



BSM is a private company, established in 1992 in Sofia, In the beginning, our activity was concentrated exclusively on production of sirens for car alarm systems. Later on, the scope of our activity was broadened and currently includes a wide range of sirens of different kinds. In 1994, the company developed and started producing one volume car - alarm systems (middle class). At the same time it increased the volume of the horn electrodynamic radiators up to 1000 pcs, per month. Due to constantly rising demand of sirens in Bulgaria in the recent years the production volume has increased substantially.

In 1996, the personnel of the BSM Company reached 15 full staff positions. During the same year, the company started production of home alarm systems and began to export to Macedonia, Serbia and Algeria. In 1998 was implemented quality control system ISO9001.

In the summer of 2005 because of the great demand of LPG automotive products BSM LTD started the production of different electronic modules. At the end of 2005 the company released on market the LPG Sequential system CARGAS designed and tested by the BSM engineer team. In the summer of 2006, based on the serious experience, started the production and sales of BARDOLINI, higher class LPG/CNG injection system, which can be compared with the best brands in the world. By that time the production capacity was increased and at the moment it reached 10 000 alarm systems, modules and sirens, 15 000 remote controls and 6000 -10 000 LPG / CNG injection systems per month. BSM LTD stepped on new markets in 2007 - Australia, Thailand, Turkey and Italy.

In 2008 started the production of own LPG reducer, new switches, pressure and temperature sensors. All LPG products have 67R01 and 110R certificates. Now, the company is a technological Leader on the market for sirens, car-alarm systems and many articles

for the security systems and LPG/CNG sequential systems in Bulgaria. We have our own manufacturing and Engineering Design Department, which develops the full range of production articles.

On the territory of BSM LTD there are also SMD assembly line and a fully automatic wire harness production line completed with machines KOMAX ZETA 655 / 633, GAMMA 333PCS and ONDAL LINEAR. At the moment the LPG / CNG products of the company are point of great interest from companies from Germany and UK. In the beginning of 2009 was developed new generation improved injection system through OBD communication with the petrol ECU. The production of high class injector rail started in the middle of 2009.



COMPANY PRESENTATION

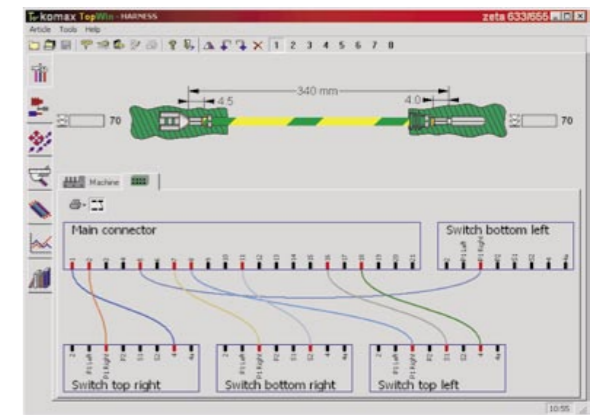
WIRE PROCESSING

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Zeta 655 on Zeta 633

Operated from TopWin



Flexible pallet system

Zeta 633/655 in BSM

Zeta 633/655 in BSM

A Robot for Block-Loading at Both Ends of the Cable Zeta 655

With its fully automatic Zeta 655 block loader, Komax has implemented a concept incorporating many innovations that open up whole new possibilities for the automatic production of wire harnesses.

Economical and Efficient

The Zeta 655 is the first block loading robot designed to take into account the ever smaller sizes of production batches. Thanks to its machine design, the Zeta 655 allows investment costs to be amortized in parallel on different types of wire harnesses, markedly reducing the cost per lead set. The Zeta 655 allows completely new applications to be subsequently incorporated into it easily and with absolutely no trouble.

Technology

With the flexible pallet carousel, the most varied types of wire harnesses can be produced just-in-time and changeover times are reduced to virtually nil. Terminal-specific parts are eliminated. All the operator has to do to change over to a new type of block is switch the two pallets. The loading of each and every block is monitored and controlled by a force sensor. Komax's patented measuring process monitors the entire loading operation, from the wire's entry into the cavity to its correct interlocking in the block.

Flexible Basic Machine

The Zeta 633 basic machine has a 36-wire changer and several crimping stations with automatic crimp height adjustment, allowing for more than 300 different wire/terminal variations to be processed without any changeover at all. In combination with a machine extension, another four processing stations can be accommodated. Moreover, wire marking systems can be connected, allowing different wires within the same harness to be marked with the operator's choice of black or white text.

User Friendly

The equipped pallets are loaded and unloaded while the machine is running and wires are placed on the second pallet. The block loader is operated from the sliding console on the fully automatic Zeta 633 crimping machine using the TopWin user interface. The software automatically calculates the order of loading within a wire harness to make the setup of new harnesses as simple as possible. The software also calculates the management of the various holding grippers in the rotary storage unit for chaotic harnesses.



Your benefits

- Extremely broad variety of harnesses on one machine - no application-specific parts
- New applications can be easily added later on
- Economical even for tiny production batches
- Non-contact position recognition for the terminals
- Uniform top quality processing
- high degree of process reliability
- Integrated quality monitoring with good/bad sorting
- Short amortization period



Zeta 633 basic machine



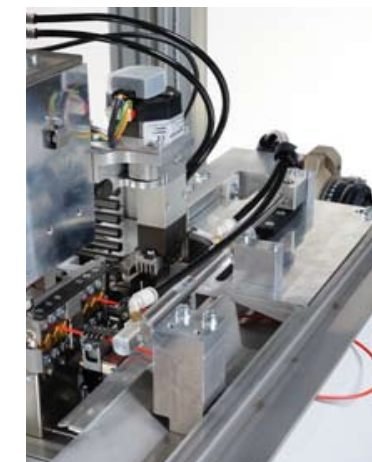
mci 765 seal loading module with seal position monitoring (SPM)



Komax 341 crimp height measuring device



mci 722 crimping module with programmable crimp height



Blade head and looper

Specially designed for small jobs and sequences **Zeta 633**

New design for a fully automatic crimping machine that can be expanded at will and transformed into an insertion system.

Here, Komax incorporates trends in wire processing and consistently implements them.

As a result, the Zeta 633 meets the growing need for unlimited flexibility.

Area of application

Zeta 633 is a highly flexible fully automatic crimping machine used for just-in-time production. With its flexible machine concept, the Zeta 633 opens up an almost unlimited number of possibilities for handling small jobs and wire sequences.

Flexibility

Up to 36 conductors are available for wire feed without changeover. Wire transport can be adapted to the specific properties of each conductor.

Modules can be configured as desired along the entire length of the Zeta 633. That means total flexibility for each area of application. The wires can be bundled or deposited in predefined order as a chain.

The Zeta 633 also serves as the basic machine for the Zeta 651, Zeta 655 and splice module (SP). Customer-specific modules such as IDC processing can also be installed.

Technology

Applying the loop transfer principle, the device feeds the two wire ends of the loop individually one after the other to the appropriate processing station. Variably programmable shuttles make this possible. All wire movements are carried out with highly dynamic servo axes. The basic machine accommodates up to five processing stations. If need be, the machine can be successively expanded and has space for up to ten processing stations.

Quality monitoring

Crimp-height and pull-out force measurement are integrated in the process sequence. The measured results from the measuring devices are transferred automatically to the user software and compared with the set values. Incorrect entries can be avoided in this way. Production cannot commence until the measured results match the specified values. The material is scanned in with the optional barcode scanner prior to the start of production and compared with the stipulated values. This step prevents materials from getting mixed up. The processes are constantly monitored during production. In the event of an error, incorrectly processed cables are automatically removed and post-produced.

712/722 crimping module

Presses with integrated crimp force analysis (CFA) for crimp forces up to 20kN.

- The mci 722 crimp press also features programmable crimp height adjustment.
- Just one teach crimp is required.
- Creep speed (slow motion) and other key functions can be controlled right at the press
- Double stroke for closed contacts
- Programmable stroke
- Tool fixture featuring quick-change system

mci 765 seal module

Module with integrated seal position monitoring (SPM) of absolute values in millimeters.

- Automatic setup of the seal position (SPM).
- The most important functions can be operated right at the module.
- Quick-release locks for all seal-dependent application parts.
- Existing applications can be used.



Gamma 333 PC



Plastic-coated transport rollers for Gamma 333 PC



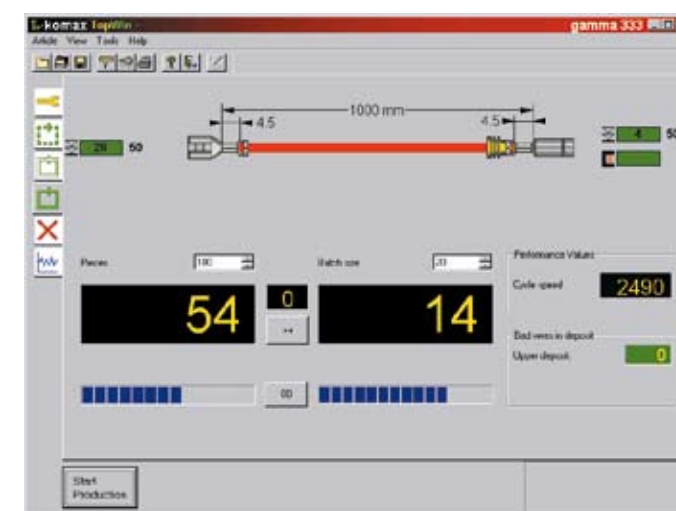
mci 711 crimp module and mci 761 seal module



mci 721 crimp module and mci 792 sleeve module



Double gripper module for horizontal and vertical connections



TopWin production menu

Diverse and flexible Gamma 333 PC

This fully automatic crimping machine stands out from the rest for the high daily productivity it achieves through short changeover times and high availability. This thoroughly tried-and-tested machine is also available with a wire drive. That means optimum force transmission and increased output for long conductors. A supplementary unit that is ideal for a broad processing range.

Scope of application

The Komax Gamma 333 PC and PC-B are flexible fully automatic crimping machines offering a variety of efficient processing capabilities. Depending on requirements, these machines can apply two-ended crimp contacts and end sleeves for strands, as well as double crimp connections with three different contacts or seals and sleeves to one end of the cable. Tinning and ink-jet marking are two further options. These models can integrate customer-specific applications like MIL crimping, welding or compaction for a further diversification of production.

Technology

The entire cross-section range is processed with dynamic programmable drives and V stripping blades. The highest quality requirements and process reliability are ensured with crimp force analysis CFA, the measuring devices for crimp height (K341) and pull-off force (K331/K332) and the barcode scanner (K351). These quality monitoring functions can be integrated in the production process to guarantee that all conductors produced comply with the specified values.

User friendly

The layout is well-conceived to allow ultra-short changeover from crimping to twisting, fluxing and tinning. Fitted with safety covers that open vertically, the Komax Gamma 333 PC and PC-B are readily accessible from all sides. Machine operation is so easy and convenient, as are all aspects of material handling. The reliable TopWin user interface adds to this high level of operator convenience, in over 20 languages. The machine has a WPCS interface that makes it easy for a customer to interface with one of its networks.

Gamma 333 PC

With the three different types of transport rollers, you can be sure that conductors will be fed in a way that is gentle on the insulation. A highly dynamic AC servomotor acts as the drive. The encoder measuring system with integrated anti-slip control system (ACS) ensures a high degree of repetition accuracy regardless of the container used.

Double gripper module

With the use of the double gripper module, the processing of double crimp connections can include up to three different contacts. The operator has his choice of processing the double crimp connection as horizontal or vertical terminations.

mci 711/721 crimp module

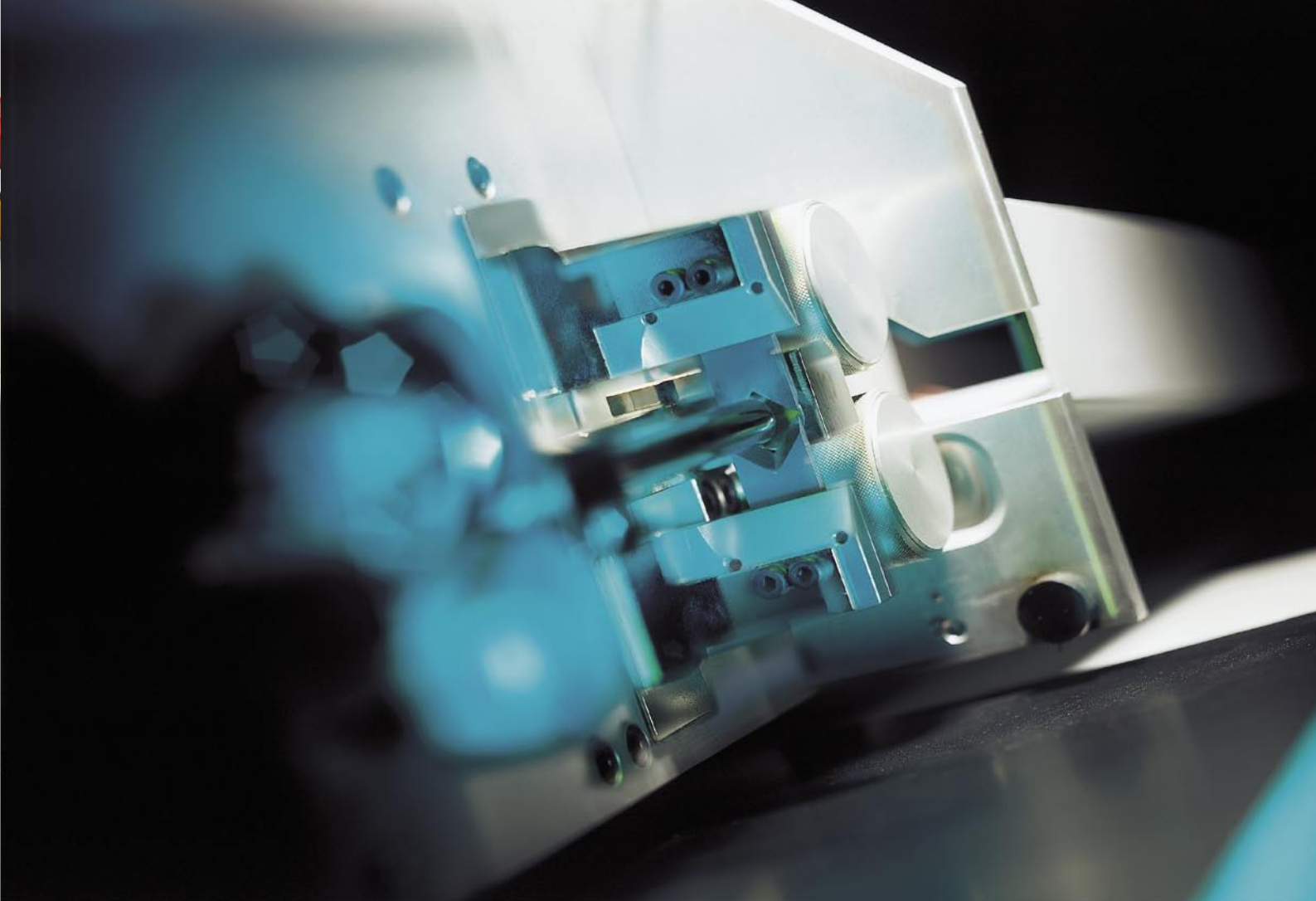
Presses with integrated crimp force monitoring and analysis for crimping forces up to 20kN.

- Just one teach crimp required (mci 721)
- Slow motion and other key functions can be controlled right at the press.
- Split cycle function
- Programmable stroke

- Tool mount with quick-change system
- The mci 721 crimp press also has programmable crimp height adjustment.

mci 761 seal module

Komax keeps changeover times ultra-short by making consistent use of quick-action locks for all seal-related application parts and by using software support to approach special setup positions. Access to the module is superb. The Seals Presence Analyzer (SPA) can also be installed as an option.



Small in size, big in performance – the new cutting machines **Komax 206 / 206 S**

Despite their compact size, the two cutting machines K 206 and K 206 S meet all requirements as regards performance, power and quality. They are extremely easy to operate and have integrated units for wire-end detection and feed monitoring. These features plus the diverse range of accessories are what make these small machines such big performers.

Scope of application

K 206 is the all-round model of the pair, while the K 206 S is the specialist. The two cutting machines display their true greatness when cutting round and flat conductors, hose, PVC strips, various types of foil, paper, textiles, etc. Both machines are standouts in delivering maximum flexibility in processing, process control and precision. Rated for high power, the cutting unit performs perfect cuts of stranded wires up to 35mm² in diameter. De-reelers, markers and work tables are all integrated, allowing these units to be expanded into simple systems.

Technology

Ribbon cable and round materials are guided directly to the blade through a wire guide featuring adjustable parallel positioning. This ensures a clean and perfectly right-angled cut. A wire-end detection unit is standard for both machines. The K 206 also has a feed monitoring unit that includes knot detection and slip control. The K 206 S is driven by finely edged rollers. The K 206 has a feed belt that is gentle on the wire and withstands extreme tensile forces. With a pressure regulator and a manometer, the roller pressure and cutting force can be set precisely and reproducibly.



Clean cut **Komax 206 / 206 S**

User friendly design

The user interface is compelling in its simplicity and is identical for both of these fully automatic machines. Users can master the software in no time thanks to its uncluttered menu structure. Two menu buttons guide users through the various functions. Inputs are made using a small number of buttons on the control panel. Basic data and operating data specific to the machine can be protected by password. Menus are displayed in the user's choice of seven languages. Toggle switches make wire setup easy. The machines can be converted to other processes without the use of tools. Ultra-quick conversion times make these units ideal for users who have to switch processing materials frequently.

> Your benefits

- Ultra simple operation
- Enormous tensile and cutting forces
- Reproducible setting of roller pressure and cutting force
- Short conversion times without any need for tools
- Diverse range of accessories
- High degree of flexibility within the processing range
- All-round versatility



LinearLiner

Programme-controlled automatic taping makes the wiring harness efficient and exact. An innovation of **ondal**



The automatic assembly machine **LinearLiner** completely eliminates manual taping operations. Owing to the intelligent control the machine is able to make all kinds of taping processes, works in both directions and without any further technical device.

Exact positioning and movement of the wiring harness guarantees the highest precision and manufacturing quality.

INTELLIGENT AND FLEXIBLE. IDEAL FOR PRODUCING SHORT WIRING HARNESSSES



The linear-positioning unit is the heart of the **LinearLiner**. The axis, which is programme controlled, guarantees identical manufactured wiring harnesses.

THE **LinearLiner** IS BOTH, EFFICIENT AND ABSOLUTELY SAFE

- ▶ Strong drives perform the steps in a short time. That makes this machine competitive in countries with low labour rates.
- ▶ The operators safety is guaranteed with 4 independant swiches with emergency stop functions. The operator is effectively protected against injuries.

THE **LinearLiner** IS A DEVELOPED MODULAR SYSTEM

- ▶ Linear units with 950 mm and 2 500 mm are available.
- ▶ PC controlled, easy programming and a large memory for programmes.
- ▶ Electro-mechanical height adjustment for using as a standing or sitting work place is optionally available.

THE **LinearLiner** IS EASY TO OPERATE

- ▶ After loading the programme the machine is ready for production. The operator puts the assembled connector in position and starts the programme step. The machine now performs this step and stops.
- ▶ The programme can be interrupted by the **STOP** button. The operator can continue with the **START** button.
- ▶ The measurement of exact lengths guarantees 100 % accuracy of the wiring harness.

TECHNICAL DATA

Power supply	230 / 400 V 50Hz
Drives	Servodrives
Speed	100-1.000 r.p.m.
Feed	0 – 40 mm/rev.
Wiring harness diameter	2 - 20 mm, optional until 30 mm
Pneumatik	6 bar
Tape roll diameter	1,5" + 3" centre 180 mm max. Outside
Safety	CE - approved