

THE WAY TO MAKE IT

komax Q1210



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COMPREHENSIVE SOLUTIONS FROM A SINGLE SOURCE

TSK, SLE and MCM expand the range



Matthias Schulthess, Head of Marketing
Marc Schürmann, Head of Sales

Our aspiration is to give you professional assistance in all areas of wire processing. That is why we constantly expand our areas of competence and our range of standard machines and customer-specific solutions, accessories and services. In doing so, we rely on innovative advances of our own as well as solutions from partner companies that recently became affiliated with Komax Wire. For this reason, we are especially proud to be able to provide you with the products of Komax Wire, SLE Quality Engineering, TSK and MCM Cosmic from a single source in the future. We warmly invite you to become better acquainted with our new partner companies in this magazine and to find out the opportunities being offered to you. <

Komax gives you professional assistance in all areas of wire processing. That is why we constantly expand our areas of competence and our range of standard machines and customer-specific solutions, accessories and services.

KOMAX WIRE – YOUR CONTACT PARTNER FOR MEETING ALL WIRE PROCESSING REQUIREMENTS

With total solutions from a single source to increase efficiency and reliability



We at Komax Wire aspire to provide our customers with comprehensive, efficient and reliable solutions for automating their processes. We rely on in-house advances while also acquiring expertise from established partners. This approach has enabled us to expand our areas of competence greatly with recent acquisitions and partnerships.

SLE Quality Engineering and MCM Cosmic have a proven track record in the development of solutions for processing shielded conductors and coaxial cables. As a result, Komax Wire has been able to expand its expertise in the processing of cables for high-frequency data transmission in cars. The TSK Group is a pioneer and leader in the testing of wire harnesses.

Thanks to our global distribution and service structures, you can purchase the products of these companies through your central contact person at Komax Wire – everything from a single source. That means these applications will soon be available to you worldwide. In addition, you benefit globally from our expert advice and the customer-oriented service culture of Komax Wire employees.

“We constantly expand our range to simplify your processes and generate measurable customer benefits.”



Matijas Meyer,
Head of Business Unit Wire

Total solutions for reliability and profitability of processes

In the medium term, we will also be able to offer even more advantages that will definitely go far beyond the simple expansion of our range of individual systems. If need be, we can already skillfully combine different processes and technologies today to provide you with first-class products, solutions and systems for the efficient automation of your operating value chain that are perfectly attuned to each other. The acquired areas of expertise will enable us in the future to deliver solutions that are even more complete and further reduce the number of interfaces in your processing chain. In doing so, we increase the reliability of your processes and can cut the shortfall quantities and throughput times substantially.

Komax Wire will continue along this path of expansion so it can keep helping you increase the reliability and profitability of your processes in the future. We have an exciting future ahead of us and look forward to teaming up with you to discover it and successfully shape it. <

Your advantages

- **Worldwide distribution and service organization for ensuring availability and short delivery periods for products and spare parts**
- **Complete solutions from a single source**
- **Process simplification thanks to a reduction in interfaces**
- **Shorter throughput times**

TSK PRÜFSYSTEME GMBH – LEADER IN TEST SYSTEMS

**With its test systems for wire harnesses and assemblies,
TSK is a potent partner for the automotive supply industry**



- 01 Headquarters of TSK Prüfsysteme GmbH in Porta Westfalica, Germany**
- 02 MS300 adaptation system**
- 03 CT30ix cable tester**
- 04 TS1700 wire harness test system**



TSK Prüfsysteme GmbH has about 400 employees working at 15 production and service locations worldwide. With their close proximity to customers, this organization ensures fast and good solutions tailored to any problems in cable processing that arise for automotive suppliers.

Top world player in its sector thanks to commitment and innovations

TSK has its roots in harness testing. Company founder Helmuth Kahl began working on the ambitious goal back in 1983 to reduce the costs of automotive manufacturing and dramatically improve reliability in the manufacturing of electrical connection equipment. In 1983, he formed the company Test Systeme Kahl, or TSK for short, and developed a technology for testing the quality control of wire harnesses. Even in its first year of business, the company was able to deliver its first harness test system for the car industry. Several years later, TSK developed the first software for PC-based cable testers, thereby revolutionizing the market. Several software development generations later, the CS WIN nx test software available today is considered the leading solution

**“As the deciding partner,
TSK is able to give the world's
leading car makers the
reassuring feeling that only
properly functioning modules
are installed in their vehicles.”**



Raimund Gundlach,
TSK Prüfsysteme GmbH

in the market. With innovation and pioneering spirit, TSK has repeatedly blazed new trails for quality control applications.

Efficiency in quality control

The innovative solutions for wire harness testing, functional test systems, adaptation techniques and TSK tester technology with high-powered CS WIN nx software ensure the highest quality standards. TSK products facilitate functional checks in complex assemblies and help to detect errors in the production process as early as possible.

TSK did much to shape the world market for cable testing systems

TSK adaptation systems became a trademark of the company. TSK defined essential standards of quality control in wire processing and continues to do so today. Numerous product advances and patents attest to its pioneering accomplishments. TSK can call itself the founder of this entire market with good conscience. <

Product groups at TSK

Adaptation Systems | Test Systems | Cable Testers
Test Software | Wireless Test Systems
Function Test Systems | Visual Test Systems
Accessories | Services

Your advantages

- 30 years of experience
- Recognized experts for cable testing systems and functional testing systems
- Broad product range
- The right solution for every application
- Short delivery times
- Global manufacturing at six production locations
- Proximity to customers thanks to worldwide service organization

SLE – HIGH LEVEL OF TECHNICAL COMPETENCE IN QUALITY CONTROL SYSTEMS

SLE quality engineering GmbH is a leader in quality control systems for the production of plug-in contacts and cable harnesses



Perfect combination of expertise and design in micrograph laboratory technology:

01 the portable SL SBL micro 4

micrograph laboratory

02 and the fully automatic SL SBL

automatic S micrograph laboratory



In 1992, the graduate engineer Josef Liebl founded SLE Electronic GmbH in Grafenau, Germany. In a matter of years, SLE had developed into one of the world's leading suppliers of quality control systems for the production of plug-in contacts and cable harnesses.

Plug-in and crimp connections unite important quality characteristics in cable harnesses and cable assemblies. SLE offers varied, competent and innovative solutions to help achieve high quality goals. SLE systems are used for the retrofitting of existing systems and integration with new, innovative products of renowned machine manufacturers. Besides the development and production of high-tech products, SLE provides comprehensive services in machinery installation and servicing.

Awareness of quality and the environment

The quality and environmental policy of SLE embodies the idea that holistic quality can only be achieved in combination with environmental protection. That is why SLE operates an effective management system according to ISO 9001 and ISO 14001. Since its founding in 1992, SLE has

"Global success requires strong connections. In Komax, we have a partner who can help us build further on our years of expertise and our competence."



Josef Liebl,
Founder and managing director
of SLE quality engineering GmbH

invested 10 million euros in the facility in Grafenau, Germany, and 12 million euros in research and development.

Strong partners

As part of its growth strategy, SLE transferred its crimping business to an independent subsidiary in early 2011. In addition, Komax acquired a stake in SLE quality engineering GmbH & Co. KG. Since the start of 2012, SLE quality engineering GmbH & Co. KG has produced its high quality crimp force monitoring systems, measuring and testing systems, micrograph laboratories, crimping presses and machines for the reliable processing of shielded conductors and coaxial cables in a new 1,500-m² building.

Highly qualified and motivated employees

The work force of about 170 employees is a big plus for the corporate group. They are highly qualified in their given areas of specialization and receive continuing training in ongoing training units. A corporate culture relying on teamwork and lean management should help the SLE employees feel like they are part of the steadily growing SLE family. They show their gratitude with their high level of enthusiasm and commitment.

Worldwide network

Business relations in Europe, the US and Asia plus the regional involvement of suppliers are what have made SLE competitive and quick to respond on the international market. <

Your advantages

- Innovative systems and plants
- Quick response times
- High degree of flexibility
- Competently trained workers
- Global service network
- Years of experience in quality control

MCM COSMIC SOON TO BE KOMAX JAPAN

Forging a common future step by step

MCM Cosmic has been part of the Komax Group since June 2012. MCM Cosmic was founded in Tokyo in 1992 and specializes in bench-top strippers and customer-specific solutions. It belongs to the Business Unit Wire within the Komax Group. By taking over this company, Komax Wire expanded the product lineup and rounded out the range. With the products of MCM Cosmic, it is possible to process coaxial cables as well as the widest variety of strand involving difficult-to-process insulation materials. Komax has also gained access to new customer segments.

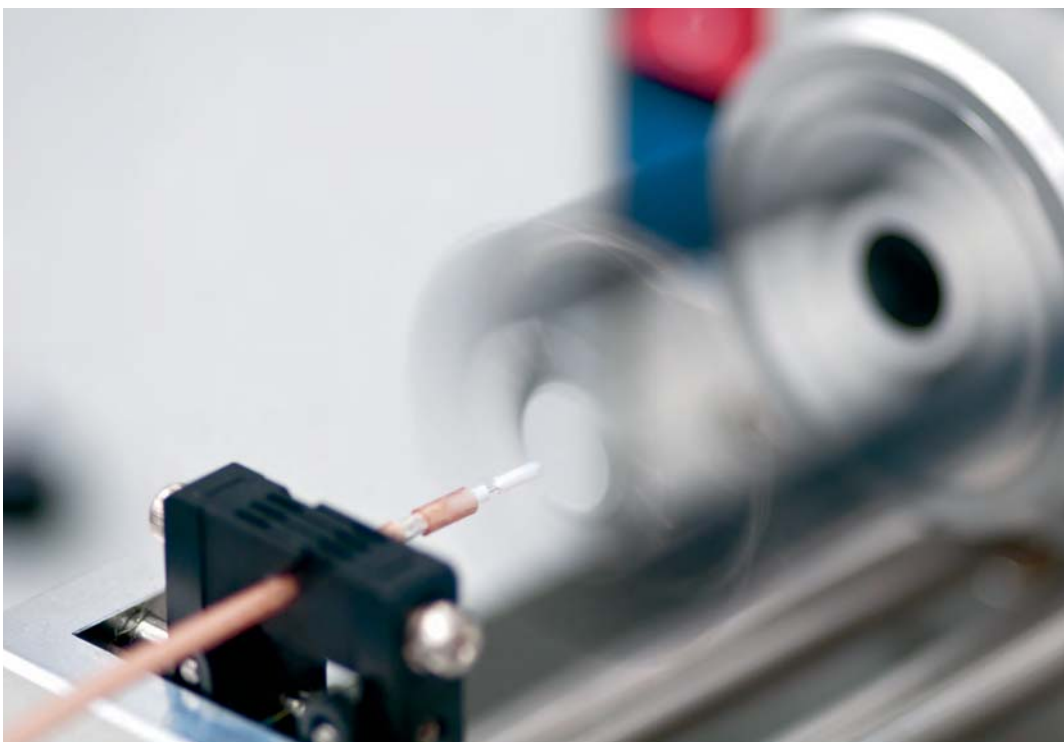
At the beginning of November, MCM Cosmic will become Komax Japan. With this step, Komax underscores its long-standing commitment to the segment of bench-top solutions. Further innovative products and solutions can therefore be expected in the future in this area.

In early 2014, the European market will begin being served directly from Switzerland. The goal we are currently pursuing is to be more proactive in covering the market. That means increasing the availability of equipment and spare parts while reducing repair times and running a hotline for providing technical support. Product information is available in German and English on the Komax homepage. Together with our distribution partners, we are also striving to improve our range continuously and provide you with the best possible service. <

"We are continuing to do our utmost to develop appealing products."



Stefan Tschofen,
Director Business Development



Multi-layer stripping of coaxial cables with Cosmic 48R

Your advantages

- **Faster deliveries and reduced transportation costs**
- **Technical support, hotline in German or English**
- **Availability of demonstration devices**
- **Product information in German or English**

Q1210 PULL-OUT FORCE MEASUREMENT DEVICE

Precision measurement device for the fully automatic measurement of pull-out forces for crimp connections



You can integrate the new Q1210 pull-out force measurement device seamlessly into the production process thanks to full support from the TopWin machine software

In the course of product management and further product development, Komax is introducing the new Q1210 pull-out force measurement device as the successor of the Komax 331. The Q1210 has greatly increased the stability of the pull-out movement as well as precision and resolution across the entire measurement range, thus enabling an excellent reproducibility of the measurements to be achieved. The device is also solidly and durably constructed to withstand the demanding conditions in industrial settings.

The Q1210 is operated just the same as the predecessor model. The TopWin machine software guides the operator step by step through the work process. The crimp height and pull-out force measurements are carried out in such a way as to minimize rejects. Production is not released until the requisite target value is attained.



The TopWin machine software guides the user through the work process step by step

Test unit as accessory

You can determine the accuracy of the device with the Q1210 test unit, which is available as an option. The test procedure is quick and easy to carry out. Ten measured values are typically recorded across the entire measurement range and automatically compared with the values of the test unit (reference sensor). A log is produced at the end of the procedure. <

“The measurement of pull-out force for a contact crimped on a cable is still highly significant for assessing the quality of the crimping process. This method may be somewhat archaic but it does allow us to check quickly and easily whether the machine is correctly equipped and set up.”



Mirko Bulinsky,
Product Manager

Your advantages

- Improved quality because correct machine setup is assured
- Reproducible measurements thanks to high resolution and accuracy
- High availability due to sturdy construction
- Safe operation with sensor-controlled clamping protective function
- Ultra-easy operation, ergonomic handling for left-handed/right-handed users

NETWORKING OF BENCH-TOP PRESSES

With MIKO (Manufacturing Interface Komax), you can integrate bench-top presses seamlessly into the production planning system

With the WPCS (Wire Processing Communication Standard) data interface, you can integrate Komax fully automatic crimping machines seamlessly into the production planning system. This same type of integration is now also available for Komax bt 712, 722 and 752 bench-top presses. The data interface used for bench top presses is the MIKO (Manufacturing Interface Komax). It has been newly developed from scratch.

“Divide and conquer”

The dividing line between machine software (TopWin or TopTouch) and MES (Manufacturing Execution System) is drawn among systems in such a way that each level can focus clearly on the tasks it is given.

With MIKO, you can have your machine completely under control and integrate it into any customer-specific production streams.

ERP

- CRM: Customer Relationship Management
- Financial accounting
- Customer order management
- Personal management
- Stock management

– Material (warehouse) management

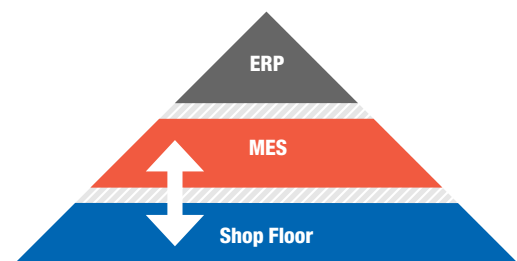
- Label printing, material verification (barcode scanning)
- OEE analysis
- Shift calendar, operator management

Production logistics, quality control

- Quality data management
- Production statistics, production data archiving
- Job distribution
- Master data management, technology data management

Machine control system

- Ergonomic operation
- Quality monitoring
- Tuning, machine settings
- Service
- Safety and security



MIKO (Manufacturing Interface Komax) is the name of the new data interface for bench-top machines. With MIKO, you can integrate bench-top machines seamlessly into the production process, thereby greatly improving product quality and production efficiency

Network structure and architecture

A customer-specific individual PDA terminal (Production Data Acquisition) is typically utilized at a manual workstation. This terminal can then be employed to handle any tasks related to production logistics, something that would not be possible otherwise due to the small machine operating displays on the bt presses. The “last mile” has now been covered by MIKO, freeing up operators from having to manually enter job data any more. Now electronic inquiries can be made about the machine state and any applicable production data at any time without manual help. <

“The effective networking of machinery is among the most important investments for ensuring top quality and maximum performance in cable cutting operations.”



Mirko Bulinsky,
Product Manager

Your advantages

- You avoid incorrect entries thanks to the transmission of data on parts, articles and jobs
- Quality improves because process parameters and technology data are now transmitted
- Production and quality control are traceable
- You comply with the stipulated process with respect to production logistics

WITH ETHERNET AND BroadR-Reach® INTO THE NETWORKED FUTURE OF AUTOMOBILES

Jointly committed to innovation

Motivation for BroadR-Reach

The main driving factors for the use of Ethernet in vehicles right now are camera-based driver assistance systems. The shielded cables normally used ensure electromagnetic compatibility but are too expensive in light of the situation in the industry. BroadR-Reach makes available an alternative 100 Mbit/s Ethernet technology that dispenses with extra shielding/jacketing and provides for an unshielded twisted pair (UTP) as a data conductor.

Besides ensuring suitable bandwidth for the transmission of larger data quantities and improved handling of electromagnetic interference (EMC), the BroadR-Reach technology also has an advantage in terms of cost.

Today, BroadR-Reach is already considered a suitable and economical cabling technology for future motor vehicles and viewed as the de facto standard for 100 Mbit/s. It can therefore be assumed that increasing numbers of expensive and complex conductors will be replaced with unshielded twisted pair conductors in the future.

Addressing new requirements

Given the trend toward BroadR-Reach and the higher transmission rates in the conductors, special effort must be put into reducing electromagnetic interference (EMC) and nearly every OEM has concrete requirements to be met for its UTP conductors. Precise dimensioning is defined for the twisted end product and exact compliance with this dimensioning is required.

"The growing need for data bandwidth creates special challenges for networking technology in automobiles. Infotainment, various systems for providing driver assistance and myriad other applications will pose tough new challenges for onboard systems in the future. Besides sufficient bandwidth and a high level of processing and signal quality, the reduction of costs, complexity and weight also plays a big role. For this reason, people in the industry largely agree that the current bus topology will have to give way in the coming years to an architecture based on reliable and familiar Ethernet technologies."



Daniel Politze,
Product Manager



Eduardo Barros,
Support Manager

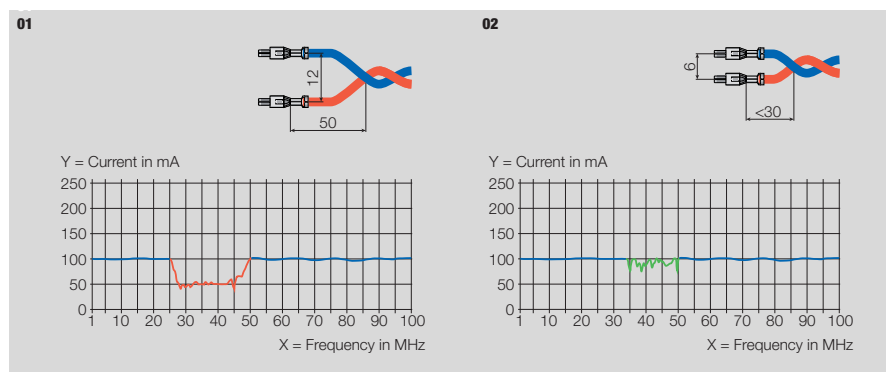
Along with length of lay, conductor spacing and a wide variety of symmetry considerations, the length of the untwisted conductor ends is especially important. An untwisted cable end length that is as short as possible is deemed to indicate a reduction in transmission errors. In addition, great attention is given to subsequent work steps. It is important to be sure the twisted pair is subsequently mateable, for example.

Economical solution based on a reliable concept

The monitoring of and effective intervention in the twisting process are indispensable to being able to produce a stable and high-quality UTP product. Komax Wire has been working intensively for more than a decade on understanding and mastering this highly complex process. Today, we have extensive expertise that we share with our customers for the production of twisted pairs.

With our new Alpha 488 S fully automatic twister in particular, we offer everything needed for fast, reliable and standardized UTP production. In keeping with quality-driven production, the machine has not only the usual types of quality monitoring found at Komax but also strictly separates out and disposes of bad cables. In addition, we address the special requirements of the automotive industry with our range of well-thought-out options. Special untwisted cable ends (e.g. of different lengths) are possible, as are particularly short untwisted cable ends. <

BroadR-Reach® is a registered trademark of Broadcom Corp.



01 Interference current for long untwisted cable ends and conductor spacing
02 Interference current for short untwisted cable ends and conductor spacing

Your advantages

- Economical solution for the high-quality production of twisted pairs in accordance with OEM requirements
- Minimization of process risks thanks to maximum monitoring and effective intervention in the twisting process
- Total solution and twisting expertise from a single source

ALUMINUM – BRIGHT FUTURE AS A CABLING MATERIAL

Challenges and opportunities

Aluminium has many advantages

The weight of a mid-range car can be reduced by two to three kilograms with the use of aluminum cabling, which in turn decreases fuel consumption and CO₂ emissions.

Besides satisfying the demands of lightweight construction, the substitution of copper conductors with aluminum ones also meets specifications on the availability of material. Despite these pluses, aluminum has several characteristics that makes its use as a conductor material difficult:

- Less strong than copper
- Creeps if subject to mechanical stress and at much lower temperatures than copper
- Electrochemical corrosion

All in all, the advantages outweigh the disadvantages with regard to a bright future for aluminum as a cabling material.

Fully automatic processing

Komax Wire is your partner in the fully automatic processing of aluminum cable. After all, the processing of aluminum on fully automatic crimping machines poses a number of special requirements for overall processing:

- Purity, cleanliness (no mixing of aluminum and copper)
- Gentle feeding of conductors
- Straightening of aluminum strand
- Cutting and stripping with special blades
- Conductor positioning in the crimping tool, high level of repeatability
- Cut monitoring with automatic conductor detector (ACD)
- Stripping monitoring with strip quality check (SQC)
- Crimp monitoring system with crimp force analysis (CFA)

To meet these requirements in full, the individual processes must be optimally coordinated with each other. For this to happen, Komax standard machines must be equipped and configured for the specific customer in each case. The main criteria are quality monitoring and blades specially designed for aluminum. ◀

“Aluminum is a good conductor of electricity. In car manufacturing, this lightweight material is increasingly replacing copper in many applications involving current conductors. And aluminum has two big advantages over copper: It reduces the cost of materials and is considerably smaller in mass.”



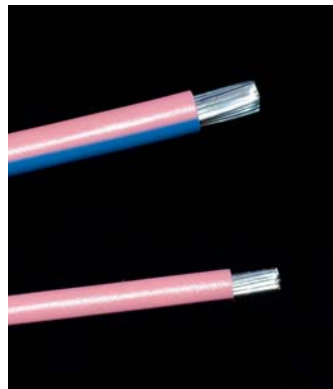
Stefan Horat,
Project Manager

Your advantages

- Optimal for machine geared to the processing of aluminum
- Partner with experience in processing aluminum
- Comprehensive quality control for the process



Alpha 355 S equipped with automatic conductor detector (ACD) and strip quality check (SQC)



Perfect stripping thanks to the use of special blades

IDC PROCESSING – ONE SIDE FULLY AUTOMATIC PROCESSING

One-sided processing of IDC insulation displacement connectors on the Alpha 356



Alpha 356 with IDC module

Space is often at a premium for peripheral devices. Conductors are therefore fitted directly on the individual circuit boards. These connections frequently take the form of an IDC insulation displacement connection.

By contrast, IDC connections are seldom found in the board network. Examples of applications in which IDC contacts are used in the automotive industry include, for instance, the control of exterior mirrors, front lights and taillights, seat heaters, control stalk functions or overhead lighting. The conductors used generally have small cross sections and highly flexible insulation. Manual processing is commensurately difficult and the risk of quality fluctuations is great.

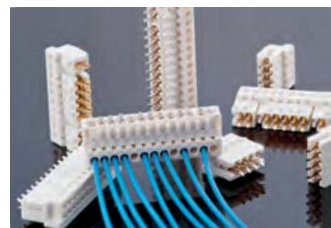
Collaboration between IDC contact manufacturers and Komax Wire

Komax Wire has collaborated with IDC contact manufacturers to develop a solution for this application. The Alpha 356 fully automatic crimping machine serves as the basic machine. It handles conductor management and conventional crimp contacting with and without seal loading. Up to

“Insulation displacement connection (IDC) has been part of automotive technology since time immemorial. However, its application is limited to a handful of components. With the steadily growing number of technical functions in vehicles, new possibilities are now opening up also for IDC applications. They entail mostly the use of short, flexible conductors in peripheral equipment. Komax has developed an efficient solution on a swivel-swivel machine especially for this requirement.”



Marcel Wolfisberg,
Project Manager Applications



IDC contacts

three different crimp contacts can be executed in a sequence at the lead end. IDC processing with 2- to 16-pole connectors takes place at the trailing end of the conductor, whereby different conductor lengths can be contacted. Extremely short conductor lengths of 50 mm and up can be executed thanks to the intelligent layout and integration of the IDC module. Precisely this requirement is critical for components in cramped spaces and was often the reason for manual processing. With a specially designed intermediate handling procedure for IDC processing, the processing steps now run parallel to optimize the conductor output. IDC connectors can now also be replenished during production.

With the automation of one-sided IDC processing on the Alpha356, we offer an efficient solution that meets the toughest quality requirements. ◀

Your advantages

- **One-sided fully automatic IDC processing**
- **Short conductor lengths of 50 mm and more**
- **Different conductor lengths per connector**
- **Big output**
- **Gentle cable handling**
- **IDC module integrated on the standard Alpha 356 platform**

CUSTOMIZED SOLUTIONS

Customer-specific solutions to meet your requirements

Solid expertise as our foundation

Our value-added engineering business is based on more than 35 years of experience in wire processing. One key factor in our value-added business is our competence in all aspects of wire processing, from wire handling and classic types of processes to complex specialized applications.

Broad range of solutions

Another key factor is the broad range of platforms on which we can draw. That means we can implement the economically optimum solution based on the complexity of the application and the production volume involved.

Our lineup of customer-specific applications is based on the following basic machines:

- Cutting and stripping machines (Kappa)
- Assembly cell SL Compact
- Fully automatic crimping machines (Gamma, Alpha, Zeta)
- Assembly cell (Lambda 96x series)

Investment in the future

Komax Wire invests continuously in the further development of the various platforms. And in fact, Komax Wire is launching a new system called Lambda 96x series especially for the value-added business segment involving larger production volumes and a higher degree of automation. It is a transfer machine with an ultra-precise transfer system that clocks the tool holders, transports them with a non-slip drive and positions them independently in relationship to each other.

The goal in designing the Lambda 96x series was to be able to offer a modular structure. When a customer project is implemented, this approach enables the ideal platform component from the Komax Wire standard range to be combined with the suitable transport system and the defined modules.

As a result, the focus can be put on application-specific subprocesses. One typical application for the new system is the production of airbag connectors with cables. <

“Demands often vary greatly within an industry. We have set the goal of ad-dressing our customers’ demands and attending to them. Based on these customer requirements, we develop customized solutions that add value to the overall process and thereby optimize profitability.”



Matthias Schultness,
Head of Marketing

Your advantages

- Obtain economical solutions thanks to a broad and flexible product range
- Minimize process risks by using Komax standard solutions
- Receive complete solutions from a single source



The new assembly cell Lambda 96x

				
Cutting and stripping machine	SL Compact System	Fully automatic crimping machine	Fully automatic crimping machine with transfer system	Lambda 96x with transfer system

Number of process steps

The right basic machine based on the number of process steps

EXHIBITIONS 2014

Date	Week	Exhibition	Representative	Place/country
06.-09.02.2014	2	Autoexpo India	Komax India	New Delhi/IN
12.-13.02.2014	7	Southern Manufacturing Show	KPE	Farnborough/GB
11.-14.03.2014	11	Cabex – Cable Wire and Accessories	Ostec	Moscow/RU
18.-20.03.2014	12	Productronica Shanghai 2014	Komax China	Shanghai/CN
18.-21.03.2014	12	Amper	Komax Deutschland	Brünn/CZ
25.-27.03.2014	12	IPC APEX	Komax USA	Las Vegas/USA
02.-04.04.2014	14	Nepcon Korea	Hansung Tech	Seoul/KR
07.-11.04.2014	15	Hannover Messe	Komax Deutschland/ AAT Aston	Hannover/DE
15.-17.04.2014	15	ElectronTechExpo	Ostec	Moscow/RU
14.-15.05.2014	20	Electrical Wire Processing Expo	Komax USA	Milwaukee/USA
21.-23.05.2014	21	Inhouse Show/20 Jahre Komax Deutschland	Komax Deutschland	Nürnberg/DE
26.-29.05.2014	21	Electro 2014	Ostec	Moscow/RU
27.-30.05.2014	22	IndustriAutomation 2014 International Industrial and Automation Trade Exhibition	Thonauer Hungary	Budapest/HU
03.-05.06.2014	23	IMS	Komax USA	Tampa/USA
10.-12.06.2014	24	Expo Electrica International	Komax USA	Mexico City/MX
19.-22.06.2014	25	Intermold	DKSH Thailand	Bangkok/TH
02.-04.09.2014	36	E-14	Matech System	Odense/DK
16.-18.09.2014	38	Energetab	Evoltec	Bielsko-Biala/PL
23.-25.09.2014	36	Productronica India 2014	Komax India	Bangalore/IN
September 2014	38	Electronex 2014	Suba Engineering	Sydney/AU
28.-31.10.2014	44	Matelec	Estanflux	Madrid/ES
October 2014		ELO SYS	Thonauer Slovakia	Trenčín/SK
19.-22.11.2014	25	Metalex	DKSH Thailand	Bangkok/TH
25.-27.11.2014	48	SPS/IPC/Drives 2014	Komax Deutschland	Nürnberg/DE
November 2014		China Electronics Fair	Komax China	Shanghai/CN



CLOSE TO CUSTOMERS THE WORLD OVER

Komax Wire has production plants in Switzerland, Germany, the United States and China and offers sales and service support in around 60 countries through its subsidiaries and independent agents.

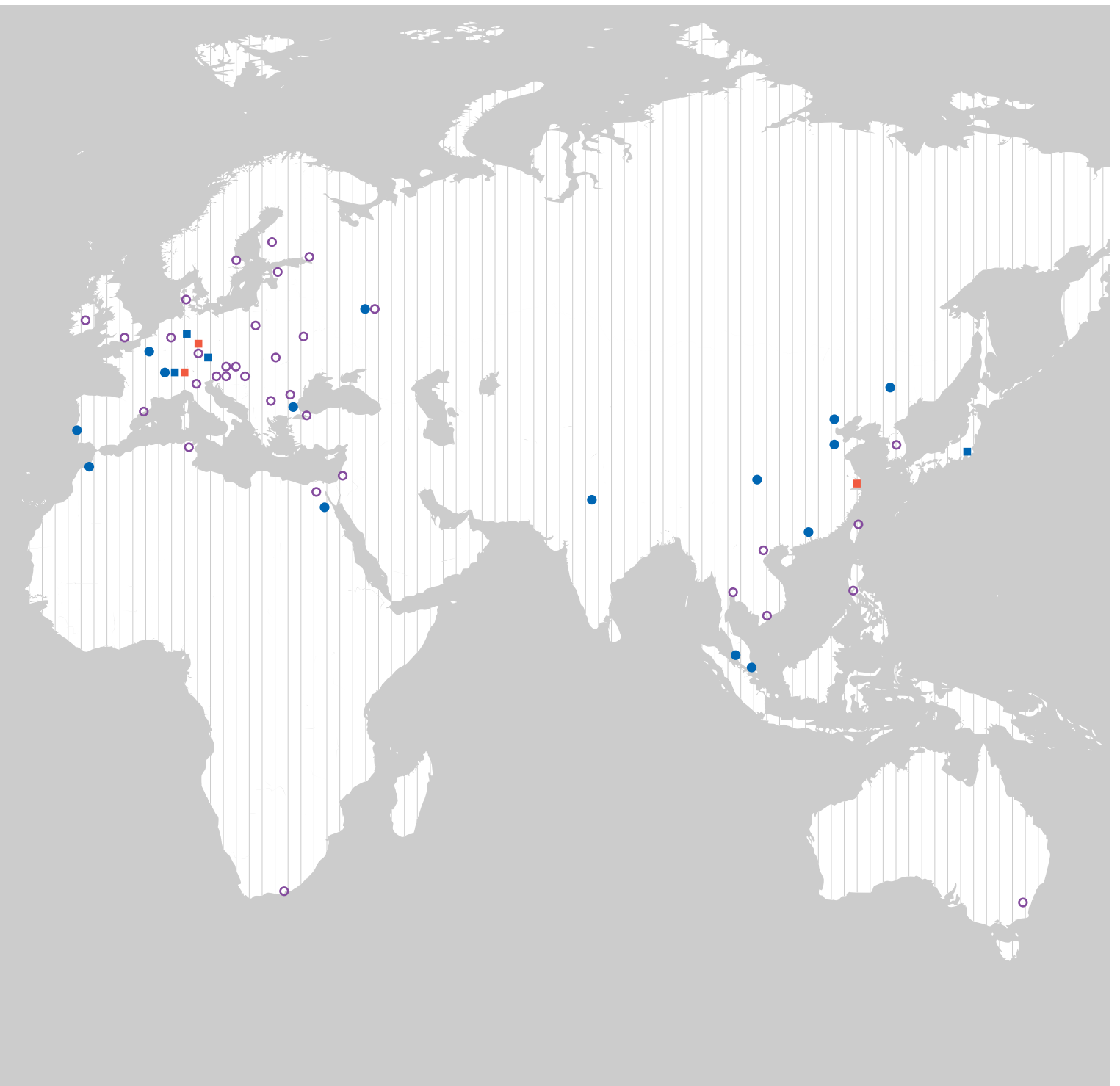
- Production Plant
- Value Added Hubs
- Sales and Service
- Representation

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