamless connectivity of the inspection solutions in the SMT line is ensured by the open IIoT and communication standard IPC-CFX.

The smart software thus becomes a powerful solution for higher yields and better quality while simultaneously reducing operator assists along the entire SMT line, making it a significant contributor to the realization of the integrated smart factory.

ASMPT enabling the digital world

www.asmpt.com



And what about Pick & Place machines?

It has been a while since we informed you about ASMPT's Siplace Pick & Place machines, not because nothing new happened, but simply because the focus has been on their unique software portfolio lately.

And of course software around P&P machines has huge impact on the performance and is becoming more and more important. That is why ASMPT has quickly become the leading developer for software to guide engineers, operators, logistic staff and maintenance engineers, to run SMD production as efficient as possible. They heavily promote their "Open Automation philosophy", to allow more easy integration with third party software and customers IT, to assist in optimizing and automating the entire SMD production in a scalable way.

But we should not forget, ASMPT is the leading manufacturer of the most flexible, fastest and most accurate Pick & Place machines in the world, available for every type of production, from highly flexible small batch production to high volume series production. In this article we would like to explain why.

Siplace SX

The third generation of the flexible Siplace SX platform is famous for its high accuracy and scalable mounting speeds up to 86.500 component per hour in a single machine. Several machines can be combined to gain more speed and feeder positions, the software will create a perfect balance without efficiency loss.

Clever integrated sensors will detect that each component is correctly picked and placed with the exact programmed placement force, despite the desired mount speed and board warpage.

The intuitive graphical user interface will guide the operator to all desired required actions and allows easy online modifications if needed. This makes the machine not only suitable for series-production but also for high mix production and proto-built. The machines offer unique features such as on-board 3D inspection to check the PCB and components prior and after placement, LED centering and Capacity on Demand by adding or exchanging placement heads very easily.

But it can also be equipped with Placement heads and Odd Shape Component features to mount components up to 300 grams weight and 50mm height at maximum dimensions of 200mm x 110mm! It includes advanced features such as 3D Stereo inspection on pins, placement force up to 100N and automatic pin clinching after placement to secure THT components in the PCB.

The in-house developed vision system is perfectly capable to deal with the most challenging Odd-shaped component designs. The automatic Acceleration Optimization function will search for the maximum mount speed without compromised to the placement accuracy due to loose of grip under the pick-up nozzle.

A wide range of available feeders and seamless integration with third party special feeders is available. This allows you to mount special components, that previously had to be mounted manually. The SX with Odd Shaped Component features can even be used in a THT assembly line.

Conclusion: The unique Siplace SX concept is available for any kind of application. It even allows the combination of Odd-shape component placement and regular SMD tasks in one Single machine, still offering high throughput and accuracy.



Siplace TX

For even higher throughput demands, ASMPT offers the TX platform, the fastest P&P concept per square meter in the world. Each single machine only takes 1 mtr line length and can offer a breathtaking performance up to 96.000 CPH! The small footprint will allow many machines in a SMD line to offer any desired throughput.

Even more impressive is the verified $\pm 25 \mu\text{m}/3\sigma$ placement accuracy at this high mounting speed. The TX2i version can even take this down to $\pm 15 \mu\text{m}/3\sigma$.

The TX platform is recently also extended with many "End-of-Line" features from the SX platform. SX and TX machines share the same flexible software and most feeder types.

Please contact us if you like to learn more about what ASMPT can offer to optimize your SMD production.



Watch this video to get a first impression.

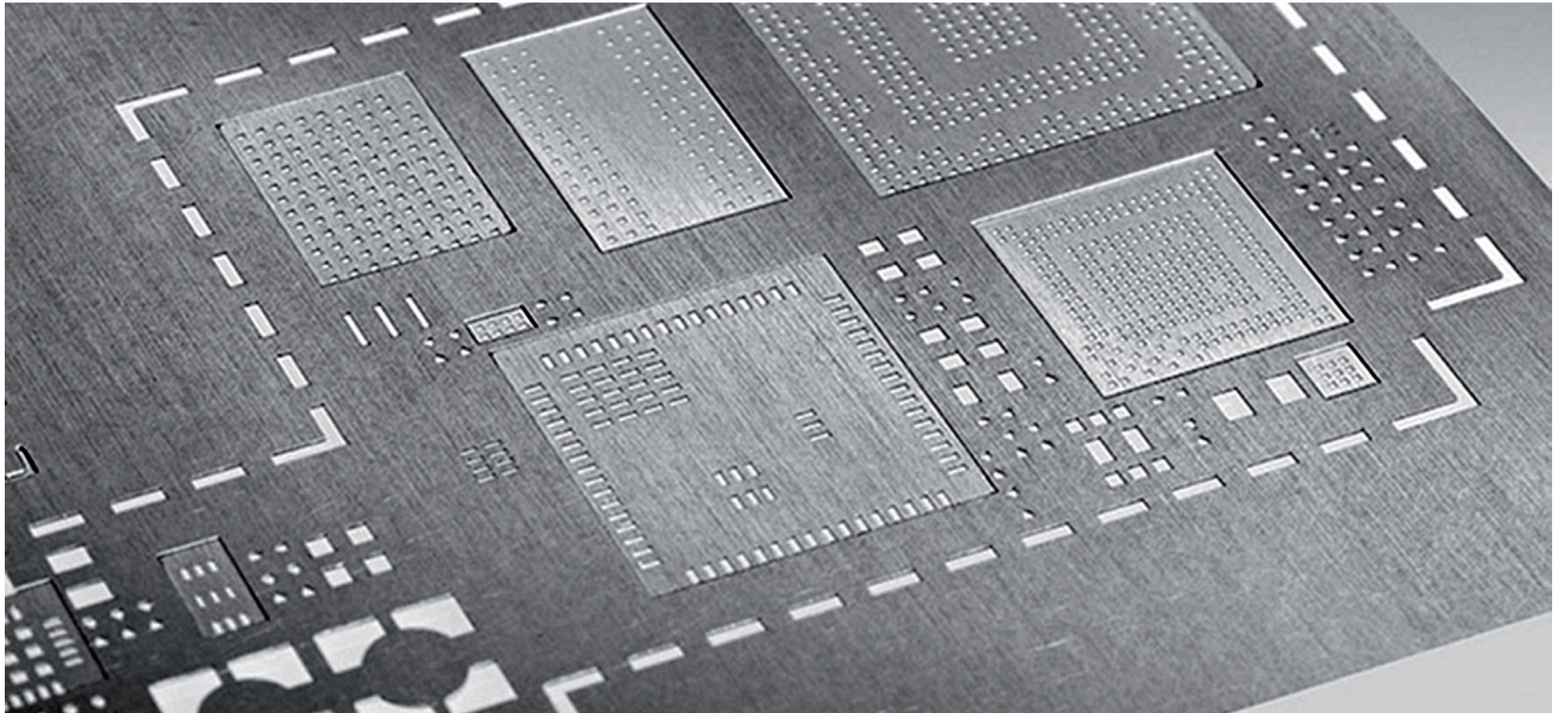
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Step Stencil Technology by Partnertec

How Multi-level stencils can contribute to better quality

Stencil design and stencil quality have great impact on a stencil printing process and on the quality of assembled PCB's. Stable and cost-effective printing processes can only be achieved with stencils that are precisely manufactured following correct Design for Manufacturing rules. Partnertec offers a broad portfolio of emulsion screens, laser cut stencils and tensioning frame solutions to match all requirements, ranging from standard SMT applications to the production of the most complex modules and devices.



Benefits of Partnertec standard thickness stencils:

- Based on ASMP/DEK Stencil design knowledge and manufacturing technology
- Latest generation High End Laser Cutting equipment used
- Design for Manufacturing health checks applied
- In depth knowledge of stencil printing in our team
- Available in a wide range of thicknesses and material types
- Excellent print performance
- Minimized Solder Paste waste due to optimized surface structure
- Maximum positioning accuracy
- Compatible with standard mesh-mounted and DEK VectorGuard™ tension frames

Why standard thickness is not always good enough?

The use of standard thickness stencils however could cause problems on certain components, when the surface area of the aperture in the stencil is too large in relation to the adjacent surface area of the pad on the PCB. If this so called Aperture Area Ratio (AAR) gets too small, solder paste release becomes critical and solder paste might stick to the aperture walls and not release completely from the stencil. This can result in insufficient paste on the pad, causing solder joint defects later on. Reduction of the stencil thickness would resolve the problem but also result in less paste on larger pads, often not accepted for taller components.

To extend the usability of a standard thickness stencils, Fine grain stainless steel and DEK ultra nano coating can stretch the process window and contribute to better paste release. DEK ultra nano coating is not only applied to the stencil surface, but also on the inside of the aperture walls to ensure a better release of solder paste from the stencil. Sometimes a change in the aperture shape can also solve specific issues and our team will always first try to find such solutions first.

But due to the decreasing size of components and increasing high variety of component types on a single board, the optimized and required paste volume for each solder joint cannot always be achieved with a standard thickness stencil.

The solution: Multi-level stencils

To eliminate compromises, Partnertec also offers Stepped Stencils, better called "Multi-level stencils". Multi-level stencils are produced with the latest high precision technologies such as micro-milling and laser welding to create local step-up or step-down thicknesses in a stencil. Step-up and step-down can also be combined in one stencil.

A Multi-level stencil will allow you to optimize the desired amount of paste at all critical areas on your board.

Our Multi-level stencils offer extremely tight tolerances for small and large multi-level areas, to allow consistent optimized printing results.

Additional Benefits of Partnertec Multi-level stencils:

- Flexible local adaption to any component mix
- Flexible design of pressure-sensitive areas
- Improved quality by optimized solder joint volume
- Higher first pass yield
- Reduced rework and touch up
- Eliminate need of solder preforms or paste add-on techniques such as jetting and dispensing
- Compatible with standard mesh-mounted and DEK VectorGuard™ frames

For more information and recommendations please contact:

Daan van Hoogstraten - Customer Process Support Manager (dhoogstraten@partnertec.nl)

Sascha Schurian - Senior Stencil Designer (stencils@partnertec.nl)

Partnertec signs official distribution contract with Berbertec GmbH for the Benelux

BERBERTEC is a leading manufacturer of high-quality special screens used in Industrial Printing Applications. Since 2006, Berbertec is producing extremely accurate emulsion screens, for a wide variety of applications, in their factory near Heilbronn (Germany).

Any size frame can be covered with a wide range of stainless steel- or polyester fabric and coated with photo emulsion film with the desired thickness. Most accurate available plotting technique are used to expose the film, to create the custom specific pint design.

In screen manufacturing, a distinction is made between 3 coating techniques.

1. Direct-Indirect Coating: A cut and pre-dried photopolymer film is laminated into the fabric using a liquid photopolymer film.
2. Direct Coating: A liquid photopolymer film is rubbed directly into the fabric with a doctor blade.
3. The capillary coating: Again, a cut and pre-dried photopolymer film is applied to the fabric evenly moistened with water.

Of these three coating techniques, direct-indirect coating is the most optimal to use for technical screen printing. The longer service life and precise layer thicknesses enable reproducible production of the screens.

BERBERTEC is the only emulsion manufacturer that has automated most of the process steps to meet the high demands of the customer. Robots are used to ensure reproducible quality of the emulsions. Berbertec is ISO 9001 certified!

The high-quality emulsion screens from Berbertec are the perfect add-on to our in-house laser-cut stainless steel stencils manufacturing for those applications that can not be solved with laser-cut stencils.

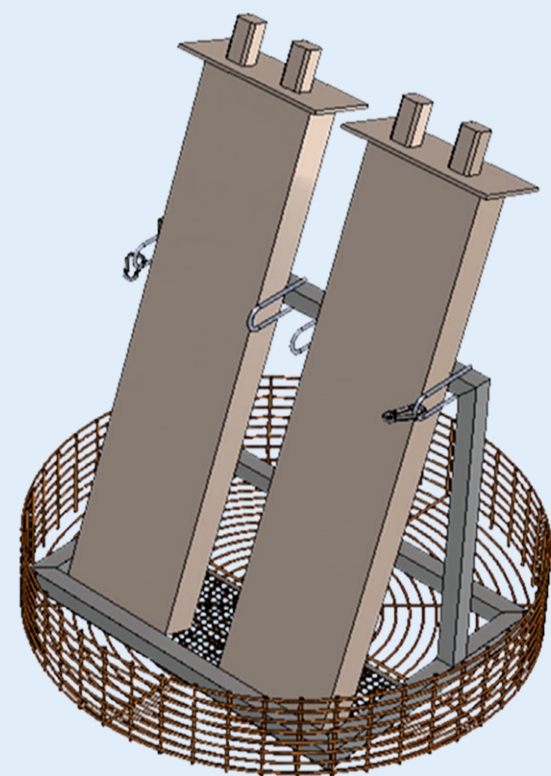


www.berbertec.eu

MBtech – MC200 Maintenance Cleaning Equipment

XL version now available for cleaning parts up to 1,2 mtr long

French cleaning equipment manufacturer MBtech, well known for its cleaning equipment for PCBA's and Stencils, also offer a very efficient machine to clean mechanical parts such as Solder Carriers, Conformal Coating Carriers, Filters and various other contaminated mechanical parts.



Recently a XL version of this MC200 is released that can now also hold items up to 1,2 mtr tall, including heat exchangers and flux condenser from reflow-ovens such as Vitronics Soltec Centurion and MyReflow.

Cleaning is performed by spray-in-air at high flow rate but low pressure, to avoid damage to the product and to assure fast and efficient cleaning.

The machine is equipped with a 100% closed-loop filtration system to filter out collected contaminations from the cleaning agent. It can optionally be equipped with a demi-water rinsing process that can be either open-loop to the drain or closed-loop with integrated demi-water filters.

After the cleaning cycle, products can be dried with the integrated hot air blower. An optional air knife can reduce the amount of remaining liquid prior to this drying step.

For perfect cleaning results, Partnertec and MBtech recommend cleaning agents from Zestron, the leading supplier in our industry. Zestron offers a wide range of chemistries, including aqueous products with no flash-point and very low VOC content to meet today's economic and environmental demands.

Contact us to share you cleaning challenge and let us recommend the right solution.



www.mb-tech.fr

More than deserved!

After exactly 23 years working for DEK Benelux and Partnertec, Pieter Verheggen, one of the best and most experienced service- and application engineers in the Benelux, has retired.

His knowledge and experience is unprecedented and will be greatly missed. In addition, his ownership, commitment and dedication is of an extremely high level and he was therefor more than a welcome engineer at our customers.

We thank Pieter for his untold effort and dedication over the past 23 years.

Pieter remains involved in the background with Partnertec as a technical consultant.

We wish Pieter all the best and even more a well deserved and healthy retirement.



www.parnertec.nl



30th Vitronics Soltec Centurion Reflow oven in the Benelux sold to Batenburg

Batenburg Industrial Elektronica, has just placed a repeat order for their second Centurion CT930 Reflow oven from ITW – Vitronics Soltec. This will take the total count to 30 Centurion ovens in our small Benelux territory since the introduction of this machine in 2016, in the year that the company Soltec celebrated its 100 anniversary, explaining the name "Centurion".

Batenburg Industrial Electronica, is a total solution contract manufacturer, offering design, PCBA and box built assembly, including testing, coating and potting. With a team of around 100 employees they offer solutions for wide range of markets as Automotive, Avionics, Agriculture, Medical and Industrial applications.

Batenburg is not only well known for their High Tech Production capabilities, but also for their inclusive position in the society. They permanently offer work space for people with a "labor market disadvantage" and have integrated them completely in the team.

Over the years Batenburg has expanded their technology skills and production capacity to follow the needs of their demanding high tech customers. At the end of 2022 they purchased their first Soltec Centurion Reflow oven and this oven was recently successfully installed in their production plant in Neede (Netherlands).

The team was familiar with the great performance of the previous Soltec models and after some investigation and a reference visit to the 24/7 user Philips in Drachten, the decision was taken to continue the cooperation with Partnertec/Vitronics Soltec and to purchase the Centurion CT930A.

Quickly after the successful implementation of the first oven, the decision was taken to expand the factory with an additional brand new SMD line including a second Centurion reflow oven in the same configuration. In September this new line will be implemented.

"The Centurion reflow oven offers great value for money and my team hardly allow me to buy a different brand" says Managing Director René Temmink with a smile, as they had very good experience with Soltec ovens before.

The Centurion offers superior heat transfer, allowing the creation of the most complex thermal profiles at relative low heater temperature set-points and resulting in minimal temperature difference over the PCB's (ΔT) and lower energy consumption.

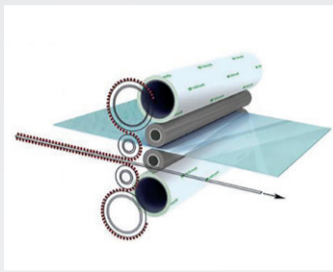
Machines are available in various lengths ranging from 8 to 13 heated zones with a wide range of options to match specific customer needs and throughput requirements. But the onboard technology and quality is equal along the entire product family, allowing small to large customer to benefit from the unique machine features.

We trust that Batenburg will benefit from their investment in Soltec Reflow ovens again for another 10 years or more, just like they did with their previous model.

Vitronics Soltec

www.itweae.com

Partnertec News Flash



TEKNEK launches next generation dissipative Contact Cleaning Roler

The new dissipative "GNTClean" elastomer rollers deliver effective static exposure prevention alongside industrial leading cleaning performance. It offers ANSI/ESD compliant low static cleaning.

The new grey compound in the roler, not only removes particles at sub-micron level but also help to protect high-value components in PCB's from potential fatal static exposure. NTClean rollers can be mounted in existing TEKNEK cleaning equipment.

TEKNEK board cleaners are recommended at the start of a SMT line, to clean PCB's prior to entering a Stencil Printer or Dispensing/Jetting machine. Latest generation TEK-BC 10 & 20 are fully Industry 4.0 offering modern machine to machine communication and automated board handling. Investment is low so why taking the risk to start with contamination on your PCB's that could harm the final quality?



www.teknek.com

Gen3 launches objective evidence website

Recent changes in the IPC-J-STD-001 standard now force companies to provide objective evidence to demonstrate the reliability and robustness of their circuit assemblies in relation to cleanliness. Previously they could refer to a successful pass of the ROSE test, known for the 1.56 µg/cm² pass/fail limit. More intense research is needed now. On the website www.objectiveevidence.org you will find all information you need.



www.gen3systems.com



GEN3 Must 3 solderability tester supplied in The Netherlands

Gen3, well known for its testing equipment to detect remaining ionic contamination on PCB's, also offers a wide range of other testing equipment, including solderability testers. Recently we installed a Must3 tester in a test-lab in Eindhoven, allowing the customer to verify wettability of THT and SMD components in a very accurate way.



www.gen3systems.com

First ASMPT DEK TQ-L installed in Benelux

Partnertec recently installed the first DEK TQ-L in The Netherlands at a well known semi-conductor manufacturer. This Large version of the DEK TQ can handle PCB's up to 500x500mm and offers the same extreme high accuracy and speed as the standard DEK TQ. The new platform offers unique features for continuous production and automation.



www.asmpt.com

New vacuum level measurement added to Solderstar SLX datalogger portfolio

For those challenging reflow application that require vacuum to achieve very low voiding levels, Solderstar has recently developed a new extension to its SLX datalogger platform to measure the exact achieved vacuum.

SLX is a very easy to use datalogger, designed specially for our industry for thermal profiling of Reflow soldering, Wave- and Selective soldering and Vapor Phase soldering.



www.solderstar.com

Growing need for incoming good scanning and component counting

Recent supply chain problems have increased the need for improved incoming good scanning and exact quantity counting solutions. Partnertec offers two interesting products to support you in this.



Modi GMBH offers smart incoming goods scanners that allow you to scan manufacturer- and vendor labels on reels, sticks and other packages, to verify it to your internal ERP database and print customized labels with your own unique ID information. This not only saves a lot of time but also eliminates the fault possibilities.



Nordson Test & Inspection, known for its advanced X-ray inspection systems, offers the smart and fast Assure X-ray Component Counter. The embedded component recognition algorithm eliminates the need of programming. The system can accurately check the (remaining) quantity on your reels, sticks and trays in a few seconds. The counted qty can be automatically updated in your databases.



www.nordson.com

Handy guide from Humiseal Low Hazard conformal coatings

Xylene and Toluene are two solvents found in many conformal coatings. Their use is safe and controllable at specified levels, but many companies are looking at alternatives to reduce hazardous exposure for their operation. Humiseal has compiled a handy guide on reducing these solvents, including comparable replacements to help build a safer future!



www.humiseal.com



MEK introducing new entry level Inline AOI system

The new inline MEK iSpector JDz is designed to provide high-quality AOI solutions for customers with low volume, high mix production, and a limited budget. With its affordable price tag and advanced features, the iSpector is the perfect solution for those looking to take their production processes to the next level.



www.marantz-electronics.com

Partnertec® is officially registered as a Trade and Brand name within Europe

Partnertec has officially registered her name in Europe. Since its establishment on April 1, 2004, the company has grown into a successful and profitable enterprise. Partly for this reason, it has been decided to register the name Partnertec as an official European Trade and Brand name. With this registration, Partnertec secures the distinctive character and also enhances its efficiency and competitive position. From now on, this official registration will be recognizable by the well-known "®" at the top right of the name Partnertec.



www.partnertec.nl



Daan's Tips & Tricks

Stencil cleaning

My name is Daan van Hoogstraten, I recently started at Partnertec as customer process support manager. I have 20 years of experience in the electronic assembly industry in both sales and service jobs. In my new role I want to help you, as our customer, to improve your production processes.

In our previous newsletter, Pieter Verheggen shared information about how to create a correct stencil printing program. Today I would like to share some tips and tricks on stencil cleaning.

To achieve a good Printing result, correct handling of stencils is very important. Stencils that are damaged or dirty will have a big impact on how accurate the paste will be applied on the board. This will directly influence the quality of the solder joints on your PCB's.

The best stencil cleaning results is achieved using automated stencil cleaning equipment, such as MBtech N29 series. If you don't have a machine available, you need to clean the stencils manually after each production run. I recommend to use DEK saturated stencil clean wipes. These lint-free wipes contain a special cleaning agent that easily wipes of remaining paste, without being too aggressive. Best result is achieved by simultaneously wiping the top side and bottom side; press your hands with wipes together and make circular moves over both the surfaces.

You can clean and dry the stencil afterwards using compressed air, but you need to be careful not to damage the stencil with too high pressure. Keeping the stencil tensioned in the frame reduces this risk.

If wipes and air cleaning does not sufficient clean the stencil, you could consider to clean the stencils with a manual ultrasonic cleaner, such like the GEN3 Gensonic. Stencil cleaning agent is sprayed on the stencil and the 40Hz ultrasonic head is manually moved over the surface. Even the most difficult particles stuck in corners of small apertures will be removed this way.

Don't hesitate to contact me, if you need more recommendation or support on any of your assembly processes.

Daan van Hoogstraten

Indium Corporation Announces New High Reliability, Low-Temperature Alloy



Indium Corporation® has released a new, bismuth-based low-temperature alloy developed for low temperature reflow processes which require enhanced thermal cycling reliability.

Indalloy® 303, also known as Bi+, is an innovative alloy that retains the low reflow temperatures required for temperature-sensitive processes while enhancing the lifetime reliability of the solder joint beyond that of traditional low-temperature solders.

As a low-temperature, Pb-free solution, Indalloy® 303 offers:

- A reflow temperature as low as 170
- Excellent thermal cycling performance
- Resistance to hot tearing
- Compatibility with SAC in hybrid BGA joints
- Low voiding

Indalloy® 303's flux vehicle, Indium 5.7LT-1, is an air-reflow, halogen-free, no-clean solder paste, designed for assembly processes using Bi-based and In-containing low-temperature alloys. It delivers:

- Superior print transfer efficiency
- Clear post-reflow flux residue
- Solder bead and solder ball minimization
- Exceptional wetting on OSP, Immersion Ag, Immersion Sn, and ENIG
- Excellent coalescence of small deposits
- Outstanding SIR performance under challenging low-temperature reflow conditions



www.indium.com



ASMPT process lens HD World's fastest and most accurate 5D Solder Paste Inspection System

ASMPT has released the HD version of the "Process Lens"
- Solder Paste Inspection System

The HD version offers up to 70% faster inspection than traditional inspection systems at much higher accuracy. The new Digital Projection Chip is equipped with 20 million digital controlled micro-mirrors, used to create a very accurate and adjustable Moiré pattern.

It can measure Solder Paste deposits down to 70 µm x 125 µm size and up to 1000 µm height! 2D analyses, prior to 3D measurement, will eliminate influence from PCB related patterns such as solder resist, tracks or silk screen. Measurement is only made on points of interest such as solder paste, glue dots or unwanted contamination. The machine detects and compensates for board warping, on-the-fly, to assure that the solder paste volume is correctly measured.

In combination with ASMPT "WORKS Process Expert" software (see page 2), the system is automatically capable to optimize your stencil printing process completely close-loop. This is done by adjusting all influencing Stencil Printer settings such as print speed, print pressure, separation speed and X-Y offsets. It will also optimize the frequency of under stencil cleaning wipes.

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