

User report



Ertron GmbH enhances product quality with VERSAFLOW 4/55

Satisfied with the VERSAFLOW 4/55 (from the left): Reinhard Probandt, Managing Director at Ertron GmbH, Thomas Wohlgemuth, Quality Assurance and Piotr Cieslak, the man at the machine.

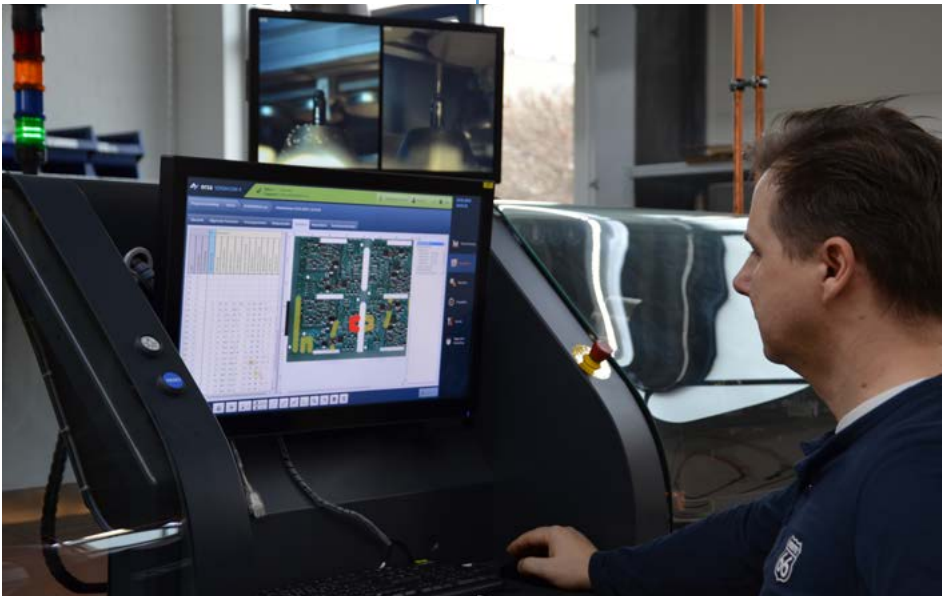
Even more agility for the EMS service provider from Erfurt

During the GDR era, Erfurt was one of the major Eastern German centres for electronics manufacturing – a situation which has prevailed through to the present day. Today, the spectrum on offer at the technology site Erfurt covers micro-system technology and micro-electronics, sensor systems and photovoltaic systems. Several successful individual companies emerged from the former state combine

Mikroelektronik Erfurt with its parent company Funkwerk Erfurt. One of these is the EMS service provider Ertron, founded in 1992, which has quality and flexibility as part of its company DNA. For THT manufacturing, Ertron GmbH has now successfully put its first selective soldering system VERSAFLOW 4/55 from Erska into operation.

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Offline programming or during machine operation: fast and simple preparation of soldering programs with the Editor CAD Assistant 4. In the background: Live process monitoring using the VERSACAM.

In answer to the question as to how an electronics manufacturing company can survive these days in a high income country like Germany, the terms quality and flexibility are always mentioned. These two characteristics also describe Ertron GmbH. The EMS service provider emerged from the former testing equipment construction department of Funkwerk. This means that Ertron has know-how in the field of electronics manufacturing as well as knowledge of metalworking and mechanical processing. Its main expertise, however, is in the manufacturing of electronic assemblies and components for a wide range of different industries: gastronomy, medicine or traffic engineering and mechanical engineering. The company does undertake unusual projects as well, however – such as the electronics for bowling centres or an organ builder.

“With 35 employees, we are a small company with short paths. This means we can act very quickly. An advantage our customers are happy to benefit from,” says Managing Director Reinhard Probandt. “If necessary, we can implement projects from one day to the next.” Batch sizes are between ten and several hundred, which are mainly used in printed circuit board panels. The main business is production of the assemblies through to final assembly. As a service provider, Ertron also offers the respective logistics with component procurement and storage as well as complete quality control with optical and electrical inspection including commissioning.

This complete package also includes development and design services. Ertron has the same claim for every project – the aim is always a product that is easy to manufacture. “That’s what makes us different from an engineering office,” explains Reinhard Probandt, “because their work is finished once development has been completed. We, on the other hand, always consider the manufacturing process during development.” Common challenges in development and manufacturing include components that are too close together, smalls that are too small or PCB geometries that cannot be clamped in product carriers. These issues are solved in direct cooperation between the specialist areas. “Because I can only manufacture a product for a good price and in the required quality if I can manufacture it well. This means fewer failures for the customer. His product simply becomes more reliable. A cost advantage not only for the customer, but also for us as the manufacturing company,” says Ertron boss Probandt.

Cooperation between Ertron and the Ersa, the soldering specialist from Wertheim, began in 2008. Reinhard Probandt had taken over as Managing Director at Ertron just the year before. At that time, there was a wide range of different soldering stations from different manufacturers being used in the manual soldering range. For one thing, this entailed high costs for reordering consumables and accessories such as soldering tips.

Assembly is clamped in a soldering frame.



The company decided to standardise this “conglomeration”. Following detailed analysis, Ersa was chosen, and today the specialists in the manual soldering department work exclusively with i-CON soldering stations. Following the takeover of the electronics manufacturer Inlab in 2013 by Ertron GmbH, the business relationship between Ersa and Ertron received a broader basis: Inlab delivered components for Ersa soldering irons and stations. In other words, Ertron was no longer just an Ersa customer, but a supplier at the same time, because right up to the present control cards for Ersa products such as the i-CON NANO, i-CON VARIO and the soldering irons PTC*700 or i-TOOL NANO are supplied by Ertron.

VALUABLE IMPULSES FROM THE ERSA KNOW-HOW SEMINAR

In 2017 Ertron had to purchase spare parts for its existing wave soldering system. The plant was getting a bit long in the tooth and reaching its technical limits. Preparation and post-treatment of assemblies, such as the masking of components that must not come into contact with solder, or the elimination of solder bridges after soldering was binding more and more capacities. This was also true of cleaning the assemblies, since the wave soldering system was equipped with a foam fluxer. Thomas Wohlgemuth (then responsible for the wave soldering department) brought back valuable impulses and ideas from his visit to the Ersa know-how seminar “Wave and selective soldering”.

It was thus logical for Ertron that Ersa should also be included in supplier selection for the new soldering system and a corresponding inquiry was sent to Mark Birl, the Ersa sales engineer responsible. The only possible solution for Ertron was a full tunnel wave soldering system, because the main objective – apart from the economic factor – was long-term improvement of soldering quality. During the first talks it became apparent that on account of the Ertron range of components and products, a selective soldering system could be the better choice rather than the POWERFLOW N2 wave soldering plant originally planned. During a visit to the Ersa Application Centre in Wertheim, Mr Probandt and Mr Wohlgemuth from Erfurt took a close look at both machine options. After the visit, the decision was clear: VERSAFLOW 4/55 with double soldering module was the right choice. The selective soldering system turned out to be the better solution for the products manufactured by Ertron, and it scored in terms of flexibility and the soldering quality achieved during the tests.

LESS THERMAL STRESS FOR ASSEMBLY

Thanks to the new selective soldering system, time-consuming preparatory work that would have been necessary for the wave soldering process due to the Ertron product spectrum is no longer required. Unlike in the selective soldering process, the assembly moves in a fixed direction – the direction of travel – over the soldering wave in the



VERSAFLOW 4/55 in batch operation.

wave soldering machine. The soldering wave comes into contact with the entire underside of the PCB in this case. Areas and components that must not be wetted with solder are either covered using special soldering masks or masked as at Ertron. In a selective system, on the other hand, only the components to be soldered are approached and processed by the soldering nozzle. As an additional benefit, this reduces the thermal stress for the assembly and has a positive effect on its quality.

The setting possibilities are also limited with a wave soldering machine, this affects the holding time of the assembly above the soldering wave or the soldering wave tear-off, for example. The soldering program always has to use mean values. In the VERSAFLOW 4/55 on the other hand, soldering parameters can be entered individually for each soldering spot. Ertron regularly had problems with bridges formed between component pins during the wave soldering process, because connector strips had to be routed across the soldering wave due to the PCB layout. Missing or insufficient solder passages were also an issue.

LONG-TERM IMPROVEMENT THANKS TO INDIVIDUALLY DEFINED SOLDERING PARAMETERS

Long-term improvement has been achieved with the VERSAFLOW 4/55 because all the soldering parameters including the nozzle to be used for each soldering spot can be defined individually and saved in the soldering program.

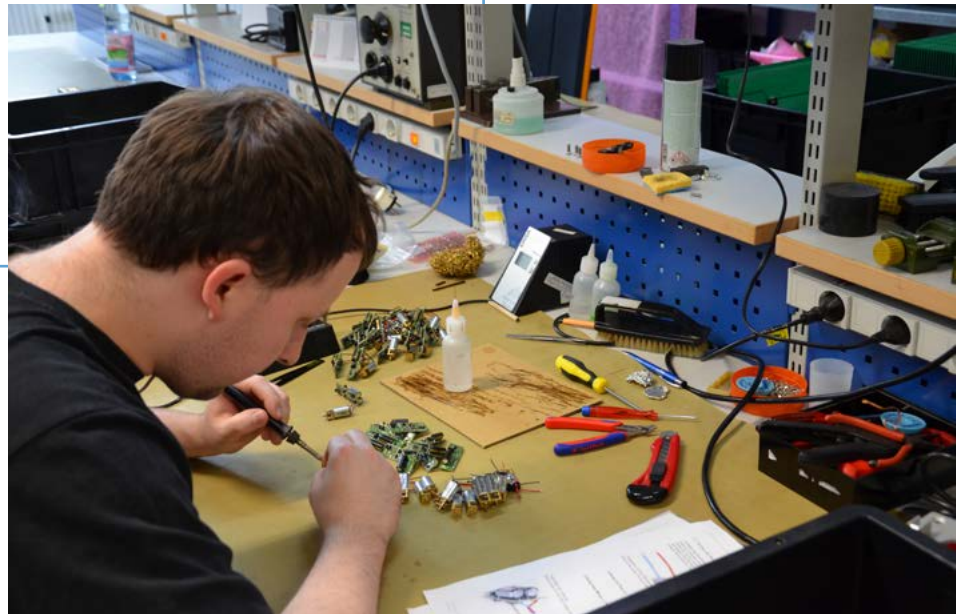
The user uses PCB data, either CAD data such as DXF or ODB++, or graphic files such as GIF or JPG to prepare the soldering program with the CAD Assistant 4 – the program editor from Ersa that has been integrated in the machine software ERSASOFT 5 since VERSAFLOW 4.

The autorouting function calculates the optimum travel paths for the microdrop fluxer and solder pots, while the definition of blocked areas prevents collisions with components. It goes without saying that the travel paths can be saved manually as well. Unlike in the wave soldering system, the solder pots of the VERSAFLOW 4/55 can move under the PCB in the x and y directions. As a result, connector strips can be processed according to length, independently of their position. This means that the pot with the soldering nozzle moves past the pins under a connector strip and thus sets up the solder connections one after another – thus minimising solder bridges per se.

DOUBLING THROUGHPUT BY PARALLEL OPERATION

Ertron mainly processes products that are soldered in the PCB panel. For this reason, the VERSAFLOW 4/55 was equipped with a double soldering module. Thus Ertron achieves double the throughput compared with a single soldering module, since two assemblies of the PCB are processed simultaneously in parallel operation.

Manual soldering workstation at Ertron with i-CON NANO soldering station.



Whereas the old wave soldering system was in use for 1.5 days a week, the VERSAFLOW is now used for three to five days a week to produce the same volume. At first glance, this seems to be longer, but the deciding thing is that in terms of the overall value creation process Ertron has significantly increased product quality – the employees in equipping and rework free up capacities for other work, downstream processes in quality control also run much faster.

Our customers have noticed the enhanced quality, too – which is further proof that we made exactly the right decision,” Ertron Managing Director Reinhard Probandt is pleased to report. Things can certainly continue in this spirit for both Ertron and Ersa! ■

Further information:
www.ersa.de | www.ertron.de

SIGNIFICANTLY MORE FLEXIBLE

“We would have had a certain increase in quality with a nitrogen wave soldering machine as well. However, the VERSAFLOW offers us a significantly higher level of flexibility in electronics manufacturing. Together with the outstanding soldering quality delivered by this system, this was the deciding factor for Ertron to invest in a VERSAFLOW 4/55 from Ersa.

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