Ersa presents its new, flexible printer platform

The new Ersa VERSAPRINT 2 stencil printer – the "ULTRA³" version is shown here – impresses with its compact and clear design.

VERSAPRINT 2 – the next generation

In 2007 the VERSAPRINT 1 was presented at the productronica – exactly ten successful years later, Ersa is now launching its next pioneering generation of printers. It goes without saying that expectations of the completely modified system are high. Driven by rapidly increasing technological requirements, the VERSAPRINT 2 has clearly set its sights on flexibility and innovation.

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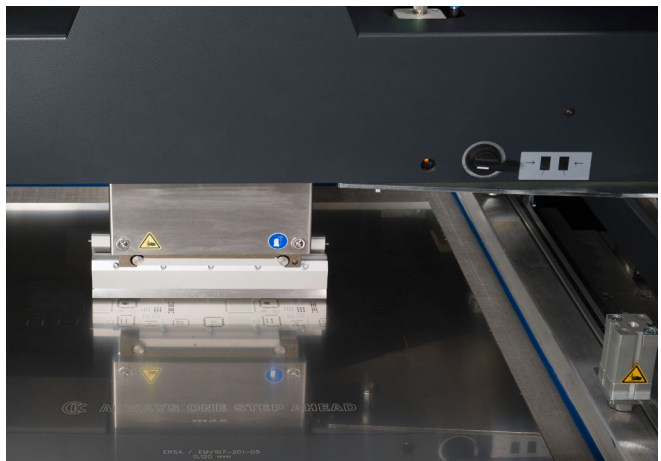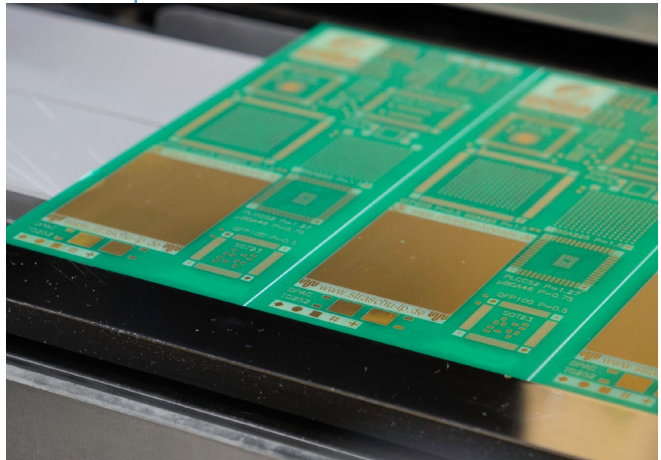and Wolfram Hübsch,
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Over-top clamping of the VERSAPRINT 2.

Tried-and-trusted pneumatic squeegee clamping and adjustable stencil support.

The stencil printer has long passed the stage where it simply covered the „prin- ting" process step. In the meantime, it has become a multi-function device which also carries out dispensing and inspection tasks. Process control and traceability connections are also a fi- xed part of the options list, because the complexity of current electronics products is making higher and higher demands on production quality.

Current and future products made by the electronics industry require proces- ses to be tuned in the best way possible and demand the complete attention of operating personnel. Only a perfectly ad- justed system will deliver the necessary quality at minimum costs. On the other hand, there are numerous processes and systems to be supported along the production line. It is almost impossible for system operators to be familiar with all the machines and processes on the production line down to the last detail. Clear and unambiguous communication between the operator and system is thus all the more important – a com- plex production environment makes easy-to-operate system technology essential. Here, Ersa provides support in the form of the new VERSAPRINT 2, which is based on the tried-and-trusted VERSAPRINT series of stencil printer models. The revised software interface communicates clearly and directly with the operator via touchscreen; icons for menu items and commands simplify and speed up operation.

Process parameters are adapted direc- tly via touchscreen, as is customary with modern multi-media devices. Only if the operator has sufficient user rights, of course. A distinction is made between five user levels, each of which can be tailored to customer requirements. The portrait format touchscreen with new monitor arm – can be pivoted through 180 degrees and tilted – offers signi- ficantly more space for communication with the operator and is clearly visible during all work at or in the system. If the monitor is not required, during au- tomatic mode for example, it is simply pivoted to the side of the system to save space, yet still displays all the im- portant information. This position was consciously chosen, since operating personnel are typically in the vicinity of the automatic feeding unit during pro- duction runs and can keep an eye on the printer monitor from there.

STABLE PRINTING PROCESS, INTUITIVE OPERATION

The results of the inspection are sum- marised and displayed clearly, providing information about the stability of the printing process. The SPC data (SPC =

Statistical Process Control) collected by the system allow the operator to quickly appraise how well the process is adjusted and whether intervention is necessary.

Alongside the improved operation of the stencil printer, the accessibility of the system has also been significantly enhanced. The tried-and-trusted front hood has remained – but has now been equipped with a stopping point on its opening path. The hood stops at about 1.7 m above the ground and can thus still easily be reached by smaller operators. Taller operators actively push the hood beyond this point to the required opening height. In addition, the access flap for changing the cleaning fleece on the back of the system has been replaced by a proper hood, making fleece changing easier.

The new panelling design makes the fast and straightforward removal of the panelling possible, saving valuable time during more complex service work or during retrofitting. The drive components of the VERSAPRINT 2 have also been positioned in such a way that they are easily accessible for service work. The VERSAPRINT 2 relies on efficient motors which are equipped with encoders on all process-related axes. One advantage is more precise axis control

and the short time required to initialise the drives after the hoods have been closed. The tried-and-trusted VERSAPRINT system concept is found inside the printer: the substrate is held level from above by practical blade strips and can be additionally clamped at the side. The substrate is supported up to the edge, which is very important particularly during printing on thin substrates.

The reliable pneumatic squeegee clamping has been enhanced by an LED status display – and the practical clamping of the stencil contact width. This means that the operator sees directly whether the clamps are activated. In addition, both clamps are monitored by the system software in order to exclude faults caused by loose squeegees or the stencil not being clamped.

The high-performance bottom side stencil cleaner has dry, wet and vacuum cleaning modes available. Transport of the cleaning fleece is monitored during cleaning and can be equipped with a suitable feeding speed for each cleaning mode. The cleaning fluid is applied by a dispenser which automatically adapts its travel path to the dimensions of the substrate to be printed. The amount of fluid applied can be adapted to the product requirements using the
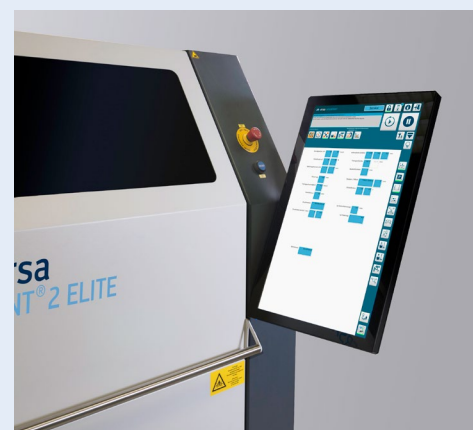
Monitor arm can be pivoted through 180 degrees – always where it is needed and never in the way.

dispenser feeding speed; the parameters selected are saved in the printing program for the specific product.

STENCIL PRINT WITH INTEGRATED INSPECTION

There are three camera variants available for the VERSAPRINT 2: area scan camera, 2D- and 3D-LIST camera. LIST (Line Scanning Technology) stands for fast line cameras. The area scan camera permits the fast detection of the fiducial positions for alignment of the substrate to the stencil. It works internally with two independent cameras – one directed towards the substrate, the other towards the stencil. The area scan camera is able to carry out inspection of the printing (for cover and bridges) and/or the stencil openings (for blockages and smears).

Due to the dimensions of the view field, only a local inspection of critical areas makes sense in this case. If the quality requirement makes a complete inspection of the printed result necessary, the 2D-LIST camera is ideal. It scans the substrate line by line at high speed and thus makes a very fast, full-surface inspection of substrate and stencil possible. Thanks to the high scanning speed there is no need for a solder paste inspection system downstream from the printer, thus saving valuable production space and additional programming effort. In addition, the effort of operating an additional system in the production process is no longer required.

The 3D-LIST camera makes full-surface detection of the printed volume possible: laser triangulation is used to record and evaluate the individual image points line by line. 3D inspection directly in the stencil printer has the additional advantage of being able to measure critical substrates directly before printing in relation to the actual height of the unprinted pads. A downstream inspection system cannot do this. As with the

More space for cleaning fleece replacement.
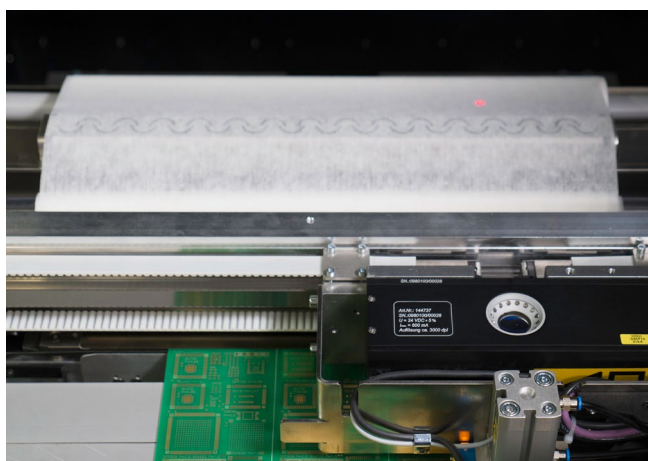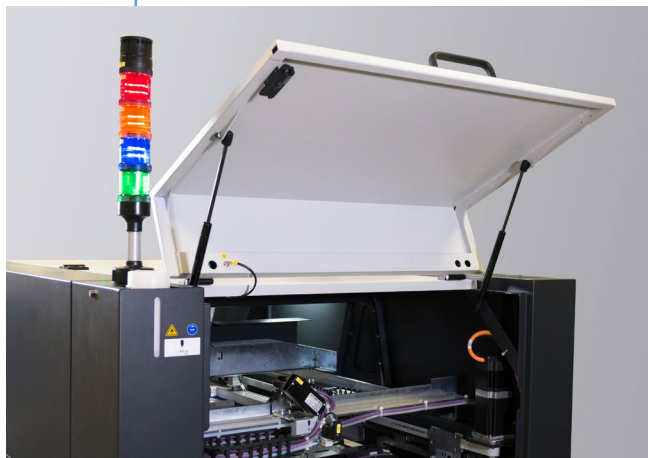
Bottom side stencil cleaner and area scan camera of the VERSAPRINT 2 ELITE.

2D-LIST camera, inspection directly in the stencil printer saves on a downstream inspection unit. Use of only one system allows programming and operating effort to be reduced considerably and makes it possible to directly generate actions from the inspection results. Print offsets can be corrected directly, for example, or cleaning processes can be started.

The open and accessible setup of the VERSAPRINT 2 permits most options to be retrofitted as "features on demand". The system can thus be adapted to current manufacturing requirements at all times. For the customer, this means that he can concentrate on current requirements when purchasing the sys-

tem, yet still fulfil future manufacturing demands through optional retrofits – guaranteeing cost efficiency and long-term future use.

VERSAPRINT 2 WITH FOUR MODELS

The VERSAPRINT 2 series includes four different models: VERSAPRINT 2 ELITE is the robust basic version which uses an area scan camera for alignment and optional inspection of the printing result. The width of the stencil support can only be adjusted using tools. All options available for this model except for the PCB dispenser, 2D- and 3D-LIST camera. The VERSAPRINT 2 ELITE plus has a stencil support that is adjusted without tools for frame sizes from 450 to 740 mm. The ELITE plus can be upgraded or retrofitted with all the available VERSAPRINT 2 options including 2D- and 3D-camera.

The VERSAPRINT 2 Pro² with its fast 2D-LIST camera is particularly suitable for products with a high inspection requirement. It can also be upgraded or retrofitted with all VERSAPRINT 2 options. The VERSAPRINT 2 Ultra³ has been designed for operators who pay special attention to the "small print". The Ultra³ uses the very latest measuring technology provided by the 3D-LIST camera. The shape of the smallest solder paste depots plays a major role in the printed volume and ultimately for the shape of the solder connection. Is the height of the paste depot consistent or does it drop towards the edges? The Ultra³ can answer this question, since it is both a stencil printer and 3D-SPI (Solder Paste Inspection) in one. All VERSAPRINT 2 options can be retrofitted in this case, too.

SUMMARY VERSAPRINT 2

With the new VERSAPRINT 2, Ersa is continuing its proven series of stencil printers. The new printer sets benchmarks in communication with the operator, as well as in terms of drive technology and system accessibility. The enhanced sys-

tem accessibility permits options to be retrofitted during service life in the form of "features on demand", so that the system can keep pace with manufacturing requirements. In addition, the VERSAPRINT 2 with integrated full-surface 3D-inspection fulfils the market requirement for increased process quality. Yet the VERSAPRINT 2 does not require any additional manufacturing space or further programming efforts – unlike a separate, downstream SPI.

The inspection results are integrated directly in the ongoing printing process: the cleaning of the bottom side of the stencil is started automatically and a print offset is corrected independently. This reduces the strain on operating personnel while maximising process quality and line performance at the same time. ∎

The fiducial menu of the new software interface.