

Technical Article

Ersa Stencil Printer

Getting the printing process to start moving

The controls to control the perfect SMT process

ERSA GmbH, Wertheim & Bachmann electronic GmbH, Feldkirch

“Together we can achieve anything”. This guiding principle of Bachmann electronic could describe the credo of many other companies as well, whenever the discussion turns to the subject of innovation or future perspectives. They are endeavoring to always be one step ahead, implementing today what customers demand and will require tomorrow. This calls for close communication and frequent information exchanges with all customers, and, finally, implementing together the insights gained. Making use of any opportunity to be a step ahead of the competition is the key to success.

This being the credo of Bachmann electronic, Ersa has found an excellent and strong partner with whom to gain this advantage of the step ahead, to turn the proverbial key.



Pict 1:

*Corporate headquarters of
Bachmann electronic in
Feldkirch, Austria*

Bachmann electronic GmbH is an internationally operating high-tech corporation with its headquarter in Feldkirch, Austria, developing and producing complete and future-proof system solutions for the field of automation technology. Founded in 1970, it has experienced continuous growth, so that today it has 480 employees located in Austria, Germany, The Netherlands, Denmark, Czech Republic, USA, China and India.

Bachmann automation control systems find their use in general industry and machine construction, in renewable energy as well as in marine and off-shore installations. In the area of renewable energy, more specifically in wind power stations, Bachmann electronic is, with a market share of more than 50% and over 60 000 wind power stations outfitted with Bachmann electronic controls, the uncontested world leader.

Because of the reputation and demonstrated excellence of Bachmann electronic, ERSA had selected in 2005, the year when it started with the development of its first inline stencil printer with 100% inspection

Ersa GmbH

Technical Article

Ersa Stencil Printer

capability, this company as its partner. The equipment specification document called for high performance and real time capability, an efficient bus system, transparency and simple configurability of the system. The M1 controls of Bachmann electronic offer exactly these features, and they assume today the handling of all control and regulating functions in real time. The flexibility of the M1 assures the functionality of the different configuration levels and models of the VERSAPRINT line of systems.

M1 controllers from Bachmann electronic are already installed in different systems manufactured by ERSA, and they have stood the test of time in excellent fashion. Particularly the large number of options and customer-specific solutions of the VERSAPRINT require a very flexible system, which needs to be continuously adapted to the newest developments.



Pict. 2:

*SPS Controls M1 from
Bachmann electronic*

That it is not only Ersas, that is completely convinced of the quality and capability and innovativeness of the Bachmann electronic control systems, can be seen when visiting the SMT manufacturing area of Bachmann electronic. Since these attributes mentioned are equally important for Bachmann electronic, the decision had been made to install an equally innovative and capable VERSAPRINT S1 stencil printer in their production.



Pict. 3:

*SMT production line with the
ERSA VERSARINT S1*

Technical Article

Ersa Stencil Printer

At this point in time, the S1 is the only stencil printer on the market offering the integrated 100% post print inspection. This is made possible through the integration of a line scan camera instead of the usually installed area cameras. In addition to the post print inspection of the complete assembly, the line scan camera offers the feature of easily and accurately aligning the board for the printing sequence.

The LIST Line Scan Technology allows for the introduction of extensive new functions, such as optically assisting the operator during the set-up, operation and process optimization: it offers fast image capture, even in the case of large areas; optimal results of the analysis through the possibility to adjust the illumination and the analysis; areal determination of positional information for an optimized alignment.

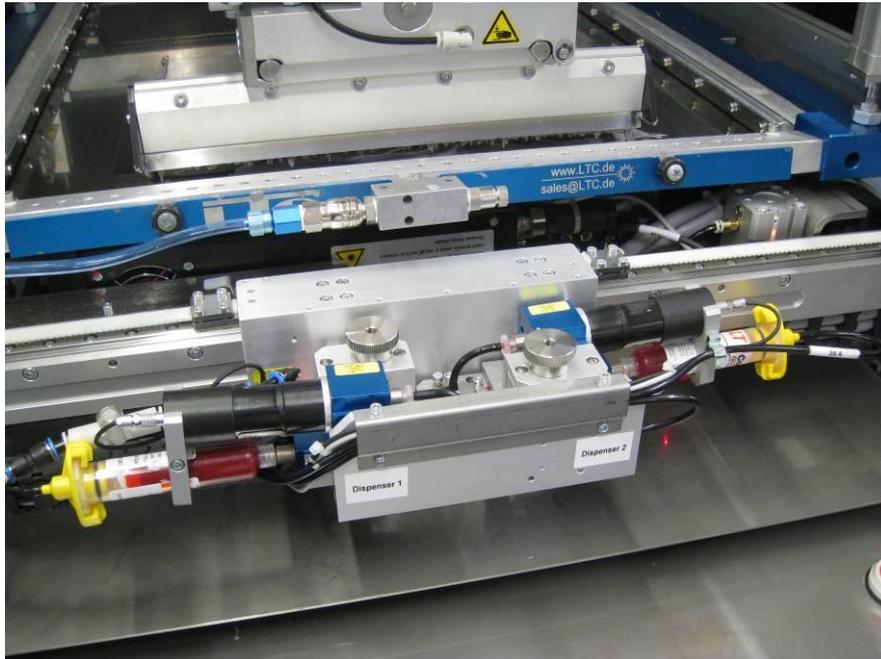
Another option which was called for in the equipment specification document is the possibility to downstream - that is after paste printing - dispense glue and / or solder paste on to the board. Because of the continuous miniaturization of the circuit assemblies, the stencil thicknesses that need to be used in those situations have been shrinking, so that in the meantime and for some areas thicknesses down to 120 μm have been reached. Considering the situation of an assembly with typically mixed population, some components will not get the solder volume necessary for a good joint to be made. A solution to this could be the use of step stencils, even when very few locations would require more solder volume, or else one turns to the dispenser and has a simple method to dispense the additionally required amount of solder.

More commonly, though, dispensers are used for dispensing glue. Especially for the reflow process, and when heavy components such as coils, for example, are mounted on side 1, these will be fixated by a dot of glue, thereby preventing them from falling off during the reflow process.

The dispenser utilized for this process is based on the Archimedean principle, a technology able to place the highly accurate points that are a prerequisite for a safe process. As usual, since the complete board layout is visible on the monitor, the dispense programs can be easily generated, just as it is for all other process steps. Simply zooming to the desired location and marking this spot represents a maximum of user friendliness. Each point on each location can be individually parameterized, and, quite obviously, inspected after the dispense procedure.

Technical Article

Ersa Stencil Printer



Pict 4:

*Dual Dispense Unit of
the Ersa Stencil Printer*

„Using the VERSAPRINT S1 stencil printer from Ersa has substantially increased our process window. We basically have three system combined into one unit: A printer, an inspection unit and a dispenser. For us, purchasing this unit was definitely the right decision”, comments Daniel Ganahl, SMT production manager.



Pict.5:

*SMT production manager
D. Ganahl and system
operator Mr. Erhart*