

#2 | 2017

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CUSTOMER MAGAZINE

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MIRA 340 SUCCESS STORY

**komax**



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# EMPOWER THE DIGITAL TRANSFORMATION

Dear Reader,

New technologies and concepts are offering opportunities to increase productivity even further in the future and thus improve your competitiveness. In addition to the actual machine technology, we are pursuing two further approaches that we would like to present in this issue. When it comes to product design, we rely on professional support during development to ensure that the setup, operation and maintenance of our machines is particularly simple.

Digital transformation also plays a major role and is being continually integrated into our developments. For example, the recently developed Komax HMI operating software with a completely new philosophy shortens the training time for the operator and offers even greater functionality in the area of networking. Thanks to real-time data, the software creates maximum transparency and control over the entire process for both the user and the manufacturing execution system. This way, you can easily exploit the full functionality of our machines and optimize the production process.

With the motto "digital transformation", we will direct you, today and in the future, towards new solutions and options that are emerging in a constantly developing technological environment. Having a dialogue with the customer is very important to us during this process. Only when we know your needs and challenges are we able to optimally adjust our solutions and options based on your requirements and continue to drive the digital transformation in wire processing forward.

Learn about our latest products, technologies, concepts and other topics in this issue of NEWS. Enjoy reading!



Marc Schürmann  
Vice President Marketing, Sales & Service



**40**  
YEARS  
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KOMAX GROUP

## CONSTRUCTION WORK BEGINS IN DIERIKON: KOMAX INVESTS IN THE FUTURE

**Komax is investing over CHF 70 million in a new-build at its head office in Dierikon and is thus strengthening Switzerland as a business location. The ground-breaking ceremony for this major project was held in mid-August 2017. The new production and office building should be ready for occupancy in the second half of 2019. The new-build will unite the three existing central Swiss sites at a single location in Dierikon.**

After a preparatory period lasting almost three years, the ground-breaking ceremony for the Komax new-build took place in Dierikon in mid-August. With floorspace totalling over 20,000 m<sup>2</sup>, the new production and office building will be situated right next to the current buildings and will comprise seven storeys (basement, ground floor and five upper floors). "The fact that a large employer like Komax is going ahead with further investments in the municipality is a vote of confidence for Dierikon as a business location," says Alexandra Lang, Vice-Chairwoman of Dierikon Council.

### **Fewer journeys, better communication**

The new-build is coming at the right time: owing to the excellent order situation, Komax reached the limits of its capacity in Switzerland last year. The company was

therefore obliged to rent additional premises in Küsnacht am Rigi to supplement the two existing sites in central Switzerland (Dierikon and Rotkreuz). "The new building will encourage inter-divisional, spontaneous dialogue among employees as they will no longer be spread across different sites", says Matijas Meyer, Komax Group CEO. "Numerous trips between the various sites will also be eliminated, thus simplifying logistics."

### **Expansion at Komax SLE and Kabatec**

In addition to investing in Switzerland, Komax is also expanding its production capacity at two sites in Germany. So that it can cope with the expected growth in the specialized machinery business, Komax SLE in Grafenau is planning an extension that will greatly increase the available production and office space. A new-build is

being planned for Kabatec in Burghausen as demand for bandaging and assembly technology is rising steadily. Both new facilities should be ready for occupation by the end of 2018. Komax will merge the two companies in the field of bandaging technology – Kabatec and Ondal Tape Processing – under the name Kabatec this year. So next year, all the employees will be able to move to the new location together.

DANIEL SCHMID

## DANIEL SCHMID APPOINTED NEW GENERAL MANAGER OF KOMAX SINGAPORE



Due to the acquisition of Practical Solution, Komax Singapore has been transformed from a pure distribution company into a production and development site too. To take account of this

development, a senior management change will take place with effect from 1 January 2018: Daniel Schmid will become the new General Manager of Komax Singapore in the place of Larry Wee, who has held this function since the end of 1995. Komax will continue to benefit from Larry Wee's extensive experience and relationship network in the future. From now on he will focus on sales and service in Southeast Asia.

Daniel Schmid has worked for Komax since 1 January 2016 – as Head of Project Management and Product Management for Komax Solutions in Rotkreuz und Küssnacht. He graduated in microtechnical engineering from the Swiss Federal Institute of Technology in Lausanne, and also holds an MBA from Cranfield University (UK). Before joining Komax, he was employed for about seven

years by Swisslog AG in various management functions in the marketing area, as well as heading up major international projects. Prior to this he worked for several years at ECTN AG as Project Manager and Technical Head.

The Executive Committee is pleased to be able to promote an internal candidate to the role of General Manager in the person of Daniel Schmid and wishes him every success in the fulfilment of his important new task. In addition, the Executive Committee would like to thank Larry Wee for successfully managing Komax Singapore for so many years, and is delighted to be able to collaborate with him further.

KOMAX GROUP

## KOMAX ACQUIRES LASELEC

**Komax is continuing to systematically implement its strategy: the acquisition of French company Laselec SA marks an important step for Komax in its efforts to strengthen the aerospace market segment. Komax has held a minority stake in Laselec since 2015.**

Komax will be taking over Laselec in the second half of 2017, subject to the approval of the French authorities. Laselec specializes in laser-assisted cable stripping and marking solutions as well as intelligent layout boards for wire harness production. These are used primarily in the aerospace industry. Komax has held a stake of about 20% in Laselec since 2015. During the course of this collaboration over the last two years, the solutions have increasingly found their way into the automotive industry, Komax's largest market segment.

Headquartered in Toulouse (France), Laselec employs around 60 staff and has a subsidiary in the USA (Dallas County), among others. This acquisition enables Komax to continue with its strategy of strengthening market segments outside of the automotive industry. To achieve this, Komax is concentrating on three additional market segments in particular: aerospace, telecommunications and data communication (telecom/datacom) and industrial applications (industrial).

SOFTWARE & NETWORKING

## KOMAX HMI – THE NEW, CONSISTENT OPERATING PHILOSOPHY

**Fully automatic, high-performance wire processing machines are complex. Komax has developed an entirely new operating software that gives access to the machine's full performance potential and can be operated with a more simple and consistent logic. Komax HMI makes wire processing quicker, more flexible and more reliable while ensuring optimal machine utilization.**

Consistently high quality of the end products as well as an increase in productivity and cost efficiency were the goals for the new human machine interface (HMI) of Komax. The key consists in clear user guidance and the design of error-proof processes. Thanks to real-time data, the software provides maximum transparency and control over the entire process for both the user and the execution system. Additional process steps can be integrated in order to adapt the production process even during operation. Furthermore, input fields of third-party systems can be integrated in the HMI, thus centralizing the operation. The new software optimizes the entire workflow, giving access to the machine's full performance potential.

### **Simply press the Komax Green Button**

The Komax Green Button guides the operator through the wire processing procedure: step by step, the operator moves from the job list to the material changeover page and via the verification sequence to production, until the job is completed. Due to the defined workflow, each action can only be executed in one way: automatically correct.

Thanks to the clear guidance, operating the software can be learned quickly, making it possible to prepare and control the production process in the minimum time while maintaining maximum safety. It also helps to prevent errors during setup, changeover and production, which means that products can be manufactured in consistently high quality, close to no rejects and maximum utilization of the machine's capacity.



### Logical and error-free operation

Komax HMI guides the operator on the basis of a use-case-driven design architecture. The operation is focused on the most common tasks and the most important processes used in practice. For instance, all information relevant to the stripping process is displayed concisely on one page, thus providing a full overview at a single glance.

The user interface is divided into three major areas: machine configuration, product specification and production. The clear and intuitive layout allows for quick orientation, and images facilitate data entry and process monitoring. This makes the specification of parts and articles easy and supports the identification and solution of problems. The language settings can be changed virtually instantaneously, allowing several operators to use the same machine and work in their preferred language. The permission editor feature assigns individual access rights to specific information and intervention options to operators and other user groups.



## Connected production, control and optimization

Komax HMI is designed to be connected with a manufacturing execution system, such as Komax MES. The parameters for the production process can be specified in the MES and downloaded to the machine via an open interface. The resulting quality and production data is available in real time and can be uploaded to the MES at any time. All quality measurements and images can be tracked live during production and documented on an ongoing basis. This transparency makes it easy to generate reports. It facilitates close monitoring, immediate analysis and prompt optimization of production by the execution system.

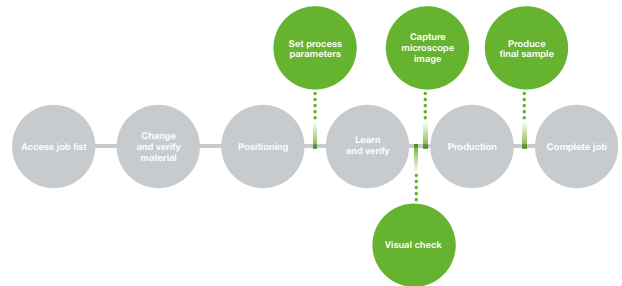
Powerful features allow the operator to monitor production. The quality monitor keeps track of the current quality measurements of all modules. This includes the force curve of every crimp or the camera image for controlling the position of every seal.

The performance monitor compares the effective production rate with the theoretical piece output, while the scrap monitor provides information about the number of rejects. The interaction countdown also displays the remaining production time, giving the operator the opportunity to prepare for the next job.

## Centralized operation, adapted to individual needs

With Komax HMI, additional steps and individual tasks can easily be integrated into the standard production workflow. In the event of a fault, the manufacturing execution system can prompt the operator to perform additional checks or produce extra wire samples. This way the work process can be modified, redesigned, extended and optimized as required – even during operation. This makes the production process highly flexible. The necessary steps are automatically added to the workflow. The operator then performs these steps simply by following the workflow via the Komax Green Button.

Input fields for third-party software can easily be integrated into Komax HMI, which centralizes all operation. As a result, the operator no longer needs to monitor multiple software programs and printed documents, performing each activity at the right time and never forgetting any of the steps in the process.



## More productive with the new operating philosophy

Komax HMI facilitates the transition from complexity to maximum simplicity with its new operating philosophy. The new software allows for dynamic and individual automation with error-free, operator-guided production. This results in more security, fewer rejects and no time-consuming post-production. Processes can be designed more flexibly, productively and economically, allowing for quicker product modifications. In this way, the full performance potential of the machine can be utilized. As a fundamentally new platform, Komax HMI sets the future standard for significant increases in quality and productivity.





ZETA 640/650 HARNESS MANUFACTURING

## HIGHLY FLEXIBLE AUTOMATION FOR INDUSTRIAL WIRE PROCESSING

**Komax has further developed its Zeta wire processing machines to meet the increasing variety of customer-specific requirements. The new, highly flexible Zeta 640 and Zeta 650 machines facilitate just-in-time processing for batches starting from size one and support continuous data flow.**

The increasing customization of industrial wire processing requires automated manufacture of wire harnesses just-in-time for batches of any size. Thus, it is essential that a large number of different wires and terminals can be processed quickly and with no changeovers. This places particularly high demands on flexibility. To ensure this variability, Komax has developed a new platform based on its previous models. The new fully automatic Zeta 640/650 wire processing machines make processes more flexible and enable batch or sequence production with no changeovers, reducing production time by up to 50%. The new EtherCAT platform

improves overall system performance and significantly increases machine availability. This allows the new generation of Zeta machines to create the best conditions for an efficient future. A new trend-setting machine design underlines the advanced concept.

### **Highly flexible machines for just-in-time production of batches of any size**

The new Zetas are geared toward a broad product portfolio and a wide variety of terminal parts. All processes, such as cutting to length, stripping, labeling, sleeve insertion, etc., are carried out automatically as needed and simultaneously on both wire

ends. Three pairs of blades cover the entire cross-section range, enabling production without the need for changeovers. The Zeta 640/650 machines reduce manual processes to a minimum, while high quality and durable components permit high process speeds. The Zeta 640 is configured with five process modules in the standard configuration, opening up many new possibilities for small batches or sequences. The Zeta 650 is designed for eight modules, which reduces changeovers and interruptions to a minimum. Both machines can be extended by five additional modules along the transfer section as necessary.

## Continuous data flow to the machine

Data export from any system (ERP, ECAD, DLW, Excel cutting list, etc.) can be easily converted into readable data (TopConvert). This production data is then sent directly to the machine via the WPCS Komax interface. Manual programming of items in the machine is eliminated, making entry error-free and highly efficient – even with a batch size of one.

## Thirty six wire types and deposit in the correct order

For the versatile control cabinet construction, the automatic wire selector contains up to 36 different wires from the entire cross-section range: from 0.22 to 6 mm<sup>2</sup>. Terminals or ferrules are also available on the Zeta 640/650 without the need for change-overs. The machines assemble the required wires in a single process step. Up to two automated inkjet printers mark the wires in black and one additional color within the same sequence. The bundler wire deposit unit sorts the wires in the correct order and provides each wire separately for further processing, freely definable according to sequence or batch. This simplifies and significantly accelerates logistics and installation in the control cabinets.



The bundler sorts and binds the batches in a single process step.

## Consistently high quality and versatile options

Fully automated production guarantees continuously reproducible standards of quality. Crimp height and pull-out force measurement is integrated and defective wires are automatically separated. Further quality controls, such as incision monitoring (ACD), are available as an option.

An extensive range of process modules and options exploit the full flexibility of all necessary machine configurations with the Zeta 640/650: the C1320 crimp module is suitable for a wide variety of terminals. The CM 1/5 GS ferrule module is able to process five taped AEH rolls at the same time. The double gripper module enables the production of horizontal and vertical double crimps. Modules for untwisting and separating batches complete the processing possibilities.



## DLW – the simple alternative

In order for the control cabinet construction process to be automated, the first step is to collect the production data, including the cable length. The DLW (digital lean wiring) software developed by Komax offers the ideal solution for this with its clear focus on simplicity and flexibility.

## Virtual wiring

In the DLW software, the technician uses an image or a 2D drawing to wire the cables virtually on the screen. This is a highly efficient method of determining the cable length per connection. After that, the production data is converted and uploaded to the wire processing machine, which produces the ready-to-install cables.

## KOMAX STC STATIONARY TERMINAL QUICK CHANGER

# QUICK CHANGEOVER COMPACT AND FLEXIBLE

**Komax has developed the stationary changeover system (STC) for the fastest possible manual changeover for crimp tools and terminal reels on the Alpha 530 and 550.**

The new, compact quick changeover system for terminal reels and crimp tools (STC) is securely mounted on the machine. The crimp tool to be changed can be unlocked and removed in a simple sliding movement in just a few steps. The new crimp tool is then inserted with the reel and securely fixed with the quick-release system. The new crimp tool and terminal reel can be prepared while the machine is running and the reel can be fixed with one hand. The STC supports different tool types – even pneumatic, thanks to the integrated compressed air connection – and is available for standard mini-applicators or crimp tools from various manufacturers. The robust design is perfectly crafted for a rough production environment and is flexible with different options. Fast changeover increases machine capacity and productivity



**Innovative system for manual changeover of two crimp tools and terminal reels.**

## SMART VISION

# TRIED-AND-TESTED MICROGRAPH SOFTWARE AUTOMATES PROCESSES

**Komax is putting its existing micrograph analysis software through a comprehensive upgrade.**

In addition to the existing range of functions, the latest version of the SmartVision software has a fully automatic measurement feature.

This feature allows common assessments such as crimp height, crimp width, exterior contour, interior contour, compression rates, etc., to be accomplished at the touch of a button. This makes the process much more



**The most important measured variables can be measured fully automatically and manually as needed.**

efficient and reduces the amount of time required to analyze micrographs by up to 50%.

Because the contours and measurements are captured without interference by the user, repeatability is significantly increased. As before, the measurement scope can be individually adjusted or carried out according to the company's usual standards.

## UPGRADE BT 188 T/BT 288

# BETTER TWIST- ING THANKS TO INTEGRATION WITH MES

**The latest version of the TopTouch operating software makes it even easier to select articles and monitor orders on the bt 188 T and bt 288 twisters. Integration with an MES (manufacturing execution system) is enabled with the newly available MIKO (Manufacturing Interface Komax) interface.**



**The new version of the user interface TopTouch makes working even easier.**

The optimized user interface makes the system even easier to work with. The user is guided through article configuration step by step, preventing sources of error during setup. In addition, individual user groups can now be created with corresponding rights. The error list now comes with a time stamp for complete traceability and quality monitoring purposes.

Integration creates the best conditions for fast and error-free setup of articles via MES, as well as high transparency along the entire value creation chain. Production progress and quality can be tracked with MIKO in real time. Automatically generated events can be used for further processes (e.g. automatic label printing with the customer's software at the end of a batch).



MX-5050

## INTERMEDIATE STRIPPING PERFECTLY SOLVED

**With the new MX-5050, Komax provides the perfect solution for fast, uncomplicated intermediate stripping. Thanks to its robust and solid design, it is the ideal preliminary station in intermediate stripping.**

Precise, error-free stripping depends largely on conditions such as wire cross-section, insulation thickness and strip length. The highest degree of dimensional accuracy is required, particularly when it comes to thin-walled wires to ensure that the insulation is fully removed or that strands are not damaged.

The new machine removes wire or conductor insulation segments in predefined lengths from 8 mm to 25 mm. Specifically

manufactured cutting blades and slitting devices ensure clean and precise cuts for wire diameters from 0.5 mm<sup>2</sup> to 8 mm<sup>2</sup>.

The robust Komax MX-5050 guarantees flawless quality and ensures a very long service life. Operation is very convenient, thanks to the simple software integration.



LASELEC SYLADE 7H

## THE FIRST HANDHELD LASER WIRE STRIPPER

**The Sylade 7H is the portable, handheld version of the Sylade 7 benchtop laser wire stripper. It is perfectly adapted to highly sophisticated aerospace wires and also has great appeal in various industrial applications that require stripping with no damage to the fragile conductor stands.**

The Sylade 7H is a laser stripping device in highest quality for manual production at the harness assembly board. Due to sophisticated production processes this lightweight handheld device is now available at an unprecedented price-performance ratio.

### **Patented laser light technology**

The patented Sylade laser stripping technology uses high-precision semiconductor lasers, which rotate around the wire in a

perfectly controlled manner and cut the insulation to the programmed depth and width with the highest repetition quality. The laser light, available in two different wavelengths, enables a wide range of insulation materials to be processed.

The focused laser light enables non-circular cables and insulation processing. The rotationally symmetric stripping of the insulation ensures a strip quality in harness manufac-

turing unmatched by other handheld devices. The automatic diameter detection capability ensures high flexibility with minimal set-up time.

### **Advantages of the non-contact laser solution**

The result is a high-quality cut, with no risk of nicking or scratching the conductor or metallic shield. Even non-circular shielded twisted cables with very thin insulation ma-

terials – as found in the aerospace industry, for example – can be processed reliably without damaging the shield or inner cable insulation.

The non-contact laser solution appears to be the best industrial solution for cutting the jacket of shielded twisted wires as the process is extremely reliable and is not operator dependent. Contrary to mechanical or thermal solutions, it is no longer necessary to inspect the stripping results or the tool. Moreover, there is no wear and tear.

**Lightweight, ergonomical, easy to use**

The Sylade 7H is easy to use and ergonomically designed. The user interface is limited to the essential functions for programming and configuration. The operator selects the

cutting program and the stripping length, presses the trigger to open the wire maintaining jaws, then inserts the wire up to the stop. When the trigger is released, the wire diameter is measured and the rotation speed is computed automatically. The stripping cycle typically takes 1-3 seconds. The compact, lightweight cutting head can be operated with either hand. A ring attachment enables it to be hung and thus optimizes productivity.

**Economical laser stripping technology for various industrial applications**

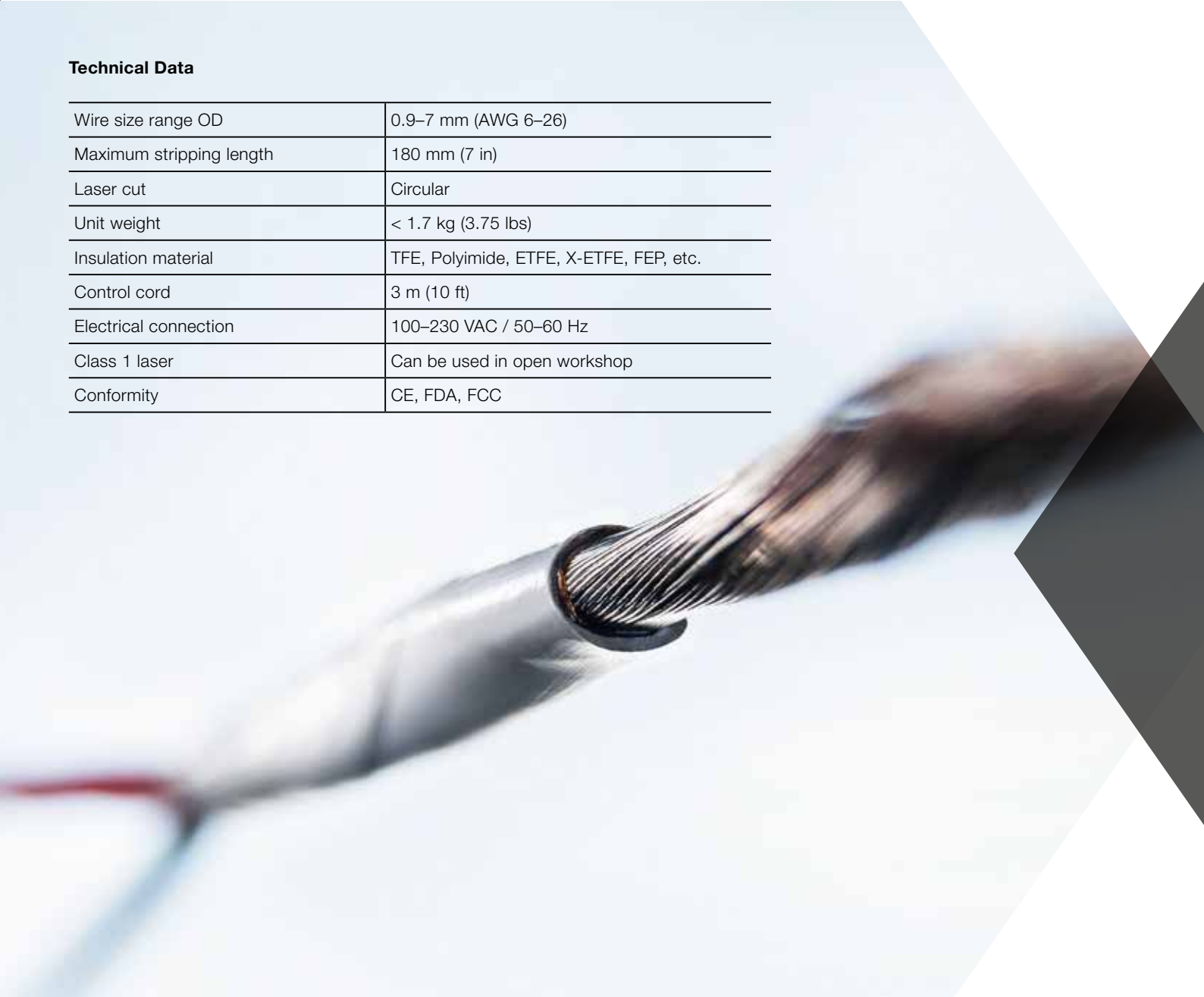
Low maintenance costs coupled with long-lasting, energy-efficient diodes lower production costs. No maintenance is required except for cleaning the device regularly. Process-generated fumes are removed

with a fan that launches automatically. The stripping blades are eliminated from the cable manufacturing process as a quality and injury hazard.

Compared to existing laser wire stripping technology, Sylade7H offers a more compact and affordable solution, making it very competitive and convenient for replacing traditional tools. Perfectly adapted to high-tech aerospace wires, the Sylade 7H also has great appeal in various industrial applications, such as automotive aluminum wires that require stripping with no damage to the fragile conductor stands.

**Technical Data**

Wire size range OD	0.9–7 mm (AWG 6–26)
Maximum stripping length	180 mm (7 in)
Laser cut	Circular
Unit weight	< 1.7 kg (3.75 lbs)
Insulation material	TFE, Polyimide, ETFE, X-ETFE, FEP, etc.
Control cord	3 m (10 ft)
Electrical connection	100–230 VAC / 50–60 Hz
Class 1 laser	Can be used in open workshop
Conformity	CE, FDA, FCC





AUTOMATED BLOCK LOADING OF WIRE HARNESSSES

## OUR RESPONSE TO MINIATURIZATION

Wire harnesses in the automotive industry are becoming increasingly more complex, which is why the demand for smaller components is on the rise. This miniaturization is making reliable controlled manual processing of wire harnesses more difficult. Wire harness manufacturers are particularly affected by this. Komax is assisting them align their processes and products to automation with its coaching and consulting services. We talked to Roland Liem, Product Manager, who is quoted below.

Modern cars have more and more cables but less and less space for them. This is one of the reasons why car manufacturers are using increasingly smaller components. On the other hand, this miniaturization makes it more difficult to insert the assembled wires into the correct chambers by hand. If a wire harness manufacturer wants to survive on the market in the future, it will have to deal with the automated production of wire harnesses today.

Automation brings other major advantages. First, it reduces personnel expenses. This is important at a time when qualified employees are becoming more and more scarce, driving salary costs up as a result. Second, it enables seamless traceability and thus documented quality. Third, it ultimately reduces disturbances prevalent in manual production, such as damage to terminals during goods handling, interim storage or improper manual insertion.

#### **Komax is an expert in automatic block loading**

For the past several years, we have been offering solutions for automatic block loading of wire harnesses, solutions that we are constantly optimizing, as we will again be demonstrating at this year's Productronica in Munich. Parallel to this, we advise not only the buyers of our machines but also component manufacturers on how they should design their products so that they are suitable for automatic block loading.

European car manufacturers have recognized the advantages and the potential of automatic block loading, and we are convinced that automation is now rapidly becoming the global standard.

#### **Wire harness design is crucial**

The decision is made whether a wire harness can be assembled fully automatically during the design and specification stage. "It is therefore important that the customer consults with us from the very beginning. In only very few cases is it possible to automatically manufacture hand-made wire harnesses without making changes to it." What usually has to



**If we receive the 3D CAD data from the component manufacturer, we can point out visible weak points and suggest modifications at an early stage of development. Product Manager Roland Liem (left) together with Team Leader Application Engineering Beat Estermann**



**During practical block loading tests on our machines, we install the housing to be tested on an individually manufactured pallet and equip it with the material provided. Product Manager Roland Liem (left) together with Application Engineer Manuel Schmidt.**

be adapted? "First of all, it has to do with the complexity of wire harnesses. In many cases, it is worthwhile, for example, to partition plugs and reduce the variety of terminals."

Thanks to our support, we give component manufacturers the opportunity to strengthen their market position by providing housings, terminals and seals that meet the requirements of automatic block loading. Where are the starting points here? "In automatic block loading, the terminal parts are inserted into the housing at a speed of up to 1.5 m/s. The smallest protruding edge or transition that is not chamfered can cause wires to buckle here and therefore impede process-reliable manufacturing. This is why it is important, for example, to chamfer chamber entrances and transitions, improve accessibility and optimize chamber design."

#### **Support for component development**

How should component manufacturers proceed so that their products are suitable for automatic block loading right from the start?

"Komax supports them in the entire development process to create automation-suitable components. Ideally, they send us the 3D CAD data, which allows us at an early stage of development to point out visible weak points and suggest modifications. Our services also include a reassessment of the modifications made by the customer."

If 3D CAD data is not available, we evaluate the machine block loading on the basis of sample parts. To accomplish this, we need enough parts from all system components. "First, we evaluate them manually to make sure that the terminal can be guided to the end of the chamber without jamming up."

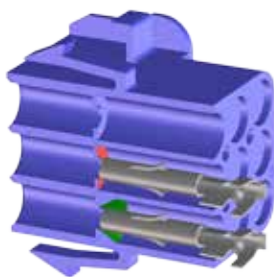
If it is not possible to make a clear statement with 3D CAD data or manual tests, we offer hands-on block loading tests on our machines. "We install the housing to be tested on an individually manufactured pallet, equip it with the material provided and then carry out trial tests. The customer can be present for this if desired."

#### **New challenges make their way into our product development**

And what happens if there are compelling reasons to leave a wire harness or plug in its original condition? "Then our expertise as an innovation leader is challenged. We almost always find a way to align our machines to very specific needs, to make the best out of set conditions or at the very least find a workable compromise. It is precisely this interaction with our customers and their needs that helps us continuously develop and optimize our solutions."

Full automation in the block loading process is just one example of how we are automating more and more stages in the entire value creation chain, today and in the future. This not only increases productivity, but also has a direct impact on more consistently high quality, since it eliminates errors and shortcomings during operation.

## Examples of optimization



### Adjust/optimize housing design

Tapered ends on all transitions of the housing prevent jamming of the terminal when inserted. This is a basic adjustment for automation, but also has a positive impact on manual block loading.



### Dividing wire harnesses

A greater level of automation can be achieved by dividing a wire harness into sub-wire harnesses. One approach, for example, is to use housings with submodules that can be plugged together manually.



## OMEGA 740 AND 750

# PERFECTLY AUTOMATED WIRE HARNESS MANUFACTURING



At this year's Productronica in Munich, we will present two new machines for wire harness manufacturing with loading of housings: Omega 740 and Omega 750. One machine assembles the wires and inserts the terminals into the corresponding housings. This eliminates manual steps, interim storage and transport, which in turn increases productivity. Both models feature a 40% larger pallet to accommodate many different terminal housings. At the same time and in a single process step, they process wire harnesses in a wide variety of configurations, which considerably increases flexibility. Loading and unloading of the pallets is synchronized with the block loading process, while another wire harness is produced on a second pallet with the new rapid hybrid gripper. The originally defined settings can be called up again for follow-up orders, which saves time and eliminates input errors.



KOMAX CORPORATE INDUSTRIAL DESIGN

## EVERYTHING HAS TO COME TOGETHER IN THE DESIGN

The Mira 230 wire stripper won the Red Dot Award this July. This award is given to products that combine exceptional design with the best in performance. The Red Dot Award has been a seal of quality in product design since its establishment in 1954 – reason enough to reflect on the importance of industrial design and report on the collaboration with our partner Vetica. We spoke about this with Tobias Nüesch, head of the Vetica design team.





**reddot award 2017**  
winner

In 2014, Komax invited five design agencies to participate in a competition that ultimately was won by Vetica. How did it go? "To participate, we first had to thoroughly inform and familiarize ourselves with the project. This included examining Komax's strategy, its entire range of products and the designs of its competitors. Industrial design is not just a fusion of aesthetics, function and manufacture. It includes simply everything. We had to approach this thoughtfully, try out and get a feel for the company, its services and its role in the market. Our vision grew out of this in the form of pictures and sketches."



**Based on a briefing, we first develop two-dimensional proposals and then an initial model.**

Established in 1998 and with its headquarters in Lucerne, Vetica is an international brand and design agency. Its services include branding, corporate design, corporate imagery, product design, packaging design, interaction design, service design and prototyping. Tobias Nüesch's team designs not only machines, but also, for example, insulin pumps, diagnostic devices for the medical sector and ceramic products for sanitation facilities.



**Tobias Nüesch, Design Director**

### Practical requirements as the basis of the design process

What is a typical design process like? "Step by step from a general outline to the finest details. For example, we want to know from the customer what the product must be able to do, how, where and by whom it will be used, and what the customer's requirements are regarding maintenance and service. This typically happens in a question-answer process. With Komax, the result of this was that we first created two-dimensional proposals for the Mira 230 and then an initial model without aesthetic requirements. From this point, we at least know approximately how large the product will be, where the connections will come from, how it can be maintained and how large a display could be."

The first phase also includes optimizing the ergonomics and aesthetics. The customer receives a selection of several design variants, some of which are classic, others more visionary.

### Jog dial and wire gate: as attractive as they are practical

Were there any particular challenges with the Mira 230? "Manufacturing costs are an issue in all our projects from the very beginning, and we adhere to the budget. But we also have the opportunity to question what was originally planned, if it makes sense." Do you have any examples of this? "At first, only keys were specified, but we came to the conclusion together with Komax that a jog dial would be more suitable. Widely used in the automotive industry, this is a wheel that can be rotated with the finger, making it easier to adjust the settings in the millimeter range. The graphical user interface that we designed also helps optimize the user experience."

Exemplary with the Mira 230 is the red "wire gate", which serves as both impact protection and as a branding symbol for entering the Komax wire processing world. The machines are made quieter thanks to closed

surfaces. The dark volumes are for processing, while the light volumes are for wire handling. The soft material is also perfect for bridging tolerances and gaps between the front side and the cover, as is always the case in practice.

### Detailed work together with the parts manufacturers

Once you know by and large what the product looks like, the detailed work can begin. For example, how can the number of screws be reduced in order that the housing can be removed as quickly as possible for maintenance? At the latest, this is when you also come into direct contact with the parts manufacturers; their expertise contributes to optimizing design details and processes. "This is also where our cross-industry experience is applied. We found solutions for Komax that had proven themselves in the medical industry, for example."



The red "Wire Gate" shows the holistic design of the Mira 230. On the one hand it serves as impact protection, on the other hand it is a design element that symbolizes the entry into the Komax wire processing world.

In the case of the Mira 230, it took some five to six months to get design approval, at which point Vetica's work was largely complete. "Implementation is done by the customer and modifications are no longer visible. If necessary, we are still available to the engineers for advice."

### Respect for each other's expertise

How did the collaboration between Vetica and Komax work in practice? "It all began in 2015 with a workshop at Komax. The 20 participants had to evaluate brands and assign values, for example. This was very helpful for the further collaboration. Komax recognized the importance of design in the success of its products, and this formed a strong foundation for our teamwork. Komax's engineers and designers respect our ideas and try to carry them out wherever possible. On the other hand, we adhere strictly to the customer's specifications as they know best how the product has to work. We had almost weekly contact with Komax and the collaboration was excellent."

Design is teamwork. "It is very important for several opinions to feed into a solution. The core team at Vetica consists of two members: one is in charge of the project, the other is constantly involved and also plays the role of a sparring partner. However, our designs are internally accessible to everyone, so we have a lot of professional input. The teamwork between the customer and us should start early on, as soon as they know more or less what they want. In this example, we want a wire stripper that sets itself apart from the competition in terms of function, ergonomics and design. If the first briefing is incomplete, we assist the customer in questioning the idea and making it concrete."

### Inspiring to use, clean and maintain

Above all, should a designed product look better? "Sometimes customers simply want us to upgrade an existing product visually. Fortunately, this is rarely the case but we understand it. A holistic design like the Mira 230 is successful only when everything

comes together, when it inspires the manager and those who work with it, equip it, clean and maintain it. This also played a decisive factor in winning the award, I'm convinced of that."

Is this award as important to Vetica as it is to Komax? "The Red Dot Award is a globally recognized seal of quality in product design. For this year's award, the international specialist jury of top-class experts received submissions from 54 countries. These were then individually evaluated over several days, with assessments made based on the criteria of degree of innovation, aesthetic quality, functionality, formal quality, environmental sustainability, ergonomics, durability, symbolic and emotional significance, peripheral equipment and self-explanatory nature. The Red Dot is as important to Vetica as it is to Komax because it communicates quality and makes a statement on the market. It's the first design award in the history of Komax."

**It's very important that several opinions feed into a solution, so design is teamwork.**



MIRA 340 SUCCESS STORY

## **“THE MIRA 340 ENABLED US TO GAIN NEW CONTRACTS AND DOUBLE THE OUTPUT OF CERTAIN WIRES”**

Launched in 2017, the Mira 340 wire stripper quickly became a customer favorite. Our partner AME Systems (Vic) Pty Ltd in Ararat, Victoria, Australia, reports on its experience and satisfaction with the new wire stripper.

Processing of a large span of leads and demanding insulation: “In the railway sector, we frequently process wires with rigid, hard RADOX insulation that is normally extremely difficult to strip.”

Since 1984, AME Systems has gradually bought two Zeta, two Alpha and eight Kappa machines from Komax. AME Systems specializes in customer-specific wire harness and commercial and special vehicles, agricultural machinery, railways and medical technology products. It offers an impressive range of services, from product development, testing, purchasing, production and delivery to turnkey solutions. Its biggest customer is Kenworth Trucks. The latest Kenworth truck features many in-house developments from AME Systems with new materials and processes in order to lower production costs. The result is a better end product at a competitive price.

**The challenge: thousands of articles with small unit quantities**

AME Systems ordered its first Mira 340 this spring and quickly followed it up with a second one. So we are curious to hear from Nick Carthew and his colleagues Laura White and Dean Pinniger on how the Mira 340 performed in practice.

Nick Carthew, Managing Director, talks about his biggest challenge in the field of wire processing. "We have a huge variety of wire harnesses (articles) that we have to produce each day with very short turnaround times. It's a complex, small volume market. In specific terms, it's roughly 3,000 different article numbers with cross-sections ranging from 0.3 to 120 mm<sup>2</sup>. We process these daily for about 200 different customers for applications in the medical, defense and truck sectors, where the demands in terms of precision, quality, durability and efficiency are extremely high. Our customers' requirements have never been more demanding. Crimp connections are of the utmost importance. And the wires must remain intact during stripping."



**Nick Carthew**



**Laura White**



**Dean Pinniger**

AME Systems searched for suitable machines at international trade fairs for some time. The solution came into focus when Laura White attended Productronica in Shanghai in March. "I had a few wire samples for a new job on hand. Compared with other machines, the Mira 340 proved to be by far the best solution for our requirements. It's very high quality, user-friendly and very good value for money. I recognized immediately that with this development, Komax had listened carefully to the customers."

#### **Shorter training period, fewer challenges for the user**

Dean Pinniger, Operations Manager at AME Systems, is particularly delighted with the user-friendliness that results from the step-by-step programming: "Many manual work steps can be avoided. Before we had the Mira 340, we worked a lot with manual cutters and Stanley knives. That resulted in a lot of frustration and even some minor injuries. The training time needed now is correspondingly short."

## » THE BEST SOLUTION FOR FLEXIBLE MANUFACTURING THAT WE COULD FIND WORLDWIDE «

"We soon realized that the Mira 340 would ensure consistent, reproducible processing of complex, multi-layer insulation types," adds Nick Carthew. "This enables us to dispense with time-consuming, non-reproducible manual processes. The Mira stripped the wires with such high quality and so efficiently that we soon ordered a second machine."

#### **Ideal for difficult-to-process wires**

For what type of jobs is the Mira 340 particularly well suited? "In the railway sector, we frequently process wires with rigid, hard RADOX insulation that is normally extremely difficult to strip," says Laura White. "We have also had good results with large and varying cross-sections with standard wires and multi-conductor cables."

She is impressed by the absolutely consistent quality thanks to the configurable process parameters. "We have practically no rejects compared with manual processing. If we receive an order with the same wire type, we simply call up the program and it works perfectly. So there is no longer any deviation between one operator and another. It's just as if you write a story and can call it up exactly as you wrote it at any time afterwards." Does that mean that even a less experienced person can operate the Mira 340? "Absolutely. It requires less monitoring because it works with established settings that can be called up simply via the name of the wire type or job."

Laura White also regards the sequential processing as advantageous. The operator can program multiple processing steps that need to be carried out one after the other. "When processing multi-conductor cables, it is particularly practical to see the color of the inner conductor shown in the display. This way, the operator can easily ensure the steps take place in the correct order."

Employees at AME Systems do not yet use the barcode scanner, says Dean Pinniger. "But we're certain that in future, we will be able to improve quality yet further and work even more efficiently with this function."

#### **Higher productivity thanks to the Mira 340**

Nick Carthew is certain that the Mira 340 has already paid off for AME Systems from a business perspective. "The Mira 340 reduces the amount of work involved since additional processes are omitted. For certain wire types, we have been able to double the output. With others, we have had minimal rejects compared with manual processing – above all, because the wires are not damaged during the stripping process. Thanks to the low reject numbers, we have also been able to reduce staffing for sorting the rejects. With the Mira 340, we have gained new contracts, particularly for rail vehicles. We have not found any other machine that so effectively processes the insulation of the sophisticated wires used in that field."





**Suba Engineering Pty Ltd:  
Working with Komax since 1983**

Suba Engineering Pty Ltd, with offices in Sydney and Melbourne, has represented Komax in Australia since 1983. Suba Engineering offers production solutions in the fields of electronics and wire processing. Its product range encompasses the best and most suitable product ranges for the Australasian market from around the world. With about 30 years of experience, Suba helps its customers reduce manufacturing costs, improve quality and increase output. And 80% of sales are generated through repeat business, which speaks for the quality of Suba's services.

Managing Director Heinz Zimmermann appreciates the partnership with Komax. "Fully automated solutions for wire processing applications have been a real strength of ours to date. Thanks to the Mira 340, we are also top in the semi-automated segment, which is very important for our relatively small market. That enables us to offer our customers competitively priced, automated products manufactured here, as an alternative to manually made ones from abroad. Thanks to the automation technology from Komax, it can survive in this small market and even export its solutions. Komax has clearly recognized this and focuses on fostering excellent relations with its customers."

"We would like to thank Komax for this friendly collaboration, which started with a handshake with Max Koch, and the outstanding support in the marketing and support areas. That motivates us to continue to give our very best."



**Heinz Zimmermann**



Komax represents the strong Swiss automotive supplier industry in the newest part of "Switzerland, country of cars".

KOMAX IN THE SWISS MUSEUM OF TRANSPORT

## “THIS COLLABORATION IS A STROKE OF LUCK”

**A modified Gamma 263 S fully automatic wire processing machine from Komax has been on display at the Swiss Museum of Transport since this spring, producing wristbands for visitors at the touch of a button. It symbolizes the importance of the Swiss automotive supplier industry, which our company has been allowed to represent to a large audience.**

The fully automatic wire processing machine has been in operation for the past few months, reason enough for us to visit the Swiss Museum of Transport in Lucerne on a mild early autumn day. We want to know in particular how it is integrated into the exhibition and whether it has attracted the interest – or even fascination – of visitors. We should point out that our experience on this journey was highly positive.

So just what is the Swiss Museum of Transport? Some of our esteemed readers from abroad are no doubt asking themselves this question. With 536,431 visitors last year, it is by far the most visited museum in Switzerland. Spread out over 22,500 m<sup>2</sup> of space – at a most stunning location directly on Lake Lucerne – it exhibits large collections of locomotives, cars, ships and aircraft. In other words, an attractive destination for families

and tourists alike. It is not just about looking at the exhibits here, you can also touch them and experience them interactively.

Our destination is the Road Transport Hall, which you can recognize from a distance thanks to the 344 signposts from all over the country that decorate the façade. A lot has changed here lately. The newest exhibition is "Switzerland, country of cars", which opened on April 12 this year. Using original vehicles, it tells of the milestones of the Swiss automotive industry.

### Switzerland's proud history with cars

It is true that we once produced cars in Switzerland. A pioneer was Isaac de Rivaz with the first internal combustion engine, or rather his test vehicle from 1813 – a predecessor to automobility. After the motor vehicle was patented, up to 40 car brands emerged at the beginning of the 20th century. One of the most important of these was Martini, which was founded in 1897 in Frauenfeld; a factory was opened in 1903 in Saint-Blaise in canton Neuchâtel. In 1934, this robust and expensive brand came to an end, mainly due to the global economic crisis and cheaper competition from abroad.

But then came Peter Monteverdi. In 1967, he founded Automobile Monteverdi AG in Binningen, which produced "Made in Switzerland" vehicles until 1982. In addition to sketches and prototypes, some 3,500 vehicles were produced: racing cars, beautiful sports cars, legendary touring cars and unconventional off-road vehicles for affluent customers from all over the world.

The company was of national and international importance and remains an integral part of Switzerland's industrial heritage. No Swiss manufacturer has followed in these footsteps to this day, which explains why Monteverdi occupies such a prominent place in the Road Transport Hall.



The Road Transport Hall can be recognized from a distance thanks to the 344 signposts from all over the country that decorate the façade.



The curator Dr. phil. This Oberhäsli presents a beautiful Martini from 1924. Ten years later, this robust and expensive brand came to an end, mainly due to the global economic crisis and cheaper competition from abroad.



In 1967 Peter Monteverdi founded his company in Binningen, which produced "Made in Switzerland" vehicles until 1982. This brand is of national and international importance and an integral part of Switzerland's industrial heritage, which explains why Monteverdi occupies such a prominent place in the Road Transport Hall.

And today? Never before has Switzerland's role been so important for the global automotive industry. Not as a manufacturer of entire vehicles, but as a supplier. Figures from a sector analysis conducted by the Swiss Federal Institute of Technology in Zurich in 2013 showed that the 315 companies relevant for the study, with 24,000 employees, generated sales of about CHF 9 billion. Engine, transmission and powertrain components dominate with a share of 56%. But coming in second place with 37% of the market were manufacturers of machinery and tools, which includes Komax.

### From the origins to the future

Komax represents the Swiss automotive supplier industry by showcasing a modified Gamma 263 S in "Switzerland, country of cars". This version produces cable wristbands, and visitors can choose between a simple, double or triple design using a touchscreen. The machine then installs a pin and plug-in housing at the end of each cable to close the wristband. In addition to the machine, a BMW 7 Series can currently be admired, together with half of its wire harness, to show visitors in an impressive manner just how complex electrical systems are these days.

How did the Swiss Museum of Transport end up partnering Komax? We asked Dr. This Oberhänsli, curator of collections and exhibitions for the past 22 years, whose passion for transport is evident at first sight. "This collaboration is a stroke of luck for us. With the exhibition 'Switzerland, country of cars', we want to take visitors from the origins to the future. We have attractive exhibits for the origins, but for the present and future we were looking for something that shows where Switzerland is strong today. We are very pleased to be able to present a globally recognized innovation leader based in our neighborhood. At the last station in our exhibition, we highlight one of its ingenious machines, which visitors can watch at work and which at the touch of the button will produce wristbands of different lengths that they can take home with them. This impresses young people too, since they realize that the automotive supplier industry has jobs with a future."

### Fascinating attraction

Komax not only provides the Swiss Museum of Transport with the fully automatic wire processing machine, but also takes care of its maintenance. "This is going very well, as is the entire collaboration with the planning



team. It's very important that the machine functions flawlessly, as it symbolizes not only innovative strength but above all Swiss reliability." Participation in this small and distinguished show will go further, by the way. Komax is currently producing a film that presents the importance of wiring in modern cars. "I have high hopes here. And perhaps one day we will be able to inscribe people's names on the wristbands using a laser. This would not only increase the personal connection to Komax and the technology, but would also considerably extend the 'lifetime' of the Komax wristband."

It was a real pleasure to watch the Komax machine in action. During our visit, we saw children and tourists from all over the world try to figure out first what the machine does, then summon the courage to use the touchscreen and finally watch in amazement as the machine quickly goes to work before the finished wristband lands in the catch tray after just a few seconds.

Komax's involvement with the Swiss Museum of Transport is thoroughly gratifying. The best way to express this is in the words of Komax CEO Matijas Meyer at his opening speech in April of this year: "As someone from central Switzerland, I am especially pleased that we are able to occupy a place in the famous Swiss Museum of Transport as a supplier to the automotive industry. Instead of sitting in the back seat, which the public often doesn't see, we now find ourselves in pole position. But what makes me particularly happy is that we're not just showing something historical at the Swiss Museum of Transport, but we can in fact contribute to a topic that is important for the future."

**Tourists are also interested in our fully automatic machine and marvel at the wristbands produced within seconds.**



**As the world's first "museum on demand", the Swiss Museum of Transport has a parking elevator: at the touch of a button, it presents each of the more than 80 vehicles from 150 years of mobility history to visitors in an exciting exhibition on a turntable.**



**The Swiss Museum of Transport in Lucerne is a popular destination for families and tourists alike.**

**40**  
**YEARS**  
**CUTTING**  
**EDGE**



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