

## User report



Phoenix Contact and Erska GmbH

*Erska dual pot systems offer high throughput and superior flexibility in very confined spaces.*

## Inspiring System Partners

Founded 1923 in the German city of Essen, Phoenix Contact, with its present headquarters in Blomberg and Bad Pyrmont, is the worldwide leading supplier of components, systems and solutions in the areas of electro technology, electronics and automation. With the opening of its innovation center for electronics in Bad Pyrmont

during 2007, the company concentrated all activities of the business areas automation systems and interface-technology at one location. And just as long and for all standard soldering processes, Phoenix Contact relies on the support of Erska, the worldwide acknowledged specialist in the soft soldering technology.

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At the beginning of the relationship between Ersa and Phoenix Contact stood the full-tunnel wave soldering system POWERFLOWN2; pictured here is the current model POWERFLOW N2.

Naturally, a sustainable system partnership between two corporations does not come into existence overnight. And to enter into such a cooperation, there had to be some type of triggering off point, which happened to be present more than 7 years ago: In their production of the power electronic product Contactron, Phoenix Contact was fast approaching technical boundaries in the process as well as limits in the production volume. For this reason, a group of engineers based in Bad Pyrmont started to look for a supplier who offered high-throughput and efficient wave soldering systems which would meet the challenging demands placed on them by Phoenix Contact, particularly as it relates to their thermal performance. Initially, three suppliers were on the short list, but after a relatively short time only two competitors remained. Equipment evaluations based on a comprehensive matrix picked up speed, numerous trials and tests were undertaken, an intensive market analysis was conducted, and finally the other business units and production facilities of Phoenix Contact were queried for their standard soldering processes needs. "This represented a substantial effort, yet it is standard procedure for us – and it has proven its effectiveness numerous times already. After all, the issue we were dealing with was by now no longer the purchase of a single system since, at that point in time, the scope of the inquiry had increased and we were asking ourselves to what extent a single supplier for wave- and selective soldering systems could cover all our demands for standard soldering processes", states Dietmar Dux, Senior Specialist Process Engineering Inter-

face Components, a staff member of the company for 28 years and responsible for the initiation of the corporate relations between Phoenix Contact and Ersa.

#### LECTURE SYSTEM PARTNERS FOR STANDARD SOLDERING PROCESSES

The actual product to be purchased was therefore a wave soldering system for the Phoenix Contact power electronic product Contactron – but this was now tied in with the demand set by production management to search for a system partner who, over the long term, could be called on to supply other production systems as well. At the end of the evaluation, the full-tunnel Powerflow N2 wave soldering system from Ersa GmbH was selected. This proved to be the start of a very productive and successful cooperation. Aside from the wave soldering system with its split conveyor segment, on which the thermally demanding assemblies of the hybrid-motor starter Contactron are being soldered from the time the system was delivered and installed, Ersa could further impress its future partner with its innovative range of products and services – all in all a coherent package, where Ersa's international presence with its worldwide sales- and service network, which ensures quick and efficient service to its customers, proved to be of prime importance. Of equal importance to Phoenix Contact are standardized, identical processes, since it has production facilities not only in Germany but also in China, the USA, India and Brazil.

#### Facts

##### Phoenix Contact

###### Founded

1923 in Essen, Germany

###### Headquarters

Blomberg (NRW) and Bad Pyrmont (NDS)

###### Turnover 2013

1, 64 billion Euros

###### Sales network

50 subsidiary companies,  
30 sales partners

[www.phoenixcontact.com](http://www.phoenixcontact.com)

*Optimally focused on the needs of the customer, and suitable for a wide range of applications: the Ersa wave soldering system POWERFLOW N2.*



“Having recourse to a modularized system is of extreme importance for us, since such equipment can be duplicated far more easily. Worldwide reproducible core processes in product manufacturing form an important base which allows us to supply our customers, independent of the manufacturing location, with superior quality products. The flexibility in configuring Ersa equipment has fulfilled our demands for the area of standard soldering processes to nearly 100 percent”, says Georg Beretitsch, Director Strategic Production Industrial Electronics of Phoenix Contact.

#### ECOSELECT FOLLOWS POWERFLOW

The first POWERFLOW N2 was followed in 2012 by a second system, a virtual duplicate, which was installed in the Chinese facility of Phoenix Contact. Following this purchase, and after a relatively period of short time, additional equipment was purchased for a number of Phoenix Contact facilities – but the basic requirements had changed in the meantime and now selective soldering systems were called for: four ECOSELECT units and one VERSAFLOW were purchased. The system partnership, which started with a wave soldering system, grew and flourished and had started to take shape. For the first two ECOSELECT units, the demands were for equipment suitable to manufacture one product group with a large number of different versions. This was the Phoenix Contact product group Varioface, an Interface Module, which establishes a connection between sensors as well as actuators in the field. About 3.000 different articles with numerous customer specific solutions, all in small

to medium production volumes, need to be processed on the system. The ECOSELECT, with its superior flexibility and its short retooling time, proved to be the ideal system for this application.

This was followed by the third ECOSELECT system: Dedicated to one production line, a value system design representing a fully automatic inline concept was requested, in which all processes, starting with the SMD-populated assemblies, should be executed in a production island. But even though the soldering process itself represented a relatively small portion of the complete production sequence, Ersa never lost sight of the individual manufacturing stages of the entire process. Thus, because of the short cycle time of the production line, it was necessary to solder two assemblies simultaneously, and through the installation of a second solder bath and a second flux head was it possible to achieve the required cycle time for the soldering process as well.

The design of the work place according to ergonomic principles, whereby the strain on the worker was to be reduced, was an important issue during the planning of the new production line. Therefore, a permanently installed hold-down plate that could be lowered pneumatically was developed for the ECOSELECT, with which the components on the board that had to be soldered could be pressed down and/or centered. This task was implemented in close cooperation between Ersa, Phoenix Contact and the supplier of the soldering masks and the hold down device. Having to manually place the heavy hold down jig could thus be eliminated.



*Technical discussion between two experts, who know and appreciate each other already for years: Phoenix Contact production engineer Heinz Krantz (rear) and Ersa Area Sales Manager Stefan Wurster (front).*

In the case of the VERSAFLOW, installed in 2012, Ersa proved that they are willing to go beyond the usual demands placed on soldering systems by designing customized conveyor- and material handling features. The task revolved again about the issue of worker's health: The work piece carriers should no longer have to be carried or lifted by the employee, but it should, at a high throughput rate, rather be handled by being turned or rolled on a table. Furthermore, many different versions of the product needed to be processed on the system. Ersa's solution: parallel soldering with two solder modules and the subsequent return of the assembly to the start of the system. Here again were a variety of special demands placed on the equipment, for which Ersa was able to supply optimal solutions. Whether POWERFLOW, ECOSELECT or VERSAFLOW – over the last seven years, Ersa was always able to provide Phoenix Contact, a manufacturer of demanding, high quality industrial electronic, with leading-edge technical solutions.

"The results we obtained in our cooperation with Ersa have fulfilled that, what we had hoped for when we purchased the equipment – Ersa's systems have met our demands in all respect. For as long as Ersa continues to offer technologically mature, reliable and innovative equipment to acceptable conditions, buttressed by an excellent service, we will certainly continue to consider Ersa for future equipment purchases for our world-wide facilities", says Dietmar Dux, Process Engineer, summing up the system partnership between Phoenix Contact and Ersa. "Nevertheless, Phoenix Contact performs equipment evaluations in periodic intervals, during which the capabilities of systems considered to be adequate are viewed in further detail and subsequently rated. Then the cards are newly mixed. But, and that is today's status, there is nothing that would speak against continuing our excellent cooperation."



*After having purchased two POWERFLOW wave soldering systems, Phoenix Contact ordered, within a short period of time, a number of ECOSELECT and VERSAFLOW selective soldering systems. Pictured is the current model ECOSELECT 2.*

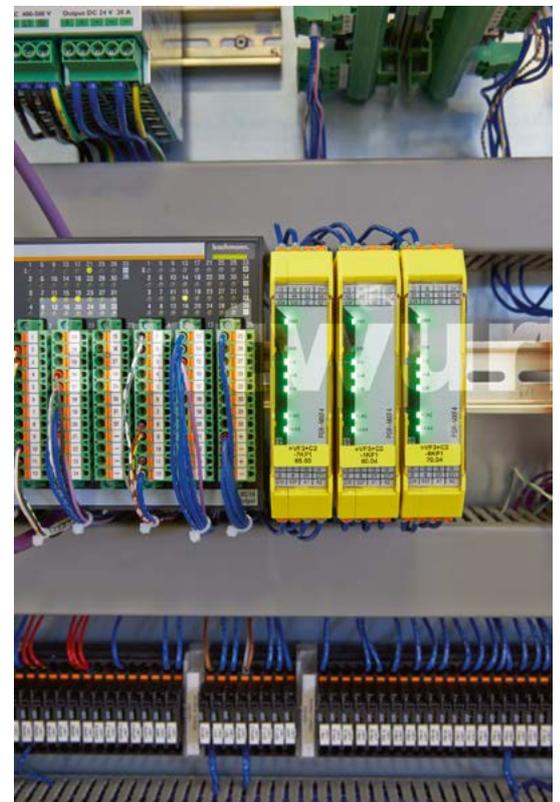
Ersa Area Sales Manager Stefan Wurster in discussion with Heinz Krantz and Sebastian Sieg, both Production Engineers, and Dietmar Dux, Process Engineer (left to right), all of Phoenix Contact.



## NEW ROADS TO INNOVATIVE SOLUTIONS

Presently, another project with a selective soldering system for an in-line product (which is on the market for quite some time already) is drawing to its conclusion. The starting point: an existing system functioned with certain limitations – yet it no longer conforms to today's technological level. In close dialogue both companies were searching for a solution: "For dip-soldering we entered new venues, technologically speaking, in regards to nozzles, since for this product - and on account of the fine structures present - there existed the possibility that with the standard soldering process components could be desoldered from the board", says Stefan Wurster, Sales Area Manager from Ersa GmbH and point of contact for Phoenix Contact from the very beginning. But that was not the only challenge: Based on its layout, the product is difficult to solder, since components are found in close proximity to the joints to be soldered. Furthermore, a technological contradiction needed to be solved: On this board assembly there are components with a very high thermal requirement, yet these components are embedded in a thermally limited plastic material.

Together, Ersa and Phoenix Contact have found solutions to both issues - to be able to produce the required production quantities and, at the same time, to ensure the solderability and the desired solder result for this product. With its extensive experience and knowhow in complex soldering processes and in close dialogue with Phoenix Contact, Ersa was able to present a solution which has not been on the market up to that time. A win-win situation for both sides, out of which, during the coming years, further innovative solutions will surely arise. ■



Practiced Partnership – Phoenix Contact components in the electrical cabinet of an Ersa system.

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