



Kurtz Ersa Magazine

For Customers and Business Partners of Kurtz Ersa Corporation

December
2018



Kurtz Ersa Corporation

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Rainer Kurtz,
Chief Executive Officer
of the Kurtz Ersa Corporation

Production needs us.

Since 01 October, 2018, Kurtz Ersa has been purely a machine manufacturer. The sale of our iron foundry marks the last step in our concentration on the machine engineering business. Kurtz Ersa has established itself as a technology leader in niche markets – worldwide. According to our vision, we want our premium technology to contribute to ensuring that things run as smoothly as possible in our customer's production. We therefore offer both machines and whole systems, as well as complete factories, and work intensively on additional efficiency enhancement through automation. In the last few years, Kurtz Ersa has been able to prove itself in many showcase projects and will continue to strive for the trust of our customers in this sector.

We have grown significantly once again in 2018, and are confident of further growth in the coming year. Rising population figures, mobility, global networking, cost pressure and artificial intelligent offer our customers many technology-based opportunities for worthwhile investment. We are following our path – not allowing ourselves to be distracted by prevailing political and economic upheaval – consistently, but with the appropriate caution. We would like to thank our customers and business partners for the positive cooperation in 2018 and, for the year ahead, wish all of us peace, equitable and respectful interaction with one another and a worldwide redoubling of endeavours to preserve the delicate balance of nature and ensure a healthy environment. ■

**As ever, we close with the old good luck wish
common among German miners: GLÜCK AUF!
Your Rainer Kurtz**

A handwritten signature in blue ink, reading "Rainer Kurtz".

Cover picture: Hasloch, Eisenhammer

Ernie Grice, Ersa Vice President Sales, Kurtz Ersa, Inc.,
and Louis Lund, Managing Director
Ersa representative Importadora from Chile,
with a MALLET band member at the
Hammerrock concert in the context of the
International Sales Meeting.



Last tapping and ...

The furnace stays on in Haseltal!

As of 01 October, 2018, Rheinische Mittelstandsbeteiligung (RMB) took over the traditional foundry Kurtz Eisenguss GmbH & Co. KG in Hasloch. Up to then it had belonged to the Kurtz Ersä Group, but its strategic significance was on the decline – latterly its share of total sales was running at 6 %.



... last casting in the Kurtz Iron Casting GmbH & Co. KG.

Just a few years ago, considerable investments were made in order to remain competitive in the hard-fought market for iron castings and to achieve a significant market share in the weight category up to 10 t unit weight. The technical equipment of the Smart Foundry was hailed among experts worldwide as a prime example of Industry 4.0; while turnover increased, the ambitious growth targets could not be reached. The specific search then began for a strategic investor with the right skill set and market presence to secure the long-term future of the foundry and its 90 jobs in Hasloch.

NEW COMPANY UNDER NEW NAME

In future, the new company will go by the name of "Eisenguss Hasloch Smart Foundry GmbH". With the purchase of the 166-year old iron foundry, and the two companies already under its ownership, Eisengießereien Hulvershorn GmbH & Co. KG and SHW High Precision Casting Technology GmbH, the new foundry group covers almost the entire spectrum of weights and sizes in all possible

standard and special materials such as ADI, chrome and chilled casting. The bundling of competence in materials and foundry engineering encompasses almost all the requirements in the area of moulded parts from 5 kg to 120 t and meets the highest standards of precision and dimensional accuracy. The investor's portfolio also includes the aluminium die casting company Eisenmann Druckguss GmbH.

At an event for employees on 04 October, 2018, Kurtz Ersä Group Chairman Rainer Kurtz thanked the staff, many of whom can look back on long years of service, and all of whom are keeping their jobs. With a heartfelt "Glück auf", the traditional good luck wish in the trade, Rainer Kurtz wished all the staff and the new managing partner Rainer J. Langnickel a positive start, constantly well-filled order books and a successful future at the Hasloch site. The over 200,000 m² site, as well as all the buildings, remains the property of Kurtz Ersä – public access is retained for the industrial park to the south of the site and the Historic Center with the hammer forge and Hammermuseum. ■



Expansion of KZM factory in Zhuhai

The enormous success of the Erska soldering machines produced in Zhuhai has led to the need to greatly expand production capacity. For this reason, shareholders and the Advisory Council have decided to significantly extend the “Kurtz Zhuhai Manufacturing” factory.

Even before Supertaifun Mangkhut swept over the Kurtz Erska production site in Zhuhai, part of the old factory buildings fell victim to the demolition excavators. The demolition was followed by the ground-breaking ceremony for a complex factory expansion before Chinese Golden Week, which

will result in a quadrupling of the existing production area. The expansion became necessary because the previous factory had long since reached its production capacity. Last year more than 200 Erska reflow systems and more than 100 Kurtz foam machines were produced in Zhuhai. In 2018, 400 machines will already be delivered. The signs are pointing to further growth in the future. Plans are also underway to produce even more Kurtz Erska machines for the Asian market in Zhuhai.

Due to the extremely positive business development and the excellent market accep-

tance of the “German designed – China made” machines, it was not difficult for the Kurtz Erska management to give the green light for the expansion last year. The expansion will take place in two construction phases: In the first phase, a new four-storey building will be constructed on the site of the demolished machine hall and paint shop (completion May 2019; 6,000 m² production capacity of up to 800 machines per year). The second expansion stage will include a further three-storey extension with an additional 3,500 m² of office and production space (an additional 400–500 machines per year). ■



Section I

By the end of March 2019, a total of 8,200 m² of production and office space will be created.



Section II

The construction phase is scheduled to begin in 2021 and to be completed in 2022. After that, approx. 12,000 m² of production and office space will be available.



In recent years, the strong growth at Ersä was achieved exclusively through considerable shortening of throughput times and efficiency enhancement programmes. There was little in the way of additional production area. Now, due to innovative technology and our worldwide presence, growth has been so strong that it can no longer be catered for with careful planning and the use of additional space.

19 July, 2018 saw the turning of the first sod for the construction of an additional 3,000 m² of additional production area and a further 1,600 m² of office space. The building work is being carried out on the existing site and will be completed in two phases. The first phase is to be concluded in April 2019 while overall completion of the project is planned for the end of 2019. To date, the work is on schedule and within budget. ■

Expansion of the production area at Ersä





Kurtz Ersä as a family company

Kurtz Ersä will be celebrating its 240th birthday in 2019. The company has been in family ownership since 1800. By now, the transition from one generation to the next has passed off smoothly five times. Not something that can be taken for granted. Family tradition can best be sustained when interaction takes place in an atmosphere of respect and harmony, and when personal wishes yield to the interests of the company.

However, a company benefits not only the entrepreneurial family but also its staff and business partners. Over time, however, circumstances change in many regards. At Kurtz Ersä, the Hammermuseum, which the family finances through a foundation, impressively demonstrates how long-term survival demands diversification. This is not only true in these fast-moving times, it has also been so down the centuries. The vital

changes are not always the major, trend-setting ones; many medium and short term decisions also contribute to securing continued existence. Keeping all this running in smooth cooperation means agreeing on a joint strategy and joint values and targets. If Kurtz Ersä had not succeeded in doing so, we would undoubtedly no longer be around.

The transition from the sixth to the seventh generation of the family is currently in progress. All ten children of Walter, Bernhard and Rainer Kurtz are closely involved with the company. Carolin Kurtz has advanced to top management, currently occupying the position of Managing Director of Kurtz GmbH and Chief Controller for the group; further representatives of the seventh generation can well imagine following in her footsteps.

With a young corporate structure, an outstanding Supervisory Board and an active management, Kurtz Ersä is ideally equipped to face the challenges of the present and the near future, so that we can continue to serenely observe the generational handover. Things are good as they stand, but will not be great if they stay this way. Given this motto, we at Kurtz Ersä are called upon to constantly redefine our joint understanding of ourselves and our values and goals. ■



Rainer and Susann Kurtz
with their children Phillipp,
Vincent, Victor and Magali.



Bernhard Kurtz with his wife Margrit, their daughters Carolin (left) and Stefanie (right) with family.



Walter and Ursula Kurtz with their children Magdalena, Stina, Eva-Maria and Maximilian and their families.

Changes in the Kurtz Ersa Advisory Board



Hans-Jürgen Thaus
Former Chairman of the Advisory Board

Thaus as a highly-competent, consistently fair and even-handed team player, advisor and figure of respect.

On 31.12.2018, Mr. Thaus's term of office ended and he was honoured with great applause at the last shareholders' meeting. Shareholders and management wish him all the best in his well-earned retirement and once again, in the name of all the staff, express their thanks for his untiring dedication.

As of 01 January, 2019, the position of Chairman of the Advisory Council will be assumed by Dr. Dietmar Straub. The time-tested Members of the Advisory Board, Bernhard Kurtz, Walter Kurtz and Alfred Weber, are remaining in office. They will be joined as of 01 January, 2019 by Mr. Frank P. Averdung. He brings with him many years of industrial experience in the area of optic, electronic and semi-conductor development. The management looks forward with pleasure to working with the new Advisory Board. ■

In 2003, the shareholders of Kurtz Ersa set up an Advisory Board. This management supervisory body was initially headed up by Dr. Lorenz Raith. Since 01.01.2009, the position of Chairman of the Kurtz Ersa Advisory Board has been held by Hans-Jürgen Thaus.

Mr. Thaus took up office in difficult times and in the intervening ten years has contributed with great commitment to the success of Kurtz Ersa. The management and shareholders, as well as his colleagues on the Council have come to appreciate Mr.



Dr. Dietmar Straub
Chairman of the
Advisory Board



Alfred Weber
Member of the Advisory
Board



Bernhard Kurtz
Member of the Advisory
Board & Shareholder



Walter Kurtz
Member of the Advisory
Board & Shareholder



Frank P. Averdung
Member of the Advisory
Board from 01.01.2019



PROJECT P01

Maximum benefit from digitization for customers

Kurtz Ersa wants to derive the greatest possible benefit from digitization for its customers. To this end, "Project 01" was launched at management level. All managers and many technical experts contribute ideas for digitization, which ultimately benefit the customer. Therefore, answers are sought to the following questions: Which new technologies support the customer in his business? Which ideas can be adopted from other areas? What ideas arise from your own many years of experience? Existing ideas are rethought and projected into the future in regular workshops. Below are a few initiatives that are continuously supplemented and prioritized.

ERSA AS A SERVICE improves customer benefit through digital services. Through the possible communication between machines at the customer site and Ersa experts, maintenance processes can be adapted to the usage situ-

ation. Optimized digital processes also speed up the delivery of consumables. Through data analysis, continuous learning processes are implemented in production, naturally under protection of sensitive customer data.

DIGITAL FACTORY improves throughput times in production. The customer receives his machine faster after ordering. The entire production process is included. Order management plans dynamically. The design department quickly implements new orders on the basis of existing drawings. The layout of the production lines is optimized in order to use the production area more efficiently. Defined "quality gates" ensure the quality of individual process steps. Warehouse processing in the central warehouse is largely automated. Every employee receives the required tools and materials on time. In addition, information relevant to the current work step is provided in digital form.

EMPLOYEE PORTAL is a digital user interface on which every employee finds all information relevant to his work and communication with the company in one place. Complex administration or long searches are a thing of the past. Customers benefit from the efficiency of internal processes and the satisfaction of their own employees.

IT INFRASTRUCTURE ensures that even the invisible part of the IT with state-of-the-art concepts and technologies forms the best possible basis for digitization. Efficient data centers, modern networks and precise monitoring systems are up to date. ■



Looking back on the year 2018, one thing that catches the eye is the large number of awards for Kurtz Ersä as employer and training company. Focus assessed the comprehensive programme for our employees and honoured Kurtz Ersä with the awards "Top Career Opportunities for Graduates" and "Best Jobs with a Future" as well as "Top Career Opportunities for Engineers" and "Top Career Opportunities for IT Specialists".

New awards for Kurtz Ersä

In the area of vocational training, with a training ratio of over 10 %, Kurtz Ersä was awarded the maximum 25 points in the nationwide comparison "Germany's Best Vocational Trainer" conducted by Capital magazine. Alongside such companies as Siemens, Airbus or Kärcher, Kurtz Ersä is therefore among the Top 5 Training Companies in the south of Germany. This achievement is underscored by the "Top Vocational Training" award of the ZEIT publishing group. This is also reflected in the assessment provided by our own apprentices; for the third year in a row, Kurtz Ersä achieved recertification as an "Excellent Training Company" on the basis of an anonymous survey carried out among our apprentices and dual students. But vocational training and professional advancement are not the only strong suits at Kurtz Ersä: At the end of the year, in the context of the "Future Prize Main-Tauber", Kurtz received an award as the company offering the best further training opportunities.

The positive working environment at Kurtz Ersä, career opportunities and family-friendly benefits also contributed to our staff voting us into a position among Germany's Top 100 family-friendly companies. In a study carried out on the topic of family-friendliness by the magazine "Freundin" and the kununu platform, Kurtz Ersä took the 50th of the possible 100 places. The positive assessment of conditions at Kurtz Ersä was not restricted to family-friendliness but extended to all employee groups. For the third year in succession, this has led to Kurtz Ersä being able to proudly bear the kununu seals "Top Company" and "Open Company". The recognition is awarded to employers who received a good rating on the basis of anonymous assessments on the kununu platform.

And this winning streak extends into the new year: At the end of 2018, Focus recognised Kurtz Ersä as an outstanding place to work with the award "Best Employer 2019". ■





VERSAPRINT 2: STENCIL PRINT AS A KEY PROCESS IN THE SMT LINE

Quality right from the word go!

In SMT manufacturing, stencil printing, equipping and reflow soldering are extremely closely connected. It's important to remember that product quality is influenced directly by the solder paste printing – studies show that more than 60 % of all faults on an SMD assembly can be traced back to this. In other words, stencil printing is a key process in the SMT line. System supplier Erska recognised this early and presented the first VERSAPRINT at the Productronica in 2007. It was quickly able to make a name for itself on the printer market.

It was never just a simple stencil printer – even the very first generation had 100 % 2D print result inspection and SPI evaluation. Users were amazed at the fast line scanner and complex software evaluation, which meant order books more or less filled themselves. Depending on the model, the Erska screen printing machines were designed for two or three printed circuit boards per minute – they were aimed at medium-sized companies with small to

medium batch sizes and a lot of product variety.

Ten years later in 2017, Erska followed up on its original product and presented the second generation of the VERSAPRINT 2 with a flourish – at the Productronica in Munich again, of course. The new Erska printer family comprises four modular models: **VERSAPRINT 2 Elite** is the sturdy basic version that uses a 2D camera for alignment and op-



○ Ersa VERSAPRINT 2 ULTRA³

tional inspection of the printing result. The **VERSAPRINT 2 Elite plus** has a stencil support for adjustment without tools, is suitable for frame sizes from 450 to 740 mm and can be retrofitted with all 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 high inspection requirements (can be upgraded/retrofitted with all options). And finally, 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 of the 3D-LIST camera (LIST is short for Line Scan Technology). 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?

This question is answered by the ULTRA³, which is stencil printer and 3D-SPI in one (all options can be upgraded/retrofitted). Here, the 3D-LIST camera makes full-sur-

face detection of the printed volume possible: laser triangulation is used to record and evaluate the individual image points line by line. The advantage of this is that critical substrates can be measured directly before printing with regard to the actual height of the non-printed pads.

VERSAPRINT 2 WITH "FEATURES ON DEMAND"

The new VERSAPRINT 2 sets benchmarks in communication with the operator, as well as in terms of drive technology and system accessibility. The enhanced machine 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. A good year after the second generation of the stencil printer VERSAPRINT 2 was launched, more than one quarter of all printers ordered were for the premium version, the ULTRA³.

"3D inspection downstream from the printing process has clearly prevailed – particularly with critical assemblies for medical technology, aerospace and aviation or automotive. Especially the EMS branch is relying on 3D inspection, since this is a feature of manufacturing quality. Where years ago partial and then later 100 % 2D inspection were sufficient for evaluating an assembly, the third level is required more and more often these days," says Ersa stencil printing expert Wolfgang Hübsch. Together with the good 400 Ersa reflow soldering systems delivered in 2018, Ersa is one of the major suppliers of SMD manufacturing around the globe. ■



SELECTIVE SOLDERING
SUCCESS STORY

1,000th VERSAFLOW 3/45 delivered!



The VERSAFLOW 3/45 forms the solid foundation of the unique success story of Ersselective soldering technology – at the end of October the 1000th machine from Ersselective's absolutely best seller series was delivered. It was shipped to the Swedish EMS service provider NOTE, one of the leading electronics manufacturers in Scandinavia.

The first chapter of the Ersselective soldering success story was written with the VERSAFLOW 40/50 and 50/60 as well as the ECOSELECT 350 in the 1990s. Many of the first Ersselective machines, of which more than 600 have been delivered to impressed customers, are still in successful use – after more than 25 years! "In order to maintain the continued production abilities of these machines, we had to develop new axis controllers in 2018 because the original control modules had long been discontinued by the supplier," says Ersselective General Sales Manager

Rainer Krauss. Thus Ersselective guarantees as a system supplier that these customers can continue to produce flat assemblies successfully on their machines.

MORE THAN 800 CONFIGURATION OPTIONS

Ersselective now delivers the "bread-and-butter" machine VERSAFLOW 3/45 with more than 800 configuration options – all possible combinations are conceivable and can be delivered as a standard machine, whether with

two flux modules, five preheater modules or three soldering modules (multi or mini-wave). Based on this, the VERSAFLOW 3/66 with and without dual conveyor system was developed – and was originally used for car cockpit displays. Since these have changed to digital units, the 3/66 is now used to produce printed circuit boards for air conditioning technology or white goods with cycle times of 10 s. The 3/66 is also excellent for customised applications, such as antennas up to maximum dimensions of 3,000 x 625 mm.

FLAGSHIP VERSAFLOW 4/55

The selective soldering machine series is crowned by the flagship VERSAFLOW 4/55 and VERSAFLOW 4 XL with far more than 1,000 configuration options – anything but a gimmick, rather an absolutely necessary spectrum to provide all customers with the best machine for their respective individual requirements. With the dual pot module VERSAFLEX for the VERSAFLOW 4 selective soldering platform, the market leader is raising the bar once again and has achieved a previously inconceivable flexibility with minimum

cycle times and maximum solder quality. The concept behind VERSAFLEX: the two solder pots in the innovative dual soldering module are installed on two mutually independent axes and can be moved separately in x/y/z-direction. This allows the selective soldering system to be moved in conventional parallel mode, as well as in asynchronous mode, so that both pots work completely independently of one another. VERSAFLEX thus generates an enormous added value in production – by doubling throughput during panel processing or reducing cycle times when different solder alloys or nozzle geometries are used, for example – all economic advantages that pay off for the user. Combined with the printed circuit board monitoring systems VERSA-SCAN and VERSAEYE, this puts customers well on the way to a zero-fault strategy.

PROCESSING PCBS UP TO 1,200 X 620 MM AS STANDARD

In the few months since market launch, significantly more than 200 soldering systems were delivered in this top segment and inte-

grated smoothly into electronics manufacturing. The VERSAFLOW 4 XL opens up a completely new area of business, because it can be used to process printed circuit boards in formats up to 1,200 x 620 mm as standard. New applications – driven in part by the future 5G network that is to replace the current LTE mobile phone standard – require server boards, antennas and network PCBs for traffic engineering in sizes and layers that have been treated as exotic exceptions so far but will now be produced in series.

“We not only recognised the trend in time but also managed to develop suitable machines – which is what distinguishes us as the market leaders from competitors on the market,” explains Ersä Sales Manager Rainer Krauss. Other machines from Ersä that round off the selective portfolio at the smaller end are also worth a mention here: SMARTFLOW 2020, ECOCELL, ECOSELECT 1, ECOSELECT 4 – despite their extremely compact design, the smaller machines from the selective family can rely on innovative no-compromise Ersä technologies – just like the larger members of the family! ■



Official handover of the 1,000th VERSAFLOW 3/45 to NOTE in Norrtälje, Sweden.

Together on the road to further growth

ERSA ISM 2018



On 25.09. Ersä General Sales Manager Rainer Krauss welcomed more than 80 participants to the three-day International Sales Meeting 2018. For the first time participants from all five continents came to Wertheim – proof of the worldwide importance. For the Ersä business partners, this was more than a must-attend event to obtain the latest first-hand information and exchange ideas with other representatives – here at the ISM, the Ersä family met and agreed on common goals for future business success.

The motto of the event was “Common Corporate Growth”, which means: to continue growing together! Over the past eight years, the company has grown by 100 million Euro – by no means an end point, but rather the starting point for further, even more dynamic development over the next five years. To this end, enormous investments had been made, for example in the new Kurtz Ersä Central Warehouse and the new production site being built directly opposite the Ersä headquarters.

The roadmap for the Ersä business in the Soldering Tools, Rework & Inspection and Soldering Machines & Systems divisions was presented during three days of packed meetings. Ersä Managing Director Ralph Knecht: “We will achieve the desired growth with our subsidiaries in Mexico, the USA and Asia, among others, and with you as our business partners. With our worldwide network we are able to install and support systems anywhere in the world.”

Despite plenty of input in the form of lectures, there was time to celebrate – on the first evening, everyone had dinner together at Wertheim Castle. The icing on the cake followed on the second evening: a rich barbecue with salad buffet and a subsequent rock concert with the classic rock band Mallet at the historic Eisenhammer in Hasloch. After a hands-on tools workshop on the third day, the ISM participants travelled home highly satisfied and well prepared to take the Ersä business to the next level! ■



Tools Roadshow makes a stop at Ersä

In 2018, Ersä Tools once again organized its popular roadshow: Interested parties had the opportunity to travel to eleven locations in Germany to attend one of the one-day roadshows. The soldering experts also made a stop in October at the Ersä site in Wertheim – 20 participants from various companies wanted to find out more about this year's topic "Demanding soldering and desoldering on electronic assemblies". Ersä Tools expert Manfred Wolff introduced the company and introduced current topics, such as soldering large BGAs on large boards, processing assemblies with under-filled BGAs, LGAs or BTCs – frequently used in smartphones – or the use of smaller chip components such as 0402, 0201 and 01005.

The coffee break was already used intensively for the exchange of soldering requirements directly in the demo room of Ersä Tools. Many details have to be considered: Which tool, which system, which flux, soldering at which temperature – for optimal results, inventors are required who work tirelessly towards the perfect result. After the lunch break, the participants' own components were discussed directly and recommendations were given about the ideal hand soldering device, rework or inspection system to be used. The entire Ersä Tools product portfolio was available for this purpose, including the rework systems HR 200 for beginners and HR 550 with non-contact solder removal module, the i-CON VARIO 4 multi-



function soldering station and the EASY ARM solder fume extraction system for health-friendly working. This hands-on part was unanimously rated as particularly valuable by the participants, as the Ersä experts also showed alternative machining methods that lead to a better result – for example through less thermal stress for PCB and components.

For the coming year, planning is already underway, and due to the corresponding demand, plans will also extend beyond the country's borders. After the Ersä Tools Roadshow is before the Ersä Tools Roadshow! ■



Wilo SE is one of the leading premium suppliers of pumps and pump systems for building technology, water management and industry with around 7,700 employees worldwide. Wilo offers its customers tailor-made innovative products with high system efficiency and maximum energy savings. The aim: as individual as necessary, as efficient as possible. To achieve the ambitious goals, a highly automated Erska VERSAFLOW 3/45 selective soldering system is used in electronics production.

BEST PRACTICE: WILO AND ERSA

Highly automated production line for smart pumps

WILO AT A GLANCE (AS OF 2016)

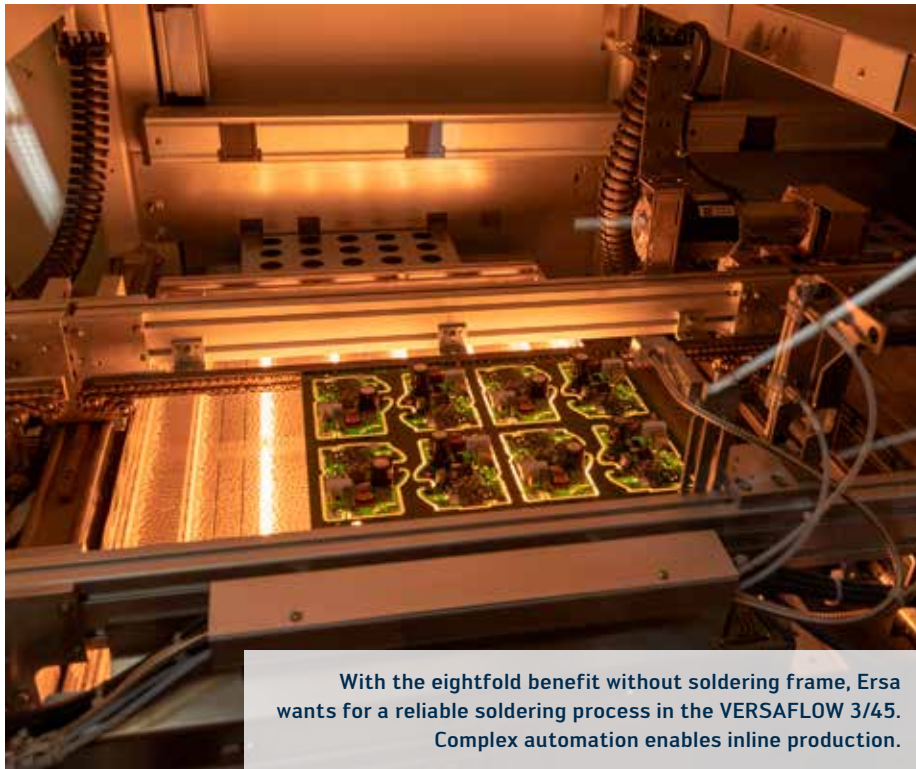
- Founded 1872
- 7.548 Employees
- 1.327 billion Euro turnover
- 109.5 million investment
- Range of services:
Building Services, Services,
Water Management

Founded in 1872 as a copper and brass goods factory in Dortmund, the Wilo Group is today a leading global manufacturer with 13 main production sites in Europe, Asia and America. The technology company thus has an efficient and customer-oriented network of more than 70 production and sales companies in over 50 countries. In the company's 146-year history, there have been impressive milestones: the world's first heating pump in 1928, the first high-efficiency pump in 2001, and the first decentralised pump system in 2009. The current focus is on new digital solutions such as the smart Wilo pump Stratos MAXO, with which

Wilo is transforming itself from a product supplier to a system provider. This is what the claim "Pioneering for You." stands for, which aims to achieve an optimum quality of life by efficiently using the valuable resource of water.

WILO AND ERSA: TRUSTFUL COOPERATION SINCE THE 1980S

Thanks to decades of expertise, Wilo is frequently called upon to implement complex projects – for example at the Google data



With the eightfold benefit without soldering frame, Ersä wants for a reliable soldering process in the VERSAFLOW 3/45. Complex automation enables inline production.

centre in Hamina, Finland, where the Wilo pumps "CronoLine-IL" make a decisive contribution to the ecology and economy of a major hub on the global data highway. Whether pump systems or electronics manufacturing – digitization fundamentally changes manufacturing techniques, workflows and production processes and offers completely new functional and application possibilities. As trendsetters, Wilo and Ersä are each setting new standards in their respective industries to advance digital transformation at all levels.

In order to be able to follow this path, the pump manufacturer uses Ersä production systems that can be relied on at all times for all electronics manufacturing applications – after all, the assemblies produced must perform reliably in smart pump systems worldwide under the toughest conditions. Dortmund-based electronics manufacturing produces for all plants worldwide and relies uncompromisingly on know-how and quality "made in Germany". Wilo and Ersä have been working together constructively since the 1980s, and both companies live in a trusting partnership. In the past, Wilo has relied on selective and wave soldering systems from Ersä for demanding soldering tasks.

"Through many joint, technologically demanding projects, we have been able to jointly develop standards that will help us enormously in future projects and give us a competitive

edge. It is important to understand our customer's needs and the tricks in the complex soldering process," says Ersä sales engineer Stefan Wurster. The fact that the team in Dortmund had very good knowledge in the selective soldering field also enabled a problem-solving process that was productive in every respect.

ZERO DEFECT STRATEGY: MULTI-WAVE SELECTIVE SOLDERING MACHINE VERSAFLOW 3/45

Last year, a four-member Wilo team from the Industrialization and Manufacturing Technologies division put Ersä's first highly automated plant into operation. This was preceded by a tender on the market. After an intensive process, Ersä was once again able to underline its technological leadership in selective soldering, with precise process control and monitoring ultimately being the decisive factor. A VERSAFLOW 3/45 multi-wave selective soldering system is now in use, which is optimally integrated into the overall concept developed by the pump manufacturer due to its high degree of automation for the production of large quantities. "A particular challenge of the project was the large component mix produced with the new production plant. In particular, the thermal requirements for heating and cooling the ceramic components played a major role.

We had already determined all the necessary process parameters in advance at the Ersä application center in Wertheim, without blocking important production capacities," says Wilo production technologist Rüdiger Riedl.

At the same time, a zero-defect strategy was pursued. Important solutions were found early on thanks to the standards jointly created in the past and many extensive pre-tests in the application and demo center at Ersä in Wertheim. This enabled a fast, problem-free ramp-up with very few adjustments to the soldering process after commissioning of the system.

Wilo Process Engineer Ulrich Krämer regards the project as an excellent example of the long-standing cooperation between the two companies: "From initiation to completion, the project with Ersä ran as smoothly as one could wish for!" ■

- 1 A clear view of the soldering process: Ersä VERSAFLOW 3/45 in Wilo production.
- 2 Ulrich Krämer, Process Engineer by Wilo (l.), and Stefan Wurster, Sales Engineer of Ersä (r.), are a well-rehearsed team that pays attention to the smallest details for a production without any friction.





BEST PRACTICE: JABIL KWIDZYN AND ERSA

Highest EMS product quality from Poland

With over 180,000 employees Jabil is one of the world's largest providers of Electronic Manufacturing Services (EMS). From the initial idea to industrialization, Jabil works closely with customers to ensure the rapid and effective introduction of new products. At its Kwidzyn site in Poland, Jabil has relied on Erska soldering technology for three years now.

JABIL KWIDZYN AT A GLANCE

- Founded 1991
- 3.500 Employees
- 705.000 m² production area
- Operating hours 24/7

As a contract manufacturer for electronic components, Jabil has been active for over 50 years and is one of the world's largest EMS service providers. In 2017, the group, which was founded in Detroit in 1966, generated total sales of 19.06 billion US dollars. Jabil has been represented in Poland for 27 years, and the Kwidzyn location has a production area of 705,000 m².

Even if the name Jabil may not be familiar to some outside the electronics industry, this is how you get in touch with the products of the electronics heavyweight – because the components and devices produced at Jabil Kwidzyn are often to be found in Polish and European households. "Well-known global brands come to us with their products. We produce them to order under the seal of the respective brand, but the entire production process takes place here at Jabil Kwidzyn," says Marek Browalski, Assistant Operations Manager at Jabil Kwidzyn.

TOP QUALITY: WAVE SOLDERING UNDER NITROGEN

Not so long ago, Jabil Kwidzyn relied on various wave and selective soldering techniques for the manual assembly process of about a dozen customers. Due to increasing product variety and soldering quality requirements, as well as the need to reduce PCB contamination in the wave soldering process, Jabil developers contacted several wave soldering system manufacturers.

"In the search for suitable technologies, we came to the conclusion that the best solution was a tunnel machine where soldering takes place under nitrogen," says Marek Czubak, Industrial Engineering Leader at Jabil Kwidzyn. After a thorough analysis of the market, Jabil asked system supplier Erska to bring its latest soldering technologies and Jabil requirements together.

CONVINCING TEST IN THE DEMO CENTER

Paweł Szumny, Managing Director of the long-time Erska Poland representative PB Technik, and the responsible Erska Key Account Manager suggested a joint appointment in Wertheim to test the POWERFLOW N₂ in the Demo Center. Together with Jabil Process Engineer Jan Zwierzchowski, Paweł Szumny travelled to Wertheim for the machine check: "We had two test days, but already on the first day it became clear that we had the POWERFLOW on board – so we produced the first assemblies which immediately showed the decisively improved soldering quality," says Jan Zwierzchowski, who was convinced by the testing in the Demo Center right down the line – from the professional setup of the test machine and the installation of the required profile by the Erska soldering experts to tests with different machines.



2



3



4



5

1 Completely satisfied with the new Erska soldering systems – the two ' Jabil soldering experts Marek Czubak and Jan Zwierzchowski at VERSAFLOW 3/45.

2 Optimal setup in detail of the Erska soldering systems in the Jabil production.

3 Jabil electronics production in Kwidzyn.

4 Erska VERSAFLOW 3/45 in the Jabil production in Kwidzyn.

5 The Jabil site in Kwidzyn, Poland.

FIVE ERSKA POWERFLOW N2 IN USE

After the decision of the management, Jabil Kwidzyn bought the first wave soldering machine with the latest technology at the end of 2015. The installation and commissioning of this first machine was carried out professionally by PB Technik Service and with full support from Erska Service. Jabil currently operates five such machines for three customers at its Kwidzyn site. Thanks to the new wave soldering technology of the POWERFLOW N2 under nitrogen, the Jabil team achieves excellent quality even with many copper layers and is able to significantly minimise contamination during the wave soldering process.

In addition, the machine parameters including flux dosing can be controlled online. Dual production has been integrated on one of the five lines so that two different products can be manufactured in parallel – Jabil Kwidzyn makes full use of the possibilities offered to the user by the POWERFLOW N2. On the basis of an excellent interaction of all features, the quality of the products can be quickly optimized on all five systems. In addition to the wave soldering machines, Jabil Kwidzyn also purchased 14 Erska selective soldering systems in various configurations that produce reliably for Jabil customers. ■

„Creapolis Makerspace“ with Ersä Tools



On September 11, the “Creapolis Makerspace” opened in the director’s villa of the old slaughterhouse in Coburg. After the official part at noon, the premises were open all day long for the numerous visitors. The outdoor area was inviting with live jazz, food trucks and a bar.

Like the Creapolis project, Makerspace wants to promote the transfer of knowledge between the Coburg University of Applied Sciences and the region. As an open workshop, it encourages as large an audience as possible to realise their own ideas, fiddle with them or simply try something out. Introductory workshops are planned as well as events for advanced students and experts in close cooperation with the study courses Electrical Engineering, Mechanical Engineering and Integrated Product Design. Thanks to extensive equipment, everything from DIY projects to pre-production prototypes can be implemented and tested in a creative environment. There is also a wood workshop, laser cutter, 3D printing, CNC milling, video

cutting, sewing machine – and an electronics workshop. With the generous support of Ersä, the company was able to equip it with professional soldering stations and tools that are also suitable for ambitious projects. The solder fume extraction with flexible arms guarantees a healthy climate even for longer work.

In addition, Ersä provided six compact soldering stations that can be used for in-house workshops as well as for mobile work. This means that the makerspace also has mobile equipment with which one can go on tour. The Creapolis team would like to thank Ersä for the generous support and the great equipment! ■

Ersä Support: 15 soldering stations for Schaffenburg e.V.



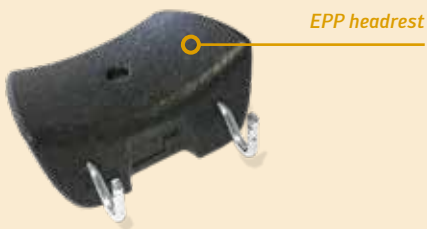
Hansjürgen Bolg (right), Vice President Tools, Rework and Inspection Systems and Key Account Manager Katharina Fertig handed over Soldering stations at Schaffenburg e.V.

“Meet. Create. Share.” – Under this motto, the around 50 members of Schaffenburg e.V., founded in 2014, get together regularly in their clubhouse, “Space”, to work on technical, manual and creative projects. But the club’s engagement is not limited to that – the hands-on Schaffenburg members are also active in the Repair Café in Aschaffenburg and offer a variety of workshops for adults, teenagers and children. As of very recently, the club can now call on 15 new Ersä soldering stations – five i-CON PICO and ten RDS 80.

“Schaffenburg e.V. is a genuine maker space for people with a passion for technology, in which creative ideas can be realised, among other things through the use of soldering tools. We are delighted to support this project,” said Hansjürgen Bolg. The Sales Di-

rector for Tools, Rework & Inspection Systems at Ersä GmbH travelled especially to Aschaffenburg in October, together with Key Account Manager Katharina Fertig, to hand over the 15 soldering stations. This also gave the Ersä visitors an opportunity for a guided tour through the Schaffenburg premises – which the club just moved into in January 2018 – and of course the i-CON PICO stations were tested right away.

The first major stress test for all the stations ensued shortly afterwards with a soldering workshop for children aged seven to eleven, in which clothes pegs with colourful blinking LEDs and batteries were assembled. Ersä wishes the creative minds in Schaffenburg e.V. lots of fun with the soldering stations and a wealth of bright ideas and positive results! ■



EPP headrest



EPP bumper system



EPS bicycle helmet

PARTICLE FOAM APPLICATIONS –
FOAMED ON KURTZ SHAPE MOULDING MACHINES –
CONTAINED IN MANY EVERYDAY PRODUCTS

Frequently unrecognised – generally concealed!

Particle foams can be found in many areas of life and many everyday products. They are often not immediately evident. This is because they are frequently concealed from the consumer, or covered by another material. In a cycling helmet, for example, we can see the particle structure directly, in a motorcycle helmet, on the other hand, it is no longer visible.

When insulation panels are attached to a facade, the particle foam can be clearly seen – as soon as the external plasterwork is applied, it disappears from sight.

Particle foams protect:

- The heads of cyclists & motorcyclists
- Electrical appliances during transport from the manufacturer to the home
- The driver in an accident
- Foodstuffs from deterioration and damage
- The house from overheating or excessive cooling
- In many further applications





→ In this article, we report on the effective protection provided by particle foams, using two examples: 1. Foodstuffs, 2. Building insulation. The list of particle foam application areas is growing constantly; further areas will be presented in the coming editions of "Kurtz Ersä Magazine".



Spanish newcomer Serplasa chooses the most economical technology

Any newcomer trying to gain a foothold in an established market needs to use more economical technology than his competitors. One of the reasons for Serplasa to choose Kurtz – the strongest partner when it comes to EPS processing machines!

Serplasa is a family company specialising in the production of boxes for foodstuffs. In addition, it produces plastic sheeting for agriculture and the foodstuff industry. In order to be able to supply customers in this branch with EPS boxes as well, it was decided to build a factory. The scope of delivery included part of the engineering for the infrastructure in cooperation with a local service provider, a discontinuous pre-expander with silo system and two BOX FOAMERS working with coreless tools. The plant was commissioned punctually and successfully. We are proud to have gained Serplasa as a customer and partner, and wish the company every success!

PARTICLE FOAM APPLICATIONS – FOAMED ON KURTZ SHAPE MOULDING MACHINES

Contained in many everyday products

OUR DAILY BREAD: FOODSTUFFS

The south of Spain is one of Europe's most important vegetable gardens. Logistics plays the decisive role in transporting goods over long distances so they arrive fresh in our home markets. Due to their outstanding properties, EPS boxes are used for vegetables such as broccoli or artichokes. On the one hand, the goods stay fresh for longer in this packaging, and on the other the vitamin content sinks significantly less over the same period than is the case in other packaging. Furthermore, this packaging is moisture-resistant, stackable, light and recyclable.

Kurtz added value for the customer:

- Planning and layout of the production plant
- Advice on media installation in the new production site
- Training and process guidance for the customer
- Coordination of machinery and tools for the highest efficiency and productivity
- Close supervision from the planning of the production site and the plant to daily production



WORTH ITS WEIGHT IN GOLD: A ROOF OVER ONE'S HEAD

40 % of the energy demand in the EU is accounted for by building heating and air conditioning. Accordingly, an enormous contribution

Kurtz BLOCK FOAMER in Norway

Following the successful installation of a number of block systems in the US and Canada, Kurtz has now also successfully entered the European market with the new BLOCK FOAMER. In the Norwegian company Løvold Industri AS, the Kurtz BLOCK FOAMER was commissioned according to plan.

to CO₂ reduction can be made by insulating measures. EPS is as long-established material for insulation panels and has been in use in external insulation and finish systems for many years. Today, some of these panels are foamed as pre-fabricated slabs, for example when they are to feature a ship-lapped edge. For this purpose, Kurtz has developed a special technology with the PANEL FOAMER. Insulation panels for butt joints are generally cut from large EPS blocks.

Should you have questions on the topic of block production, simply have a word with us – the Kurtz Team would be pleased to advise you! ■

Complete fit-out BOX FOAMER with:

- vertical or horizontal version
- innovative process control
- low level of residual moisture
- electrical length or width adjustment
- sturdy and low-maintenance length adjustment with vertical block form
- low maintenance
- easy to clean





WE ROCK YOUR IDEAS!



FOUNDRY MACHINES IMPRESS
WITH SUSTAINABLE MOULDED PARTS

Kurtz Foundry Machines Rock Your Ideas!

At the beginning of the fourth quarter, Kurtz Foundry Machines launched its campaign “We Rock Your Ideas” presenting sustainable lightweight solutions for the automotive sector – initially at ALUMINIUM in Düsseldorf, then at FUNDIEXPO in the Mexican city of Guadalajara. Moulded parts in aluminium have long become firmly established in the automobile industry – and the share of such parts is set to rise further. With ever-greater frequency, a variety of aluminium moulded parts are to be found in motor vehicles. In the area of electromobility, in particular, every gram counts, lightweight construction has become indispensable. Whether for chassis, transoms, frames or structural parts, sand core hollow structures or fully-moulded parts, lightness is the main concern. Numerous interesting discussions on this topic ensued at both fairs.

COUP AT CHINA DIECASTING

But the major coup for the casting machines was achieved back in July at CHINA DIECASTING in Shanghai. Asia’s most influential fair in Asia, and worldwide the second largest event in the area of die casting, in recent years this leading fair has developed into a valuable platform for low-pressure casting.

With over 16,000 visitors from 41 countries, the share of potential customers for low-pressure casting also rose. Kurtz Ersä Asia sent a fair team to Shanghai, who made valuable contacts and provided extensive advice at the stand using videos, virtual reality applications and lightweight construction

sample parts. With remarkable success – the foundations for two major contracts were laid at CHINA DIECASTING. These are Kurtz casting lines with four AL 18-16 FSC casting machines and three AL 22-17 FSC casting machines. Both casting lines will be producing moulded parts for e-mobility. In addition to frames for the local Chinese automobile market, it is also used to manufacture motor housing for foreign vehicles. Both parts are moulded using sand core technology.

“We could not have wished for greater success for the fair – that rocks!” said Lothar Hartmann, General Manager Business Unit Kurtz Foundry Machines, at the end of the fair. ■



SEE YOU

- VDI-FACHTAGUNG
MAGDEBURG
29.01. - 30.01.2019
- FOAM EXPO EUROPE
STUTTGART
10.09. - 12.09.2019

The last weeks of the year were marked by meet-up events in the particle foam industry. October saw the inauguration of FOAM EXPO EUROPE. After two highly-successful events in the US, the European version now followed in Hannover, also meeting with a very positive response. The follow-up fair is already set for next year in Stuttgart. In November it was the turn of the VDI Particle Foam Conference in Nuremberg and the PTO EPS Conference in Las Vegas. (Report to appear in the next issue.) At all the events, Kurtz Ersa was able to demonstrate its market leadership in particle foam, impressively presenting new developments and applications.

It's time to meet!



FOAM EXPO EUROPE 2018

For three days, the fair presented highlights and innovations for manufacturers and buyers of technical foam products and technologies. Kurtz Particle Foam Machines had a fair team on the ground there and, at a stand showing sample parts and video clips, demonstrated how Kurtz GmbH will shape the moulded parts production of the future. Great interest was attracted above all by the new, high-temperature resistant materials and the matching processing technology. "Particularly in view of the ever-expanding light weight construction in motor vehicles and airplanes, stable, temperature-resistant plastics are in demand. The new Kurtz technologies in this area are absolutely 'state of the art' and have their finger on the pulse. We will undoubtedly be here again next year," said Harald Sommer, Director Profit Center Particle Foam Machines at Kurtz GmbH.



VDI PARTICLE FOAM 2018 IN NÜRNBERG

On 08 and 09 November, the VDI Particle Foam Conference was held under the chairmanship of Kurtz Managing Director Uwe Rothaug. Once again this year, it was an important meeting place for the branch with approx. 110 participants from among foam processors, raw material producers, machine manufacturers and customers coming along to the presentation of new materials and technologies. The main focus of the conference was on newly-developed particle foams such as Ecovio, E-PESU, E-PET, Infinergy and a new, biodegradable material PHBP from the company Kaneka. Should this end up in the sea after use, the new miracle material will simply be eaten by the fish, with no consequences! New foams also demand innovative processing. The steamless processing technology from Kurtz GmbH, which operates with radio frequency waves in a temperature range up of to 250 °C, was the central attraction, consistently enjoying great interest. In summary: once again a completely successful event – and the innumerable fair contacts will undoubtedly lead to many new Kurtz customers! ■



Contract Manufacturing
Solar Industry:
Single machines for a
30 m cooling line for the
production of thin-film
solar modules.

CONLINE GMBH

Integrated Contract Manufacturing in Perfection

In connection with the change of name to Conline GmbH at the beginning of 2018, there was a change from a sheet metal worker to a technology company – this process is scheduled to last two years. The first joint orders in the field of automation, which were successfully implemented together with Kurtz GmbH and Ersa GmbH, met with extremely positive feedback from customers. Contract manufacturing currently accounts for the largest share of Conline's business in sectors such as the solar industry, medical technology, automation technology and the packaging industry, and will remain the most important pillar next year. At the same time, the Automation and Automation Solutions division is catching up with great speed. Below are a few examples from Conline's current contract manufacturing operations.

SOLAR INDUSTRY

In May 2018, Conline signed the largest contract for contract manufacturing to date: The order with a volume of EUR 2.5 million amounts to a total of ten complete cooling lines including return conveyor for the manufacture of thin-film solar modules.

Each of these cooling lines is 30 meters long and consists of six individual machines. The completed cooling lines will be used in plants that will supply the world's largest solar park in the Gobi desert with supplies in the form of solar panels. Thanks to Conline's extensive capabilities, the machines will be as-

sembled and extensively tested mechanically, electrically and pneumatically by the Wertheim Contract Manufacturer, and Conline will also be responsible for the procurement of the components.

Ten men will be fully employed over a period of ten months for the major order, which will be completed in the first quarter of 2019. This will be followed immediately by another order of the same amount – further orders have been announced by the customer until 2023.

PACKAGING INDUSTRY

Conline GmbH has completely rebuilt a "Hot Seal Unit" from the 1980s for a leading machine manufacturer for thermoforming and packaging technology. In the heat sealing machine, thermoformed plastic switches, products and cardboard bridges are "married" to form a packaging unit. The different types handle 10,000 products per hour or 15 cycles per minute (900 parts). A special, modular conveyor technology is used for the design – the seal unit was completely redesigned, whereby 25 % savings potential could be realized.

After an agreed design freeze, the machine goes into series production and can be delivered as of February – the complete electrical and mechanical assembly as well as the purchase are in the hands of Conline. At the same time, the development of peripheral units for automated processing in large quantities is started, which then dock directly onto the Hot Seal Unit – associated functions include, for example, automatic product insertion, integration of an enclosure, printing of a barcode. Conline operates comprehensive warehousing for these projects, thus ensuring a seamless supply to the customer and thus becoming an integrated partner in the customer's production. ■



Contract Manufacturing
E-Mobility:
Transmobil for use
in paint shops.

E-MOBILITY

The "Transmobil" project has been going on for several years, but was not completed – now it is being continued in close cooperation with the client to create an innovative Transmobil shuttle with today's standards for digitization and electromobility. The idea was to use a remote-controlled transport system to drive the shuttle under an electric vehicle and transport it including the lifting platform to the next station – variants are planned for cars (2.5–3.2 t payload) and vans (up to 4.5 t).

The need is seen in paint shops, because if you disconnect an electric vehicle from the battery, it stands "like lead" – electric motors have no idling! Otherwise, the battery

would have to be disconnected and reconnected at every step, such as filling, sanding and cleaning, which adds up to the time factor and is not exactly beneficial for the battery and electronics either. First of all, a manual control system is implemented, in which the operator runs behind.

But a complete expansion stage with fully automatic transport via central 4.0 control systems is also planned – with detailed analysis at the end of the year, the foundation stone was laid for the new development, which already contains the options with regard to control, electronics and design. Series production is expected to start in spring/mid-2019.



Contract Manufacturing
Packaging Industry:
Hot Seal Unit for
blister packaging.



ROCK CONCERT
IN HAMMER FORGE

Rock you like the Eisenhammer!



After last autumn's blues concert, the Kurtz Ersä makers added to the list and invited to the Hammer Rock Concert in the Eisenhammer at the end of September. Already the advance sale via Hammermuseum and e-mail started well – at the box office another 30 tickets went over the counter, so that one could announce a full house. Not surprising, since FOUR WHEEL DRIVE is an experienced band that has been bringing classic rock with a rich sound and a cool atmosphere to stages all over Southern Germany for many years.

And the musicians redeemed what the numerous rock fans who made the pilgrimage to Hasloch expected: 100 % schlager-free live rock from AC/DC to Whitesnake to ZZ Top. At 8:30 p.m. the band from Würzburg started to

heat up the rock fans right from the start. With lasting joy of playing and a broad repertoire, the Würzburg musicians around guitarist and singer Ali Patzak once again proved with their 3-hour gig how timeless good rock music is. The last riff and the last buzzing of the bass drum ebbed away around 00:15 o'clock.

When the iron hammer released happy concert goes into a cool night at a late hour, it was still bathed in reddish shimmering light. The rock spark definitely jumped over that evening – among the concert visitors as well as those responsible at Kurtz Ersä. There they signaled to organize further concerts in the unique ambience of the hammer mill. Keep on rockin'! ■





Since our membership in the International Association of Forging Designers (IFGS), it was clear to us that we wanted to get involved with actions to promote the blacksmith guild. It gives us access to the small world of the blacksmithing scene and thus increases the awareness of our iron hammer.

In preliminary talks it was decided that we want to give the young blacksmiths the task of producing a 2.5-D model of our throw-up hammer according to a design by Thomas Maria Schmidt (IFGS board member). In the

run-up to the event, our activity was advertised in forging circles – young forges from Finland, the Netherlands, France, Austria and Germany registered, the quarter was occupied in the old hammer building.

After arriving on Wednesday, August 15 and explaining the project, the blacksmiths' work began on Thursday – interrupted by a visit of the district administrator, who wished the project a good course. Also on Friday and Saturday, three forge fires and anvils were forged until late into the night,

so that the work was finished in time for the Sunday matinee. Experienced blacksmiths supported the young blacksmiths in their work.

To the delivery of the work of art there was also a tombola, whose proceeds went to the action rainbow (solemn delivery at the beginning of the new museum season). The work is placed on the side wall of the museum and attracts attention as an eye-catcher. ■



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Technology fan? Passionate interest in industrial history?

The story of Kurtz Ersä comes to life in the HAMMERMUSEUM – let yourself be infected with the enthusiasm for technology that still marks us out in the 21st century.

We're looking forward to your visit!

Kurtz Ersä HAMMERMUSEUM

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