



AERO SPACE



komax

AERO SPACE

The Komax group offers a enormous variety of wire processing solutions for many different market segments. The Aerospace branch, which includes commercial aviation, defense and security industries has very special needs, due to the high safety standards, the very light construction and the harsh operating environment in the air. Connections must be 100% resistant to temperature, air pressure variations and heavy vibrations. Legal regulations such as certifications and also the complete quality documentation must be complied with.

With this brochure we want to give our aerospace customers an overview of our product range and the unique advantages that Komax offers to manufacturing and maintenance companies in Aerospace industries. We offer you state-of-the-art production methods and drive process automation.

Your advantages with Komax:

- Over 45 years of experience in automation of wire processing
- Many solutions developed specifically for the aerospace industry.
- Innovation leader in wire processing
- Always close to you with a large global sales and service network.





KOMAX COVERS THE ESSENTIAL STEPS IN THE COMMERCIAL AIRCRAFT WIRE-HARNESS MANUFACTURING PROCESS

Wire Harness Kitting

- Review manufacturing plan
- Picking connector components
- Wires cutting and laser marking
- Sleeve marking
- Sleeve insertion



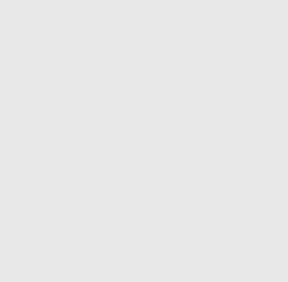
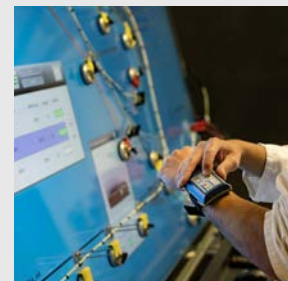
1st End Connector Assembly

- Wire stripping
- Contact crimping
- Shield preparation
- Contact insertion into connector
- Closing of connector



Harness Forming

- Placement of the 1st end connector
- Laying the wires to the position of the 2nd end connector
- Assembly of the sleeving
- Tying the wires



Aircraft manufacturing is a very special and sensitive business. As a pioneer and market leader in the field of automated wire processing, the Komax Group provides its aerospace customers with innovative and

sustainable solutions for any situation that calls for precise contact connections. We manufacture series and customer-specific machinery, catering for every degree of automation and customization.

Assembly of the 2nd end connector

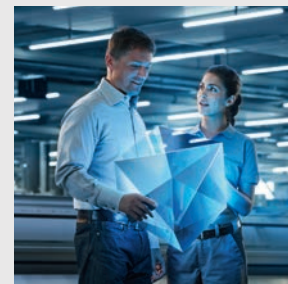
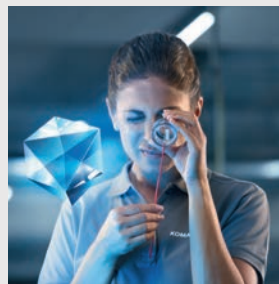
- Stripping of wires
- Crimping of contacts
- Preparation of the shield
- Inserting contacts into the connector
- Closing the connector

Quality Assurance

- Continuity test
- Leakage voltage test
- Visual inspection
- Packing and shipping

Komax Care Service contracts

- Online support
- Online training
- Spare & wear parts
- Feasibility tests



Please note that this overview may differ from the harness production processes in your company. It is just an illustration how Komax can meet individual needs with advantageous solutions.



MARKING & KITTING (WIRE PREPARATION)

HIGH PRECISION CABLE CUTTING (MECHANICAL & BY UV LASER)

Mechanical cutting

Iota 330 – cutting machine

The smartest way to process multi-conductor cables, largest processing range in their class up to 8 mm² / AWG 8



Marking and cutting cables

MRO 200 line

- 6 models for low to medium production:
- Non-aggressive, clear, unalterable and permanent marking
 - Ergonomic and compact
 - Low operating costs
 - UV laser
 - Twisted single-wire or multi-wire cables sheathed with 6 to 26 AWG gauge
 - Automatic production mode due to EasyProd software

◀ Komax Iota 330, the all-round solution for precise mechanical cutting

Marking and cutting cables

ULYS Modena line

- 9 models for medium to high production:
- Non-aggressive, clear, unalterable and permanent marking
 - High performance and easy to use
 - Autonomy and low maintenance requirements
 - Various solutions for dereeling, loading and handling of cables
 - UV laser
 - Twisted single-wire or multi-wire cables sheathed with 6 to 26 AWG gauge
 - Automatic production mode due to EasyProd software

Automatic Feeding System (AFS)

ULYS Modena line

The automatic feeding system uses an automatic clamp mounted on a robotic axis. The clamp picks up the wire from the machine input and loads it into the system without operator intervention. Position, speed and acceleration of clamping during loading are fully controlled. Cable waste length is reduced to less than 15 cm.

Cable de-reeling

ULYS Modena line

- Different models of de-reelers fixed on a motorized axis are available:
- Single or multi-spool dereeler with manual wire feed
 - Single or multi-spool powered dereeler.
- The spool's rotating speed is synchronized to the wire processing speed.

▶ Ulys Modena equipped with 12 spools de-reeler





KITTING

RapidShare **ULYS Modena line**

The RapidShare robot is designed for the automated handling of laser marked wires and cables. It is a flexible solution in which each production process – sorting, labeling, grouping, etc. – is customized according to your needs.

RapidShare works with the entire line of the ULYS Modena machines and offers advanced sorting features to accelerate electrical harness manufacturing.

Once installed, no adjustment or daily maintenance is necessary. Production data files are loaded automatically.

With a fully equipped LASELEC production line (Multi-spool cabinets + Automatic feeding system + Ulys Modena + RapidShare) the operator's tasks are solely:

- Loading cable spools
- Loading empty stock containers
- Access the production program on the EasyProd software of the ULYS Modena machine
- Removal of containers full of produced wires

All digital information necessary for the system to function, information for label printing or the number of cables per group or sub-group, is handled by the EasyProd software of the machine. The Ulys Modena machine and the RapidShare robotic cable handling system are inter-connected.

A storage container conveyor system is included that prevents machine interruptions due to the loading/unloading of storage containers used to store the cable.

Benefits

- Wire ends aligned to ease the manufacturing of first connector extremity
- Automatic labeling process per wire, bundle and sub-bundle
- Automatic wire grouping and sorting process
- Self-sustaining, automated laser wire marker



Automatic marking and cutting production line



RapidShare: cables at the end of the process



WORK STATION SOLUTIONS

LASER STRIPPING, SHIELDING, SLEEVING

Sylade line

- Superior level of precision when compared with thermal and mechanical stripping techniques
- Stripping of shielded and unshielded cables
- High-precision circular laser cutting of the insulation without risk of damaging the shield or conductor
- Maintenance and consumable-free
- The fastest solution for unsheathing twisted multi-wire cables
- Cables from 6 to 26 AWG gauge

Sylade 7 Bench Top

3 models: Sylade 7b / Sylade 7v / Sylade 7d

- Automatic cutting length from 2 to 200 mm
- Automatic cycle start (integrated sensor)
- Simple or multiple laser cutting (up to 3 cuts)
- Automatic production mode option

(Easystripping) allows for continuous stripping without manual parameter adjusting.

ILC Bench Top line

3 models: ILC-20/8 BT / ILC-20/8 BTS / ILC-30/20 BTS

- A very broad range of wire insulations / gauge including coaxial cable dielectric, or multilayer composite outer jacket
- The best solution for high demanding applications, complex wire / cable construction and out of round wire / cable
- Wire size range OD:
ILC-x0/08: 0.5 – 7.8 mm / 0.02 to 0.31 in
ILC-x0/20: 1 – 20 mm / 0.04 to 0.8 in (optimized for 8 – 20 mm / 0.3 – 0.8 in, other on request)
- Stripping length from 3 to 115 mm (from 0 on BTS version)
- Automatic cycle start (integrated sensor)
- Longitudinal (straight or spiral) slit feature on BTS version
- Window strips feature

01

Sylade 7 Bench Top

02

ILC Bench Top with HV-cable

03

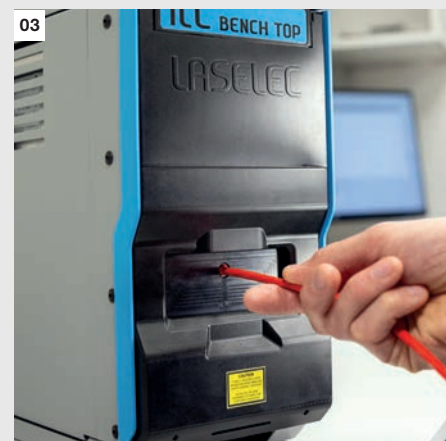
ILC Bench Top

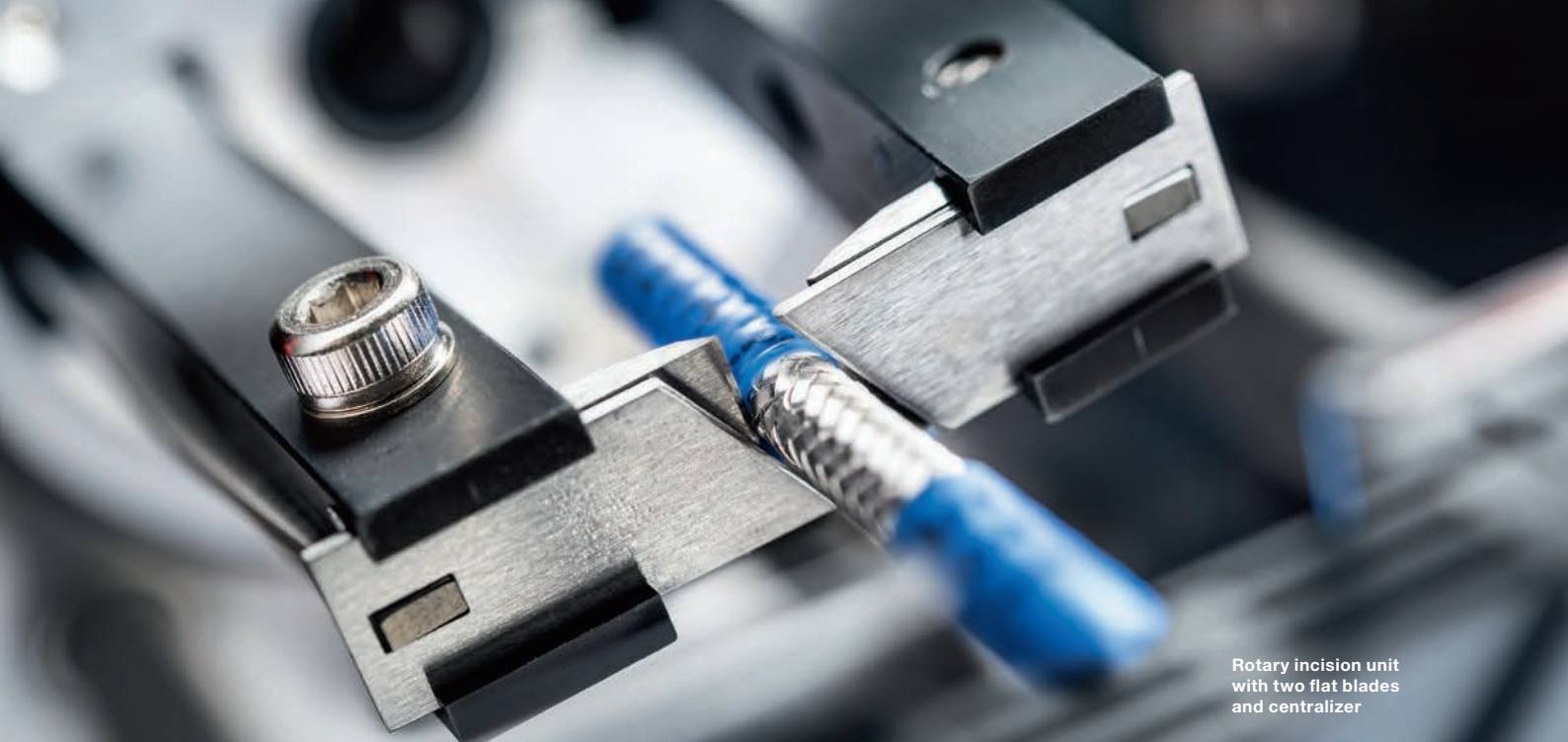


02



03





Rotary incision unit
with two flat blades
and centralizer

MECHANICAL WIRE STRIPPING

The Mira mechanical wire strippers provide an enormous variety of different processing options for a wide range of applications. They offer clear advantages for industrial manufacturing in the aerospace sector:

– One tool for all jobs

Mira wire strippers are enormously versatile, saving a lot of hand tools and manual machining.

– Rotating cutting heads

The complexity of many shielded cables requires high precision and cutting reliability. Mira wire strippers feature rotating cutting heads that can handle demanding cables quickly, precisely and gently.

– ACD Automatic Conductor Detector

This quality monitoring detects the slightest contact between blade and conductor strand during stripping, setup and production. Based on a capacitive measurement principle, the ACD is integrated in the blade holder and ensures perfect quality in the stripping process.



Robust cutting head
with rotating 4X-blades



ASSEMBLY ON HARNESS BOARD

INTERACTIVE HARNESS ASSEMBLY BOARD FOR PRODUCTION AND PROTOTYPING

EasyWiring

- Replaces paper plans with a dynamic display of electrical harness assembly instructions.
- Assists the operator throughout the production process.
- Available in 75" or 86" modules that can stand alone or be connected to form a larger system.
- Works with CAD files (DXF and DWG) and .TXT format.
- Complete equipment consisting of display device, CAM software and removable accessories suitable for all types of harnesses.

EasyWiring Osiris

- The operator controls the production from a tablet.
- Several operators can work simultaneously on one harness by following instructions on their tablet.
- Several harnesses can be produced simultaneously by splitting the screens.

EasyControl

EasyControl makes EasyWiring software control even easier.

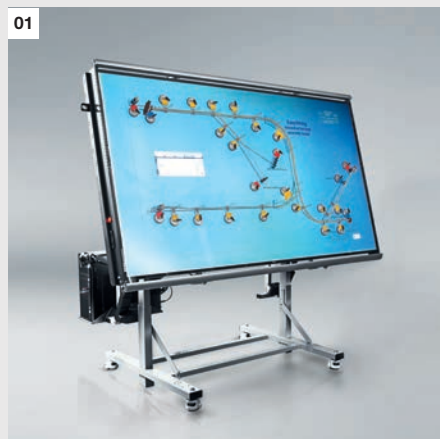
No need to move in front of the table to use the mouse or keyboard: the operator controls the assembly board directly from the Blue-tooth wristband unit.

EasyTouch

In "Touch Mode", the operator only needs to touch the extremity of the wire to identify it and display routing and pinning information directly on the EasyWiring harness assembly board. It's not necessary to use barcode readers or to type wire identification number on the keyboard.

Preparation before using the system requires a sub-assembly harness for the side 1 connector. Wires are connected to the EasyTouch test box with an interface harness.

- 01 Interactive harness assembly board
- 02 Easy Wiring Dynamic Display
- 03 Easy Wiring Osiris interactive harness assembly board





HAND TOOLS & TEST ON HARNESS BOARD

Sylade 7 H

- Cutting length manually adjustable from 5 to 200 mm
- Ideal for manual table-top production of electric harnesses
- Mobile solution where the tool goes to the end of the cable and not the other way around
- Its ergonomics, compactness and ease of use make it a perfect alternative to traditional tools
- Accessories: sloping holder, tool balancer, balancer jib cart, mini USB barcode scanner

Exmore IRMO - Hand-held shrink appliance for product diameters up to 16 mm

The Infrared processing appliance allows efficient and reliable processing of the following components:

- Heat shrink tubing
- Adhesive coated heat shrinking tubes
- Label sleeves
- Solder sleeves
- Heat shrinkage caps
- Related heat-shrink materials and products

This hand-held appliance has been developed for use in confined spaces like electrical cabinets and for cable harness assembly boards.

EasyTouch – Continuity Test Mode

In "Continuity Test Mode", the operator can perform a continuity test on a single connector during the harness assembly process and correct any errors directly on the assembly board.

By connecting all connectors to the Easy-Touch Test Unit, a final test is completed on the entire harness and a traceable test report is generated, ensuring a strict quality control.

01

Sylade 7 H

02

Exmore IRMO

03

Successful Continuity Test on A5 connector



QUALITY TOOLS

LASERMARK CHECK

Laselec EasyContrast

EasyContrast allows measurement and control of the contrast achieved on laser marked wires and cables. The illumination and camera systems have been specially designed for stereo microscopic and macroscopic applications. A specific benchmark kit is provided for calibration of the unit.



WIRE STRIP CHECK

Komax 345 – Microscope

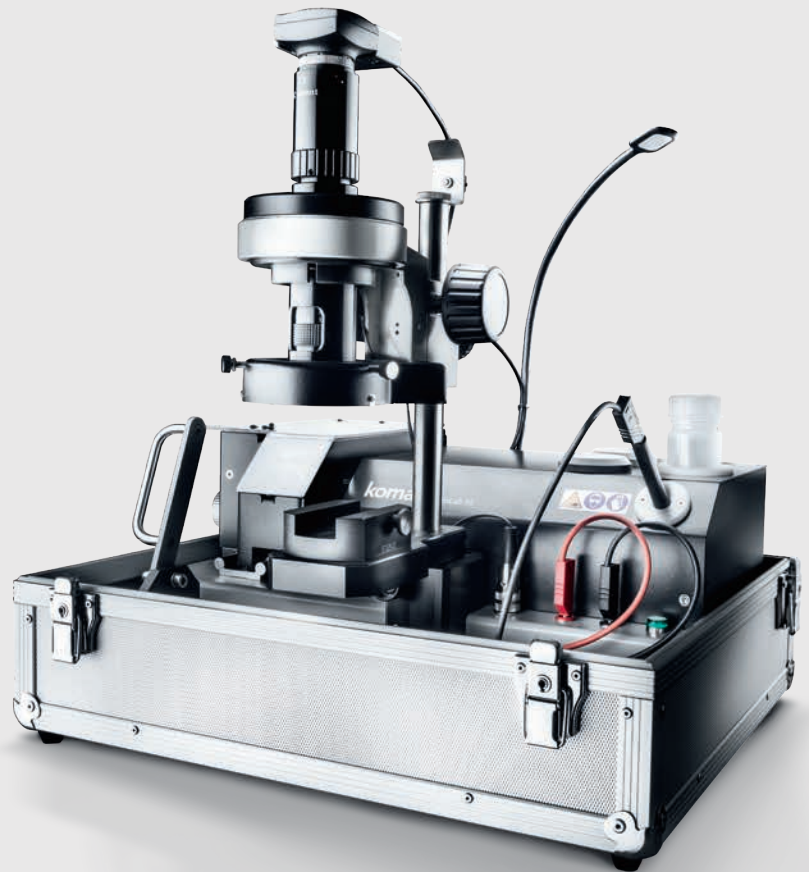
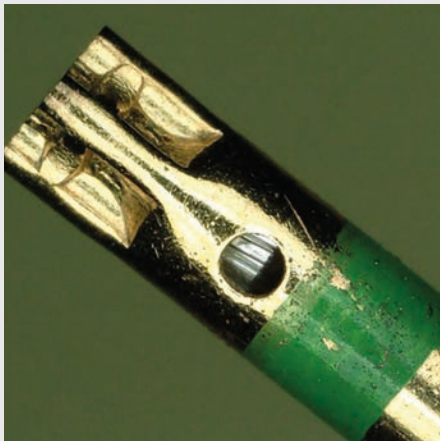
With the high-quality Komax 345 digital microscope, users can now display even the smallest conductor cross section clearly and sharply on an operator monitor. The adjustable focus and various measuring supports allow to test cables and contacts of the most of different sizes. An integrated LED light delivers perfect lighting.



CONTACT CRIMP CHECK

MicroLab 10 – compact and mobile quality assurance for small contacts

The MicroLab 10 enables micrographs to be taken quickly and easily regardless of the location. It covers all relevant processing steps – from cutting and polishing to etching and visualization. The compact carry-case design enables the quality of crimp and splice connections to be assessed with minimum effort and maximum effectiveness.



CONTACT CRIMP CHECK

MicroLab 30 – Mobile and simple quality control with automated processes

Micrographs are indispensable in the release of new crimp terminals and tools. The MicroLab 30 micrograph laboratory is a part of modern quality engineering. It is designed for creating micrographs of B-Crimp, MIL-Crimp, HEX-Crimp terminals up to a diameter of 10 mm. It contains also a automatic separation unit and dry grinding unit with saw blade.



SERVICE OFFERINGS AND DIGITAL SERVICES



KOMAX SPARE + WEAR PARTS

Do you need original spare parts to keep production downtimes due to maintenance and repair work as short as possible? We got it! Some 80% of all spare parts are available regionally or locally; for all other parts, we keep you stocked with express deliveries.

- Maximum availability through the use of original parts
- Minimization of unplanned production downtimes
- Short downtimes thanks to high availability of spare parts
- Longer service life of machines and test systems thanks to the delivery spare and wear parts at least 7 years after the discontinuation of production
- Fastest possible rectification



KOMAX CONSULTING + FEASIBILITY TEST

Having problems with a new wire that you would like to process on your Komax machines? Our feasibility test provides you with a precise roadmap to choose the ideal machine and to find the perfect settings.

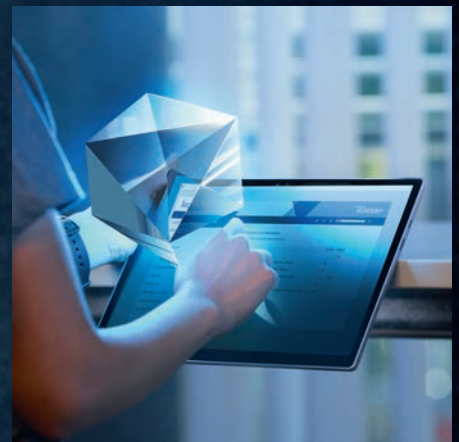
- Time and cost savings through outsourcing
- Access to the Komax expertise while searching for optimal production solutions
- Optimally configured machines
- Shorter configuration times thanks to pre-determined parameters
- Reliable and safe wire processing



KOMAX ON-LINE TRAINING

Looking for a simple way to train your employees in the use and maintenance of Komax Group machines and test systems? The Komax Academy offers an outstanding On-Line Training for your the handling of your equipment.

- Well-trained employees who know what they're doing
- Fewer breakdowns due to human error or improper maintenance
- Less internal training necessary
- Simple, flexible training with 24/7 availability
- Personalized certification



KOMAX DIRECT PRODUCT INFORMATION

Do you want to know everything about Komax – right now? Here you'll find everything there is to know about your Komax equipment – quickly, easily and around-the-clock on your computer, tablet or smartphone.

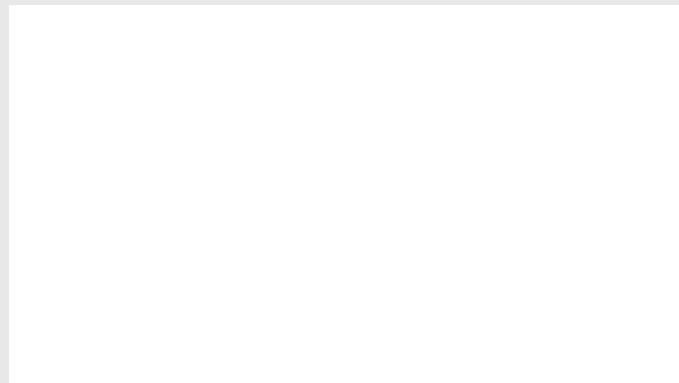
- 24/7 online access via computer, tablet or smartphone app:
- Information about your installed products (brochures, datasheets, videos, operating, maintenance and assembly instructions)
 - Software for installed products
 - Spare parts (list of recommended wear and spare parts, identification of and search for specific components, online ordering of original parts)



Komax – leading the field now and in the future

As a pioneer and market leader in the field of automated wire processing, Komax provides its customers with innovative and sustainable solutions for any situation that calls for precise contact connections. Komax manufactures series and customer-specific machinery for various industries, catering to every degree of automation and customization. Its range of quality tools, test systems, and intelligent networking solutions complete the portfolio, and ensure safe and efficient production.

Komax is a globally active Swiss company with development and production facilities on several continents. Komax uses its extensive distribution and service network, which includes local companies and their employees, to support customers across the world on site, thus ensuring the availability and value of their investments after equipment commissioning through standardized service processes.



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