90 Years ERSA – From the Inventor of the Soldering Iron to a world-wide successful Supplier of complete Systems

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It was in 1921 in Berlin, that Ernst Sachs founded the „First Special Factory for Electrical Soldering Irons", using the first letters of his name to give the company its name. ERSA was born.

With two samples of his product, already patented during the founding year of ERSA, he went to the Fall Exhibition in Leipzig to present to the world the very first electrical soldering iron. The product generated immediate interest, both from German and from foreign visitors, and he received right away the first orders. From then on, Ernst Sachs led his young company with great commitment and foresight, continuously developing new products and expanding its product range.

After World War II, he had to build up ERSA for a second time, starting again from virtually nothing. Fortunately, at its favorable new location in Wertheim and due to his determination and unceasing drive, the company underwent a positive development. Its product range continued to expand once more. Lighter and smaller soldering irons for the growing electronic industry were added, as were heavy duty irons for sheet metal work and tin melting crucibles for dip soldering.

Towards the end of the 1970s, the decision was made to manufacture, aside from the established soldering tools, complete soldering systems. This decision was to shape the future of ERSA, and put it on the road to ever greater success.

In 1993, ownership of ERSA transferred from the Sachs family over to the Kurtz Group.

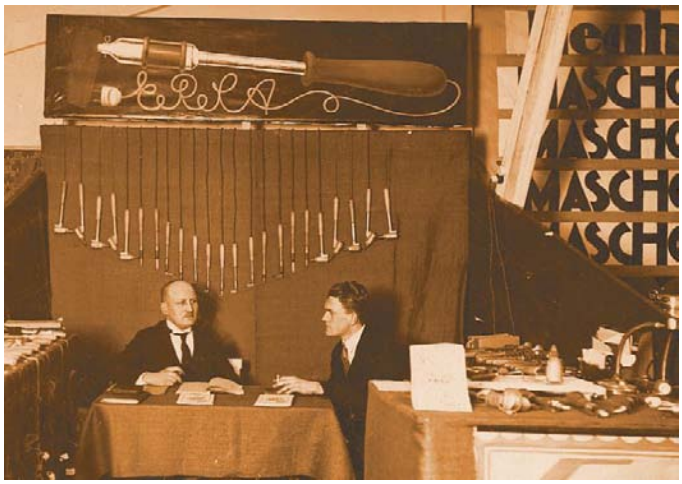

Fig.1 – ERSA at the Spring Exhibition in Leipzig (1922)

Today's ERSA is the most dynamic ever. Its new strategy - to continue globalization and to restructure its product line towards leading-edge technology incorporating flexibility and high throughput - has opened for ERSA the doors to all the key players in the electronic industry of today, and allowed ERSA to become a *system* supplier with a world-wide unique product range.

Living the meaning of the corporate vision, which states "Our competitive lead in technology optimizes quality, costs and delivery service in our customers' production process", ERSA unfailingly focuses on improving its products and processes, so that its customers can draw additional benefits from them.

As a manufacturer of high quality equipment and tools for the electronic manufacturing industry, ERSA presents itself to its customers and other interested parties as a highly innovative technology partner possessing extensive process knowledge, who also possesses the competency to take on overall process responsibility. The trend in industry to select partners that offer overall solutions is gaining in importance, given the ever increasing complexity of manufacturing processes and continuously rising cost pressures. A single contact responsible for the complete process, efficiency in the line composition, manufacturing islands as production concept, a common software platform, total line control, as well as efficient traceability solutions are only some of the more important arguments entering the equation when looking at the concept of TCO (Total Cost of Ownership). ERSA can offer all this as a single source, and many regular customers, for quite some time already, have called upon this service in the past. All over the world, global players such as Bosch, Sanmina-SCI, Zollner, Continental, Jabil or Plexus are producing today on ERSA equipment and rely on ERSA-provided solutions.

Yet despite the success with the global players, when looking at the product / system mix overall, more than 40% are newly gained customers, which clearly shows that ERSA's technological presence and strong innovativeness is also recognized and appreciated by the market in general. This breadth of market penetration with their products bodes well for the future of ERSA.

Through this, ERSA - whose slogan has been, for many years already, "ERSA goes green" - is not only satisfying its self-imposed obligation to preserve the environment and to sustainably use resources in its own operations, but through the optimization of the energy efficiency of its products, ERSA actively participates in the world-wide drive towards improving the environment: customers installing ERSA equipment are therefore also conserving energy in their operations.

Fig. 2 - Between the first ERSA soldering iron and the new ERSA i-Tool, weighing only 30 g, lie not only 90 years, but also around 1,500 g of weight difference.

For the ERSA soldering tool division, the emphasis rests on solder- and desoldering stations for the use in microelectronics and SMD assemblies up to thick-copper applications. ERSA i-CON stations impress by their compact size, high performance and low operating costs, since inexpensive exchange soldering tips are used, where it is not required to replace every time a tip is worn out both soldering tip *and* heating element. Innovative features such as process window alarm, various stand-by modes and energy levels also lower energy consumption and save resources. For a large variety of applications, a comprehensive range of standard soldering tips are available to choose from. Customer specific special designs are also frequently realized.

Over the last few years, ERSA has added to its product range screen- and stencil printers, products, with which it has become a serious and not to be overlooked contender on the market. These additions were a necessary consequence of the concept of total process responsibility, which ERSA is offering to its existing and future customers, and they underline the strong process competency within the company. Studies show, that 60 % to 70 % of defects found on electronic assemblies occur during the printing process, but that they are detected only much later, when additional and unnecessary costs have accrued and resources have been wasted. These facts were both an incentive and a challenge for ERSA that led to the decision, in 2007, to actively get involved in the screen- and stencil printing technology. The VERSAPRINT was born, and the patented printer line has been brought to market quite successfully. With its fully integrated, full-area AOI after the printing step (within the cycle time of the line) the high-end versions P1 and S1 offer a singular advantages to the user. Additional models with a reduced number of features complement the product line. Presently, the company is intensively involved in completing the development of 3-D inspection.

Fig. 3 – VERSAPRINT- Patented stencil printer with fully integrated 100% post-print AOI within the cycle time of the line

In contrast to the relatively new screen printer program, ERSA's reflow systems are on the technological forefront for many years already. The present generation ERSA HOTFLOW 3- series convinces with the lowest TCO values, attained through the systems unsurpassed thermal performance, their very high system availability for production and the lowest operating costs. Depending on the requirements of the customer, a number of models differing in process tunnel length, process gas cleaning and conveyor system are available. Some well-known manufacturers of mobile phones produce on the ERSA "Quattro-track", a system where 4 tracks carrying boards run in parallel and where the line uses 60 kg solder paste per hour! And despite these production volumes, exemplified by the amount of paste used, the extremely efficient process gas cleaning feature, as installed in the ERSA HOTFLOW 3, is able to maintain the process zone free from condensate. With the very user-friendly system software and the Autoprofiler reflow programs are quickly and easily generated off-line.

Fig. 4 – HOTFLOW 3 – Soldering system with innovative reflow technology for maximum quality at minimum operating cost

Similar remarks apply to the selective soldering systems from ERSA. Here as well, soldering programs are written efficiently and intuitively. CAD data can be used when writing a program, as can be pictorial data from scanned printed circuit boards or values arrived at from tables. All of these methods can be implemented off-line, so that high system availability for production can be ensured. This consideration is especially important when products are being changed frequently, and even batch sizes of “One” can be economically soldered. Having sold and installed, world-wide, more than 1000 VERSAFLOW selective soldering systems over the last 15 years, ERSA is both market- as well as technology leader. There are many reasons for the impressive success of the range of ERSA’s selective soldering systems. The intensive dialogue ERSA maintains with its customers provides valuable information, virtually from “first hand”. As a result of this, ERSA’s product range is always ideally tuned to the user’s requirements. From the entry level unit up to the modular version, where multiple selective soldering processes can operate consecutively and parallel, each and every one with the highest repeatability, and in between – for every requirement a suitable system can be offered. In the “classical line” version, the flexible modular concept of the VERSAFLOW 3 offers virtually unlimited combination possibilities, while the ECOCELL with its U-layout of the process zone offers the ideal prerequisite for manufacturing in production islands. The ECOSELECT line of systems is appropriate for those situations where the production volumes are not very high, but where the quality and the repeatability have to be up to the highest standards and may not be compromised. Whenever high volumes are specifically required, inserts and layout-specific nozzle plates for all ERSA selective soldering systems are available. This multi-wave soldering process is mainly recommended for applications where there are infrequent product changes.

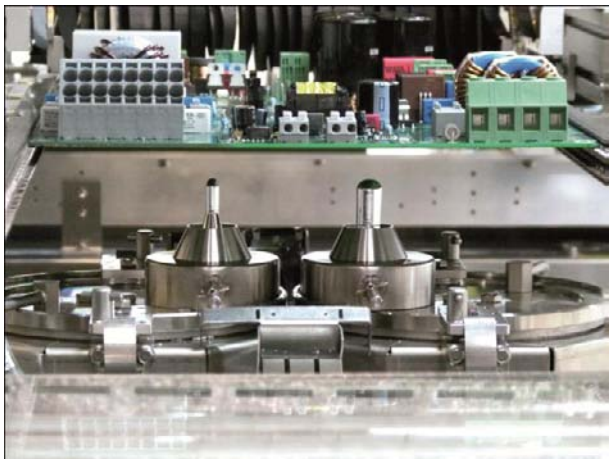

Fig. 5 – VERSAFLOW 3 – World-wide leading selective soldering system, of modular design for virtually unlimited combination possibilities

It was in 1961 that ERSA brought and introduced to the German market classical wave soldering systems, starting to build their own systems in 1968. Since that time, ERSA has continuously and successfully advanced the development of their wave soldering systems and the process. The

newest proof for this is the POWERFLOWe N_2 , shown for the first time at the SMT 2011 in Nuremberg. It has been conceived for average production volumes and batch sizes, and its design concept allows achieving substantial cost savings through the drastic reduction of dross generated. At today's cost of the base metals, the system therefore amortizes within the shortest period of time. It is available, as is its high-end partner from the POWERFLOW series, with a pallet as well as a finger type conveyor.

Fig. 6 – POWERFLOWeN_2 – A brand new wave soldering system for medium batch sizes with an excellent ROI.

For more than a decade now, in excess of 5000 users word-wide are drawing benefits from using the patented ERSA IR-Rework technology. Aside from its very attractive price / performance ratio, the units have gained their strong market position since even with the most complex rework tasks it delivers excellent results. The current ERSA flagship offers 9200 W heater power and can handle assemblies up to a size of 500 x 625 mm. In this product line as well, ERSA offers a product variety that meets all demands, including a manually operated hybrid station and a comprehensive range of rework accessories.

It does not matter whether the purpose is to inspect a BGA which had just replaced using the rework system, or whether the aim is to establish or verify correct process parameters – the ERSASCOPE inspection system has established itself as the preferred tool to non-destructively inspect hidden solder joints, and as such it should be at hand in each and every electronic manufacturing environment. The patented and award-winning tool is just one more proof of the strong innovative abilities of ERSA.

Fig. 7 – Customers and other interested parties can run trials on the different soldering systems using their own boards in the ERSA demo- and applications center.

In addition to its comprehensive product range, ERSA also offers a range of services such as employee qualification measures, system- and process audits, ramp-up support or equipment capability studies. ERSA also advises its customers on the subject of special applications, having extensive test facilities in its 400m² in-house applications- and demo center.

As an accredited member of the **Training Association Soldering Education** of the DVS, ERSA offers year round training courses leading to the certification of the participants as *Manual Soldering Specialist* / *Electronic Manufacturing* (DVS 2620). In addition to these training courses, ERSA also offers Know-How seminars covering systems- and process technology.

Fig. 8 – Personnel qualification takes on more and more importance – ERSA trains year round Manual Soldering Specialist / Electronic Manufacturing as per DVS guide lines.

Having the focus on its customers and service as a strategic factor, is the major objective of ERSA. To be able to offer this optimal support, the company is represented in all important market through their own divisions. This presence is further strengthened through a dense network of sales and service partners, which help to ensure that each customer world-wide can be attended

to quickly and effectively. To make certain that this assistance is up to the customers' expectation the partners are trained on a regular basis at the headquarters of ERSA in Wertheim.

The regular customer base of ERSA is made up of corporations requiring challenging technical solutions, coming in more or less equal parts from the USA, Asia or Europe. The question of why ERSA prevails so often in equipment evaluations has numerous possible answers. At times the customer selects ERSA as the "system provider" offering an ideal package, at other times it is the fact that ERSA can offer customer- or product specific special solutions. But frequently it is only the superior technology and performance offered by the standard systems available, which optimally match the customer's needs. After all, with ERSA he has the choice to select from the world-wide broadest product range.

During the next decade of their corporate history ERSA will continue to listen very closely and attentively to the market, so that it will be able to support its customers with innovative products and solutions to any of the future challenges in the soldering and joining technology. Whether the miniaturization continues to be advanced, or whether the thick copper technology will be the subject of the future – ERSA will be ready to tackle any challenge. To ensure this and to be ready, ERSA cooperates closely with universities, engages engineers in dual education programs and sustainably allocates high levels of investments and resources for R&D.