

# POWERFUL. VERSATILE. DURABLE.

EXPERIENCE OUR MX SERIES  
INJECTION MOLDING MACHINES



**KraussMaffei**  
*Pioneering Plastics*

[illegible]

# POWERFUL. VERSATILE. DURABLE. MX SERIES MACHINES

KraussMaffei is the market leader in large-scale injection molding machines. Our MX series is recognized around the world and is principally characterized by the hydromechanical two-platen clamping unit, which we developed ourselves. The product range spans from compact injection molding units with basic automation and highly complex manufacturing cells, through to complete factory planning.

With the MX, you can increase your process quality and your production efficiency. Take advantage of our well-founded expertise, individually customized solutions and a professional, global service team.

The highlights of the MX Series at a glance:

## **Powerful thanks to**

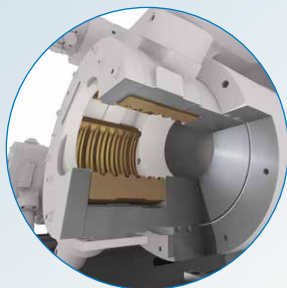
- Maximum speed combined with maximum precision
- Outstanding melt quality and excellent shot weight consistency
- High level of part quality

## **Versatile thanks to**

- Customer-specific solutions
- Platform for wide technology spectrum
- Intelligent, user-friendly control system

## **Durable thanks to**

- Construction and components optimized according to load case
- Low maintenance effort, simple retrofitting
- Intelligent pairing of premium-quality materials



**Innovative locking system**

Maximum speed combined with maximum precision

**Maximum modularity**

Customer-specific solutions



**Compact dual platen clamping unit**

Absolute platen parallelism for low mold wear and first-class part quality

**MC6 control system**

Simple and clear operation with SplitScreen, ProcessDesigner and Eco function



# IMPRESSIVE TOUR AROUND THE MX INJECTION MOLDING MACHINE

## Ideal interaction between automation and machine

Proven, cost-effective  
overall concept



## Tried-and-tested screws and non-return valves

Outstanding melt quality

## High-performance plasticizing units

Excellent shot weight consistency

## Easy-maintenance design

Fast and easy preventive  
maintenance



## Highly efficient hydraulic system

Energy-saving operation  
combined with high level  
of dynamism



# COMPACT DUAL PLATEN CLAMPING UNIT

## ROBUST IN DESIGN, FAST IN PRODUCTION AND LOW-MAINTENANCE IN OPERATION

KraussMaffei's MX series is your solution for big tasks. Your hydromechanical two-platen clamping unit features maximum reliability and flexibility. Force flow-optimized sliding shoes in combination with guided tiebars guarantee exactly parallel clamping movements and permanent mold protection. The intelligent locking concept ensures extremely short locking times.

### **YOUR BENEFITS:**

- Clamping unit design that works with speed and precision
- Space-saving design
- Reduced servicing effort
- Increased mold service life (service life)
- Ideal for high mold weights

### **Absolute platen parallelism thanks to innovative clamping technology**

Force flow-optimized sliding shoes reliably support the moving mold fixing platen as it travels on the machine bed. The sliding shoes are guided horizontally at the side. Even for very heavy molds and maximum opening widths, exact platen parallelism is guaranteed at all times. In addition, the tiebars are permanently guided via slide bushings. The dynamic movement is produced by two movement cylinders which are arranged diagonally and positioned on the outside.

### **Very short locking times – bringing innovation, even down to the smallest detail**

The hydro-mechanical fourfold locking on the tiebars is carried out by saw-tooth shaped elements behind the moving platen which mesh together. It is designed for very short locking times combined with precise positioning. The even application of force through progressive tooth flank play and the friction-optimized material combination of brass and steel together ensure maximum service life.



*The force flow and weight-optimized sliding shoes ensure that the moving platens are guided securely.*



*Premium-quality material combinations increase durability*

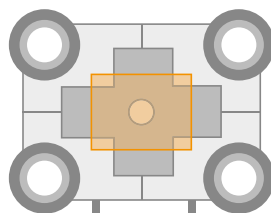


*Molds are protected in every position thanks to the guided tiebars.*

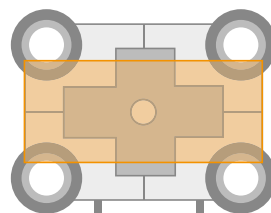


*Encapsulated locking unit and locking cylinder for extremely short cycles. The moving platen is manufactured in a box structure and optimized using FEM (finite element method).*

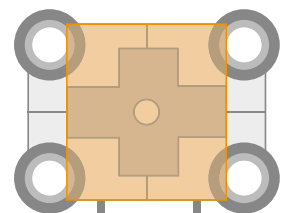
MX 1600



Min. mold size  
1240 x 940 mm



Mold size  
2550 x 1400 mm



Mold size  
1850 x 2100 mm

*The solid mold fixing platens ensure outstanding rigidity and guarantee extremely low mold wear*

#### **Building up clamping force quickly and reliably**

The special pressure pads of the MX series allow clamping forces to be built up very quickly, and the pads always position themselves exactly. The clamping force is built up at precisely the same time on all four tiebars.

#### **Durability is the keyword: Maximum mold protection combined with first-class part quality**

Solid mold fixing platens ensure a high level of mold size flexibility for the MX and guarantee excellent platen rigidity. The mold fixing platens have been designed in such a

way that the mold parting lines are not affected and the molds are permanently protected. Thanks to the reduction in mold wear, you benefit from significantly lower maintenance costs and can sustainably optimize your production costs.

#### **Low-maintenance operation**

Self-lubricating guide bushes and slide rails with centralized lubrication ensure low-maintenance and trouble-free operation.

*The injection unit is the heart of our machines. It guarantees maximum precision and process stability.*



#### **YOUR BENEFITS:**

- Outstanding shot weight consistency
- High level of part quality
- First-class process stability
- Longer service life
- High expertise with special polymers
- Fast plasticizing unit change



*Linear force transmission ensures maximum shot weight consistency.*



# FIRST-CLASS PLASTICIZATION, PRECISE INJECTION UNIT EXACT IN PERFORMANCE TUNING, WEAR-RESISTANT IN OPERATION

## Outstanding shot weight consistency combined with first-class repeatability

Take advantage of unlimited precision. The proven in-line injection unit with its rotary piston design transmits the force centrally via the injection piston onto the screw. Injection regulation of pressure and speed is a standard feature of the MX Series. It guarantees you maximum process stability and first-class repeatability.

## Maximum productivity

The MX Series offers you a choice between hydraulic and electric screw drives. The electric drives enable plasticization in parallel to other machine movements, thereby creating a further increase in productivity.

## High throughputs with outstanding melt quality

Our plasticizing systems are characterized by their excellent melt quality and cover a wide range of applications for a wide variety of plastics. Thanks to our years of experience and technological expertise, we understand the complex operations involved in plasticization. This is why we can guarantee a high melt specification, high throughputs, and optimum melt quality. Choosing the right plasticizing system can improve the quality of your products and increase value retention.

## The right screw for every plastic

In order to provide an ideal solution for the processing requirements of different polymers, we have developed material- and processing-specific plasticizing systems.

In addition to outstanding melt quality and high throughputs, high-tech plastics mostly require additional wear protection against adhesion, abrasion, and corrosion. As a result, service life is also extended. Depending on the part requirement, special plasticizing systems containing specific screws, check valves, and cylinder fittings are available to you. Using our plasticization systems, you can process the following materials, among others:

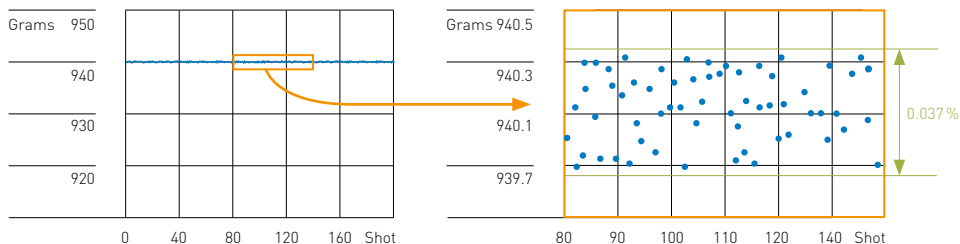
- PC and PMMA materials
- Short and long glass-fiber reinforced plastics
- Blends
- Recyclates

Plasticization is our core competence. In this area, there are virtually no limits set on your material-specific requirements.



*As a specialist in plasticizing units, we have a wide selection of screws in our range for you to choose from, up to a diameter of 265 mm*

## Shot weight consistency



*Shot weight consistency 0.037%, based on the example of 20 liter buckets in 2 cavities with a shot weight of 940 g (PE)*

# USABILITY IS OUR TOP PRIORITY

## THE NEW MC6 CONTROL SYSTEM WITH SPLITSCREEN TECHNOLOGY AND ECO FUNCTION

The new MC6 control system meets all of your needs for operator convenience.

Whether you are working with a KraussMaffei control system for the first time or you are accustomed to its MC5 predecessor – MC6 technology is so intuitively accessible that you will work better and more efficiently than ever before.

### Everything at a glance – thanks to the new split-screen technology

SplitScreen technology is one of the special highlights of the MC6: Thanks to the split-screen display, you can see the most important production processes simultaneously. In parallel with the actual value cycles, you can control, for example, the injection process.

### Clarity thanks to the ProcessDesigner tool

The integrated ProcessDesigner tool provides a clear visual presentation of all current processes and enables you to modify them, depending on requirements, by means of simple drag-and-drop movements or intuitive swiping gestures.

### Destination reached with just two taps – thanks to a dropdown menu and a favorites bar

To make handling the control unit as user-friendly as possible, deeper navigation levels have generally been avoided with the MC6. Based on the motto "Get where you need to go as quickly as possible," this offers a clear overall concept with individually configurable favorites bars. In order to guarantee optimum use, the machine keypad only provides the keys which can be selected in regard to the operating states of the machine. Our user-friendly principle is rounded out by a special field for selecting systems. You can therefore directly select all components of the machine up to automation and technology.

### Go Eco! Energy efficiency at the push of a button

In keeping with our overall energy-efficient design, the MC6 control system has an Eco button. This allows you to configure the machine for optimal energy efficiency at the push of a button.

### Intelligent user profiles

Thanks to standardized role profiles – from the machine operator and mold setter through to the production manager – you can assign different authorizations quickly and easily. Of course, you can also create additional hierarchy levels and assign individual rights to users. Another feature of the MC6 is the resistive dual-touch function which also allows the screen to be operated by a person wearing gloves. With the Windows 7 Embedded operating system, the MC6 is ideally equipped for today's technologies and those in future. The MC6 control system can be ordered in more than 30 languages. And best of all: Every feature is available not only with the control system, but also on the hand-held pendant.



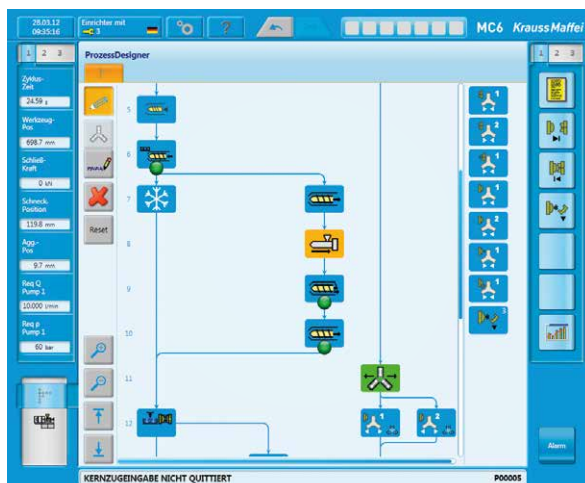
*Want the machine set for optimum energy efficiency? Always on demand! – Simply press the Eco button.*

### YOUR BENEFITS:

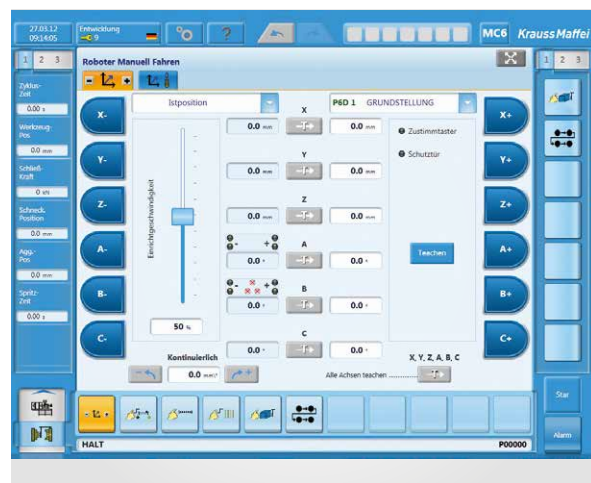
- User-friendly function principle
- Simple process control thanks to SplitScreen and ProcessDesigner
- Clear structures
- Standardized user administration
- Two-way operation of automation and machine possible



With innovative features such as SplitScreen technology, the MC6 control system offers you greater convenience and usability.



The MC6 control system impresses customers with its clear overall concept. Here using ProcessDesigner as an example.



You can operate the automation both from the handheld pendant and from the injection molding machine.



# FLEXIBILITY THROUGH MODULARITY

## THE MX MACHINE CAN BE INDIVIDUALLY COMBINED



### **YOUR BENEFITS:**

- Machine combination according to the customer's requirements
- Quick tool change
- Energy-efficient drive systems (possible savings of up to 50 percent)
- Efficient, modular hydraulic systems

### **Versatile through customer-specific solutions: The MX machine can be individually configured**

For MX series machines, KraussMaffei can offer a great number of combinations for your individual clamping, injection, and screw selection. Thanks to the comprehensive catalog of options (optional upgrades/add-on units), the machines can be configured to meet your requirements. In addition to the classic options, such as core pullers, cascades, or hot-runner control stations, we also offer standardized special solutions.

These include, amongst others, a wide variety of different types of mold tempering or quick mold clamping systems. In addition, we also have optional modules such as DecoForm for over-molding and back-compression molding of sensitive decors (e.g. textiles, carpets, TPO/PP foam or imitation leather sheets) in our portfolio. Hydraulic options such as these can, of course, be individually connected or disconnected in order to increase flexibility in production. Standardized interfaces (according to EUROMAP 70.0 or 70.1) facilitate convenient use of magnetic clamping platens for quick mold changing.



# HIGHLY EFFICIENT HYDRAULIC SYSTEM

## PRECISE CONTROL, FAST CONTROLLER BEHAVIOR, ENERGY-EFFICIENT AND COST-EFFICIENT

### **No compromises: Maximum injection speed at maximum injection pressure**

In combination with the in-line injection unit, the intelligent hydraulic drive concept allows the machine to be driven within the key parameters of application-related process control. Especially for large and complex components, maximum injection speed and maximum injection pressure are required during the filling and holding pressure stage. This allows extremely short injection times and, consequently, a cycle time reduction of 5 to 15 percent.

With the MX series, we have opened the most useful processing window possible in injection molding technology.

### **High level of process reliability thanks to precise and quick-acting proportional valves**

Contrary to the market trend, KraussMaffei has always appreciated the value of precise and premium-quality proportional and control valves. In combination with the in-line injection unit, the injection process is controlled as a standard feature. This leads to extremely low levels of component stress and component distortion. In turn, this allows the MX, with its premium-quality hydraulic system, to achieve a level of process stability that is unmatched by the competition. For us, maximum availability and energy efficiency go without saying.

### **Focus on oil filtering: For minimal maintenance and operating costs**

A bypass filtration system in the low pressure range allows a high deposition rate and long filter service life. During filtration, oil is continuously cleaned of particles via a fine filter. The level of oil purity achieved in this way leads to a longer service life for hydraulic components and the oil itself.

### **Parallel movements of ejector and core-pulling systems**

Standard parallel functions of ejector/core puller systems and mold movements reduce your cycle times.

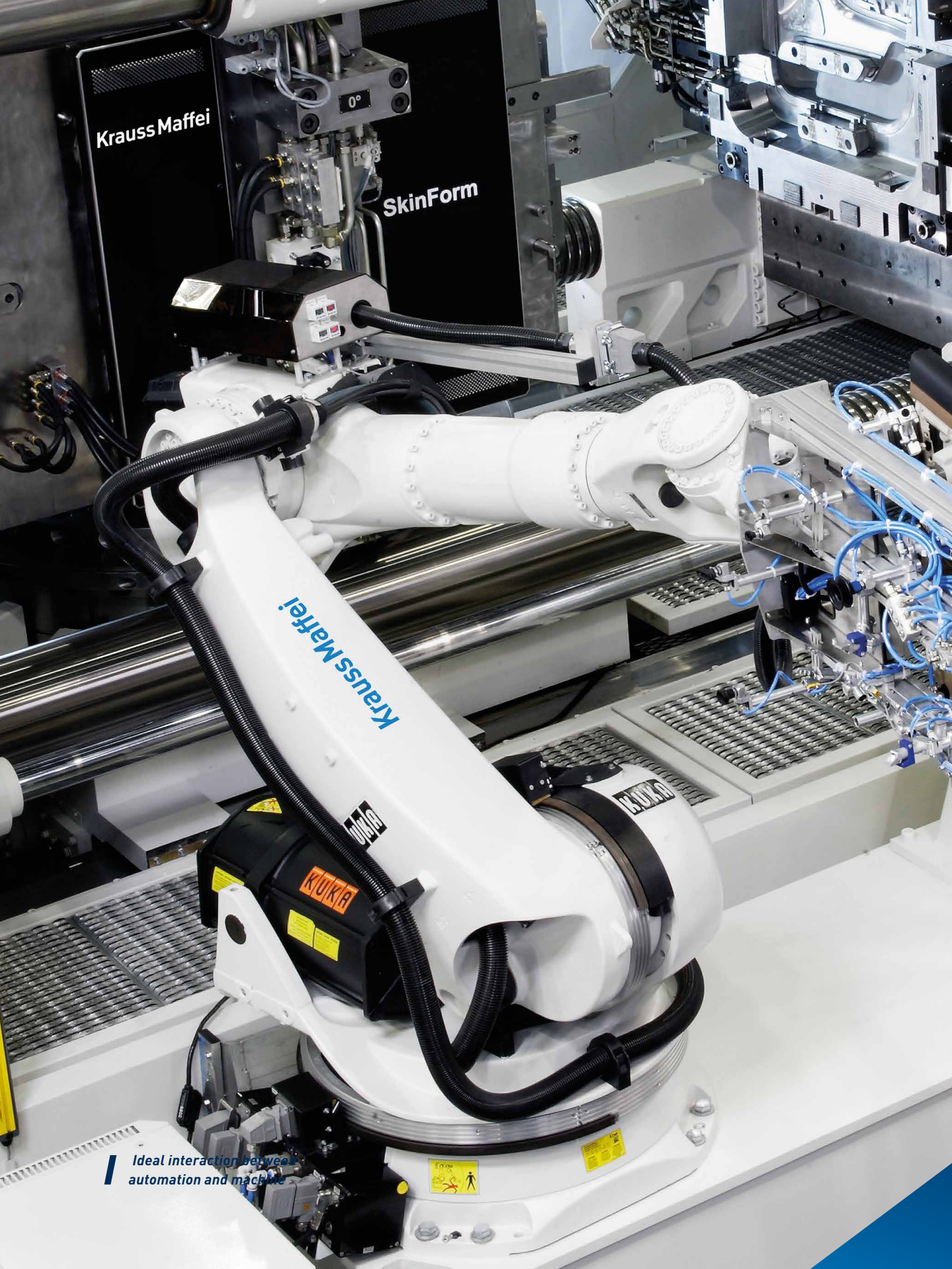
### **“Blue Power” efficiency solution – “Servo Drive Technology”**

Through the optional use of “BluePower Servo Drive” technology, energy consumption is further optimized compared with variable delivery pumps. The savings made in comparison to other hydraulic concepts are between 10 and 30 percent, depending on the particular application and, in comparison to conventional hydraulic concepts on the market, may even be up to 50 percent. A positive secondary effect is the lower noise level of servo drives.



### **YOUR BENEFITS:**

- Cycle time reduction of 5 to 15 percent
- Quick dry cycle time
- Increased injection capacity
- Extremely low oil and lubricant consumption
- Maintenance-friendly design
- Durable hydraulic system
- High level of performance



Krauss Maffei

SkinForm

KraussMaffei

KUKA

Ideal interaction between  
automation and machine



# IDEAL INTERACTION BETWEEN AUTOMATION AND MACHINE INTELLIGENT, COST-EFFECTIVE OVERALL CONCEPT

Our extensive know-how in the areas of injection molding machinery and automation is your economic advantage. Standardized elements combined with customer-specific solutions are the basis for high flexibility in production. The integrated CE-approved safety concept ensures a high safety standard and reduces the machine costs.

## **Compatible. Simple. Always – The new LRXplus linear robot**

The linear robots of the LRXplus series from KraussMaffei offer a wide range of applications and cover all clamping force ranges – from small to large. They can be used universally: from simple pick-and-place solutions to challenging tasks in the injection molding process such as insertion, demolding, processing and more.

The new LRXplus linear robots are particularly robust and durable and feature optimized profile geometry for the axes of movement. These now consist of crash-proof aluminum or steel, so only minimum damage occurs in the event of a crash. Consequently, downtimes and maintenance expenses are reduced to a minimum.

## **Unlimited opportunities with the KraussMaffei industrial robot**

The industrial robot (IR) guarantees maximum flexibility during complex demolding and a wide range of other assembly steps or production steps. The intelligent control system concept featuring a simplified user interface and an extended expert mode is suitable for every user group and helps you reach your goal with often just two clicks. The user interface of the handheld pendant can also be selected in the beginner mode or expert mode depending on the user authorization and hierarchy.

# IDEAL INTERACTION BETWEEN AUTOMATION AND MACHINE COMBINATION OPTIONS



## LRXplus linear robot

Machine/  
clamping  
force in  
metric tons

LRXplus 350  
(payload of 35 kg)

LRXplus 500  
(payload of 50 kg)

LRXplus 750  
(payload of 75 kg)

LRXplus 1000  
(payload of 100 kg)

MX 1300

MX 1600

MX 2000

MX 2300

MX 2700

MX 3200

MX 4000



## Industrial robot (floor)

## Industrial robot (shelf)

Machine/  
clamping  
force in  
metric tons

IR 900  
R2700  
F/K

IR 1200  
R2900  
F/K

IR 1500  
R3100  
F/K

IR 300  
R2630  
S/K

IR 2100  
R2900  
S/K

IR 1800  
R3100  
S/K

IR 1500  
R3300  
S/K

IR 1200  
R3500  
S/K

IR 900  
R3700  
S/K

IR 1200  
R3900  
S/K

MX 1300

MX 1600

MX 2000

MX 2300

MX 2700

MX 3200

MX 4000

Key for industrial robots: IR = Industrial robot 300 = Payload in N R2030 = Reach in mm F = Floor S = Shelf type K = KUKA





# CUSTOMIZED AUTOMATION SOLUTIONS FOR MAXIMUM EFFICIENCY

Our automation expertise includes customized solutions from removal to post-processing in highly productive manufacturing processes.

## **Gripper expertise**

Development and production of end-of-arm tools, including innovative 3D printing grippers.

## **Versatile automation solutions**

Testing, inserting, marking and mounting – precise and reliable.

## **Multirobot systems**

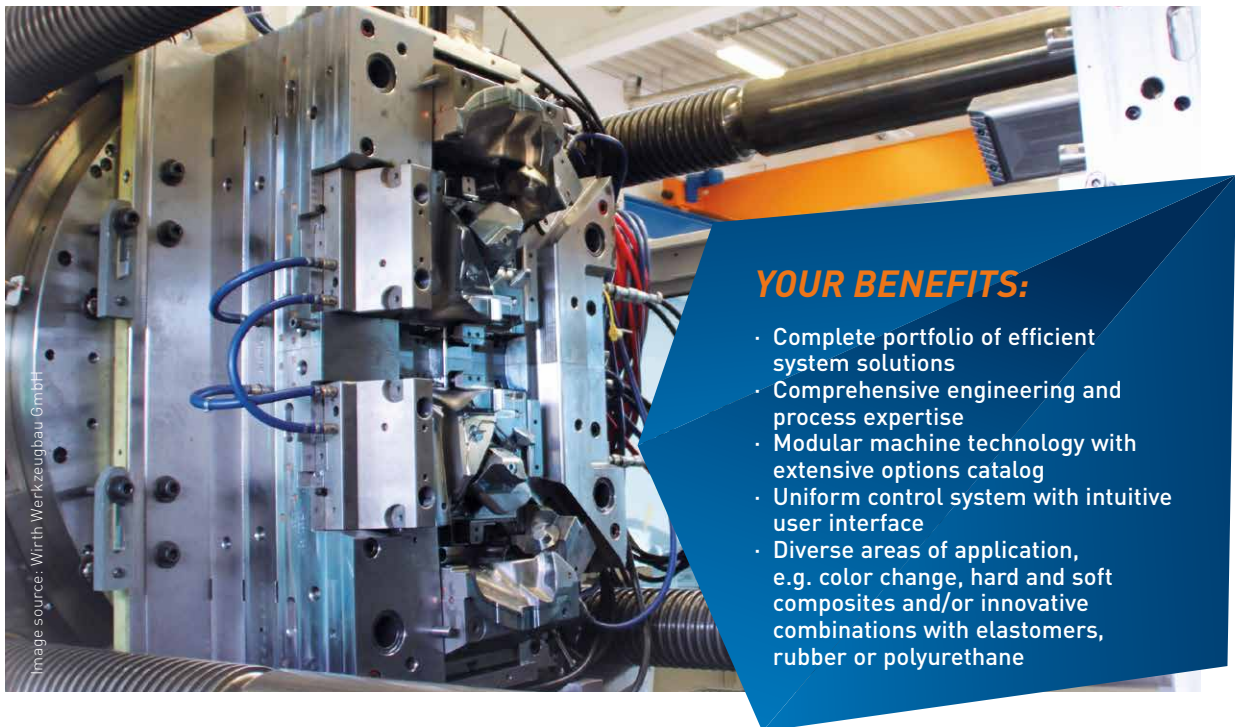
Seamless combination of linear and industrial robots for maximum flexibility.

## **Traceability applications**

Seamless traceability for maximum quality and safety

# ADDED VALUE THROUGH COMBINATION

## MULTINJECT TECHNOLOGY FOR MULTI-COMPONENT APPLICATIONS



### YOUR BENEFITS:

- Complete portfolio of efficient system solutions
- Comprehensive engineering and process expertise
- Modular machine technology with extensive options catalog
- Uniform control system with intuitive user interface
- Diverse areas of application, e.g. color change, hard and soft composites and/or innovative combinations with elastomers, rubber or polyurethane

*Multinject provides a great number of injection molding variants such as the injection molding of moving parts, sandwich pane or composite injection molding. An extensive range of mold technologies can also be employed (e.g. sandwich pane, sliding split, sliding table and turntable, swivel plate, indexing and transfer technology).*

Multinject is the KraussMaffei technology for combining thermoplastics, polyurethanes or elastomers in different designs.

With Multinject technology, KraussMaffei is offering a complete range of solutions for implementing multi-component applications. We can supply a complete package – including the multicomponent mold technology and extensive processing know-how. All these possibilities have one thing in common: the perfect interplay between the individual system components. Our customers make it possible for us to re-apply our ex-

pertise with perfected solutions and/or develop it further with exclusive, cross-process technologies. This offers you security. The security of having efficient production cells as a reference for creating multi-component applications cost-effectively – whether standard or special – yesterday, today and tomorrow. A partnership with KraussMaffei can lower your part production costs. And it can also assure you of decisive competitive advantages, whether from cost-effective, high-performance production cells or from new-style processes.



# FOAM INJECTION MOLDING OF LARGE COMPONENTS WITH MUCELL TECHNOLOGY



## YOUR BENEFITS:

- Lower viscosity and better flow properties
- Elimination of the holding pressure phase
- Avoidance of sunk spots
- Shorter cycle times
- Low warpage
- Clamping forces considerably reduced

*Weight and material savings, dimensional stability, and a higher level of productivity by cutting down cycle times – these are the advantages of MuCell technology that attract customers and developers from an extremely wide variety of sectors.*

KraussMaffei is a system partner for the MuCell process marketed by Trexel. As such, KM is capable of ideally matching process and machine technology.

MuCell is a physical foaming process for thermoplastics. It uses nitrogen or carbon dioxide as blowing agents. For this purpose, the gas is transformed into a supercritical fluid (SCF), fed into the plastic melt toward the front of the barrel, and mixed with the melt.

KraussMaffei has been using MuCell technology successfully for many years and is a leading individual customer of Trexel. The global authorization to directly market MuCell technology confirms our technological expertise. You can order your complete MuCell system directly from KraussMaffei – without additional agreements with third parties, without teething problems during the course of the project and including all utilization rights.

# MX SPINFORM TECHNOLOGY

## YOUR “TURNAROUND” TO MORE COST-EFFECTIVE PRODUCTION FOR FUNCTIONAL COMPONENTS

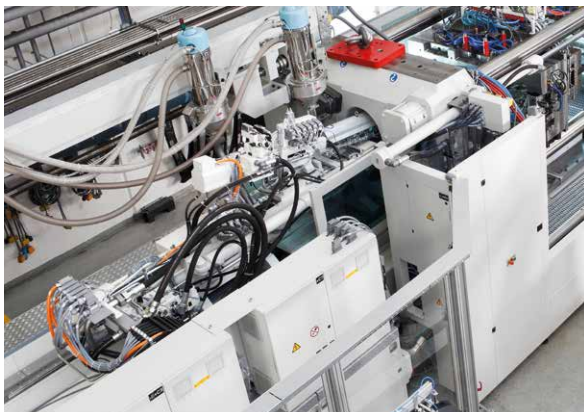
SpinForm technology enables optimum use of multi-component injection molding with advanced machine and mold technology. KraussMaffei provides you with the robust machine basis for your mold technology and the necessary process expertise, in order to exploit swivel platen technology to the full extent.

With SpinForm swivel plate technology, KraussMaffei is providing a multi-component concept that can be used to effectively optimize multi-component injection molding. In comparison to turntable molds, SpinForm offers numerous advantages, among which doubling the output while maintaining the same clamping force achieves the greatest effect. There is no alternative to the SpinForm concept when it comes to manufacturing larger 2-component products.

SpinForm is based on robust, standardized machine technology that has proven its value on the market for many years and sets the standard in this technology sector. This concept works extremely accurately and also provides the precision required for complex compression processes. Thanks to the two-platen system and the spin unit, an extremely wide variety of different automation solutions can be quickly and easily linked – perfect for linear and six-axis automation.

### YOUR BENEFITS:

- Maximization of output
- More potential for large-format, contoured parts
- Standardized systems across all clamping force sizes
- Greater flexibility thanks to the unique design of the spin unit
- Unit cost reduction thanks to process integration from a single source

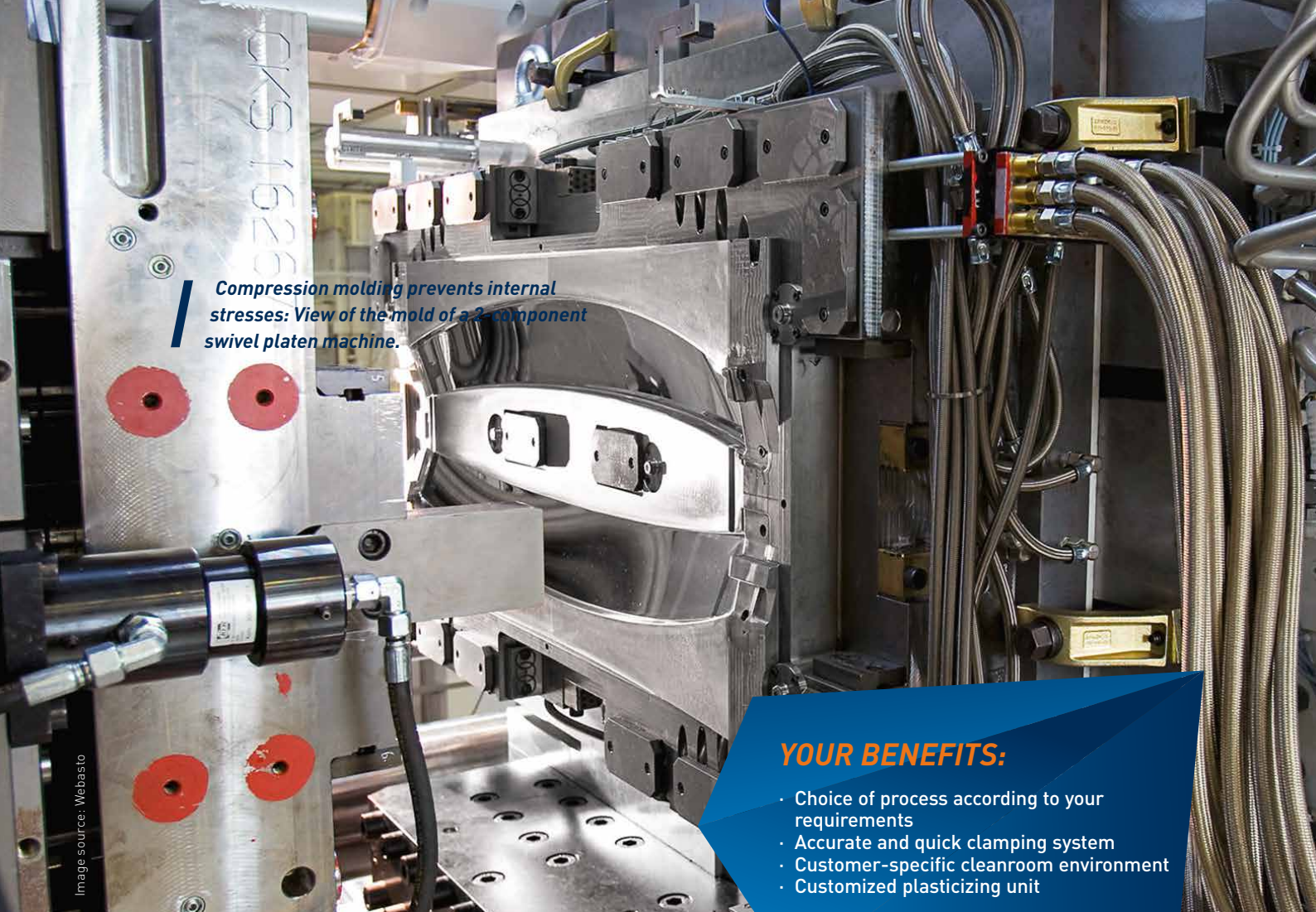


*Due to their general design, the SpinForm machines provide sufficient room for even complex periphery and automation equipment to be easily integrated.*



*MX series designed as three-component SpinForm technology (swivel plate).*





*Compression molding prevents internal stresses: View of the mold of a 2-component swivel platen machine.*

#### **YOUR BENEFITS:**

- Choice of process according to your requirements
- Accurate and quick clamping system
- Customer-specific cleanroom environment
- Customized plasticizing unit

## **STAMPFORM**

### COMPRESSION MOLDING PROCESSES FOR MANUFACTURING OPTICAL PARTS

With our StampForm technology, we use the clamping movement of the injection molding machine to produce aesthetically perfect quality products. The areas of application range from the automotive and packaging industries through to the pharmaceutical industry. StampForm is unbeatable when it comes to its combination of process features: internal stresses are reduced, sunk spots are eliminated and practically no limits are set on the manufacture of surface structures.

Whichever process you choose, from injection molding or expansion injection molding, to compression molding or IMPmore, through to force molding, we will meet your requirements in every case. Take advantage of our accurate and quick clamping system, dynamic and high-precision mold movements as well as an extremely rigid mold guidance system with constant parallelism monitoring. KraussMaffei can look back over many years of expertise and comprehensive know-how in clean room applications. We adapt the clean room environment specifically to your requirements, thereby guaranteeing the best possible protection for your OK parts. With the customized plasticizing unit, you always achieve the highest level of melt quality as well as a high level of shot weight consistency.



# OUR WORLDWIDE EXPERTISE IS YOUR ADVANTAGE DIGITAL & SERVICE SOLUTIONS

With your KraussMaffei machine, you have chosen a product that delivers the highest levels of productivity and reliability. In addition to our range of machinery, KraussMaffei focuses on comprehensive and future-oriented solutions, innovative business models and an innovative portfolio of digital products.

## Customer service at the touch of a button

The process of digital transformation is becoming faster and easier than ever for the customer. Our Digital & Service Solutions unit makes your production chain even more flexible and efficient with future-oriented solutions. KraussMaffei thus globally provides an all-inclusive customer service package and networks machines and processes with each other. Our global support offers a sound basis for your local long-term success.

## Individual challenges in mechanical engineering call for intelligent solutions

With our services portfolio, we support you throughout your machine's lifecycle with a strong focus on your specific needs. In order to satisfy your wishes, we offer you a wide range of solutions in order to ensure maximum availability and optimum productivity of your machines.

## Technology<sup>3</sup> as a unique selling proposition

KraussMaffei is the only supplier in the world with a product range comprising the most important machine technologies for plastic and rubber processing: injection molding machinery, automation, reaction process machinery and extrusion technology. KraussMaffei is represented worldwide with more than 30 subsidiaries and over 10 production plants as well as about 570 commercial and service partners. Working together with our customers and partners, we are thus in a position to offer vast and unique expertise in the industry.

You can find further information at:  
[www.kraussmaffei.com](http://www.kraussmaffei.com)

# KRAUSSMAFFEI – PIONEERING PLASTICS



## Extensive expertise from a single supplier

KraussMaffei is one of the world's leading manufacturers of machinery and systems for producing and processing plastics and rubber. Our brand has been synonymous with cutting-edge technology for over 180 years. Our product range includes all technologies in injection molding, extrusion and reaction process machinery. KraussMaffei has a unique selling proposition in the industry as a result. By drawing on our proven innovative capacity, we can guarantee our customers sustained additional value over their entire value-adding chain through our standardized and individual product, process, digital and service solutions. The range of our products and services allows us to serve customers in

many sectors including the automotive, packaging, medical and construction industries. We also supply manufacturers of electrical and electronic products and household appliances.

## At your service all over the world

KraussMaffei is represented all over the world. Subsidiaries provide you with support in the countries shown in light blue. Our sales and service partners take care of you in the regions shown in white.

You can find all contact information at  
[www.kraussmaffei.com](http://www.kraussmaffei.com)

**POWERFUL.**  
**VERSATILE. DURABLE.**  
EXPERIENCE OUR MX SERIES  
INJECTION MOLDING MACHINES



***[kraussmaffe.com](http://kraussmaffe.com)***