

KraussMaffei

PEOPLE FOR PLASTICS



SUSTAINED HIGH PERFORMANCE

CX series injection molding machines

IN PARTNERSHIP WITH INDUSTRY

KraussMaffei is a premium partner for the plastics and rubber processing industries worldwide



Automotive



White Goods



Construction



Life Sciences



Electrical/Electronics

Whatever you aim to achieve in plastics or rubber processing, KraussMaffei is your partner. We are the only company with intensive expertise across the three main engineering fields. And we have a strong track record in integrating this expertise to develop new processes and systems.

Ready for any challenge

Our **Injection Molding Machinery Division** supplies machinery and systems from 35 to 4,000 tonnes for standard applications and for all processing variants, together with fully automated solutions. We have a strong customer base in all the relevant industries worldwide.

Our **Reaction Process Machinery Division** supplies machines and complete systems for processing polyurethanes and other reactive materials.

Completing our product portfolio, **Automotive Component Systems** supplies foam molds, cutters and routers. Our customer base is wide, with a focus on the automotive, construction and white appliances industries.

Our **Extrusion Technology Division** supplies machinery and systems for compounding, for pipe, profile and sheet extrusion, physical foaming, and the production of technical rubbers and intermediates for tire production. Machinery from the company's range – from single extruders to

complete extrusion lines – is used in many industries, including chemicals, pharmaceuticals, automotive, construction, furniture and packaging.

People for Plastics

We are the “people for plastics”. We are your partners from the first exploratory discussion, through development to commissioning, servicing and operating your system, and final disposal. At all times, you are assured of outstanding competence in planning and engineering, as well as reliable and fast spare parts, service and support.

Adding value for customers

We put our expertise to work for your success. With machine ranges engineered for modularity, we can deliver application-specific solutions based on our wide range of standard modules and specially engineered solutions. This strategy offers customers technical and cost advantages.

Close to customers around the world

As an international company, KraussMaffei has a presence in all the major markets for the plastics and rubber processing industries and employs around 3,000 people worldwide. Our sales and service network keeps us close to all our customers around the world.

CX series injection molding machines for consistently high performance based on reliable two-platen technology



Packaging

KraussMaffei's CX series is a range of all-hydraulic injection molding machines for clamp forces from 35 to 650 t. CX machines are engineered to deliver the sustained high performance and high product quality required in many sectors and applications. The CX is a modular, platform-based range for high flexibility and cost-effective production. Two-platen technology means a compact machine and the four-tiebar clamp stands for highest precision and efficiency.

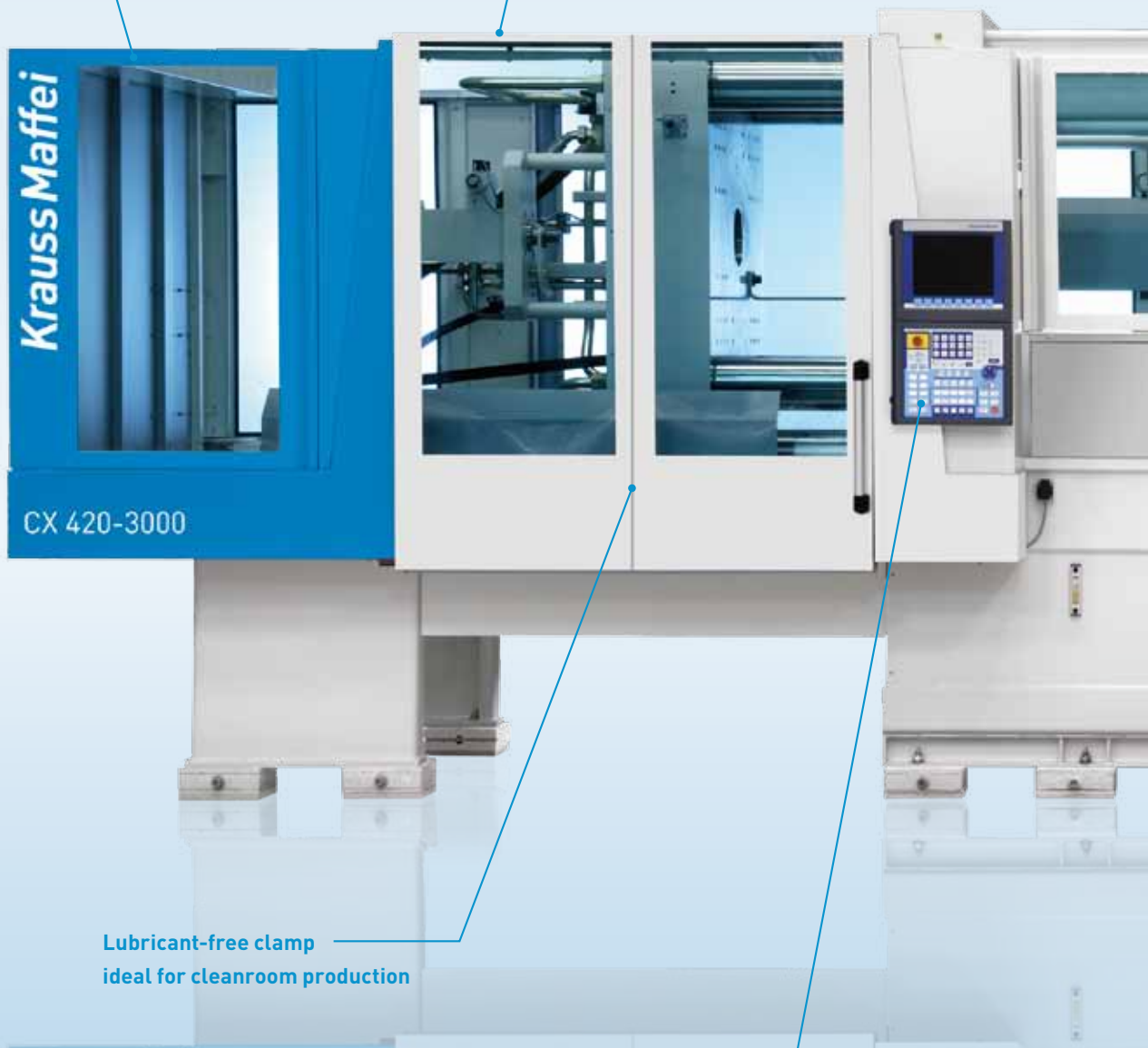
KraussMaffei offers a comprehensive choice of plasticizing units and production options, making it possible to configure CX machines for different applications and output levels in thermoplastic, thermoset and polyester injection molding.

TRANSPARENT TECHNOLOGY

Meet the machine: take a tour of a CX injection molding machine

Cantilevered clamp unit
ample space for application-specific
product transport and automation
solutions

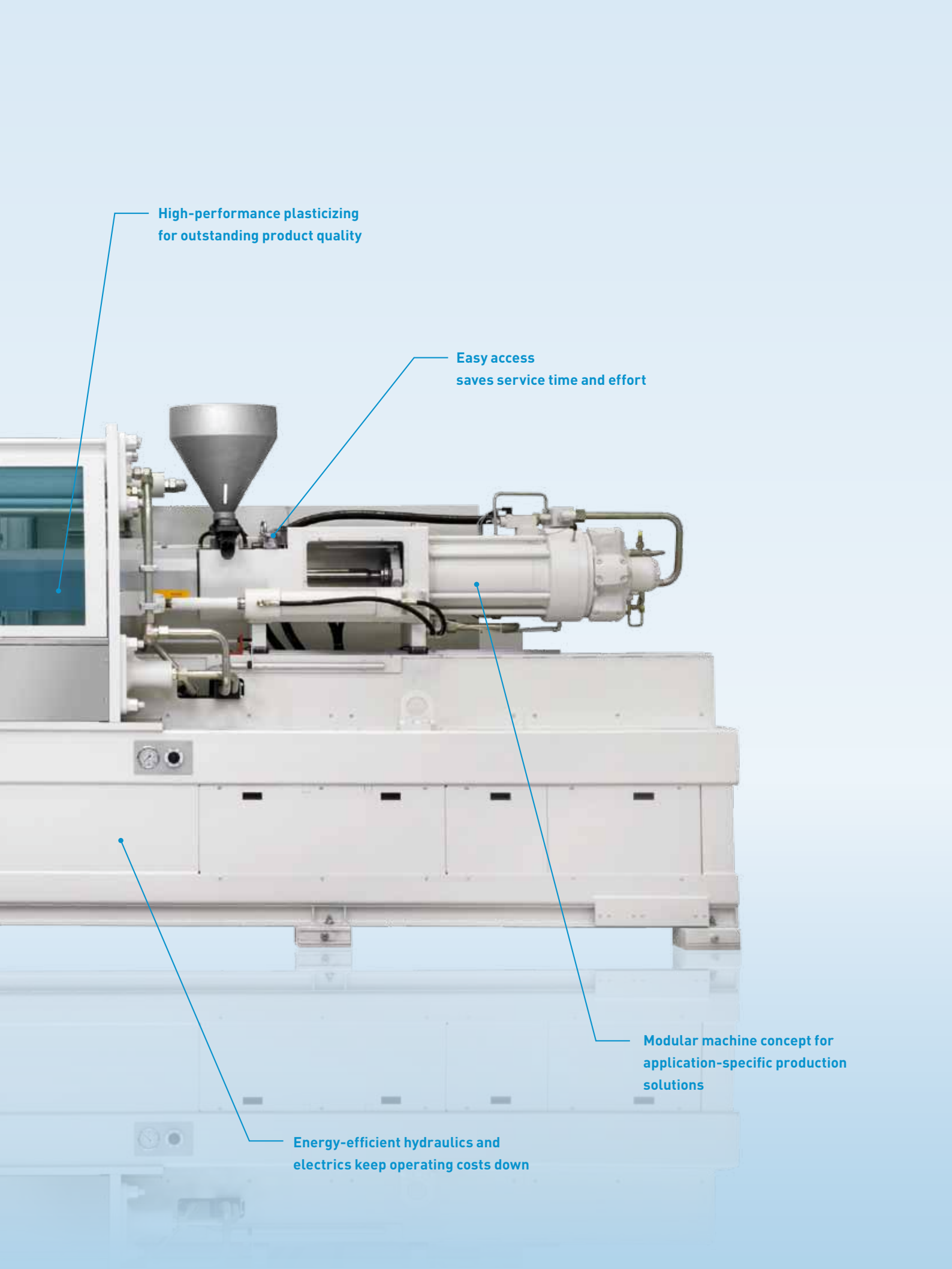
Compact 2-platen clamp
for a far shorter machine



Lubricant-free clamp
ideal for cleanroom production

Operator-friendly MC5 control system
for high machine availability

CX 450-3000



High-performance plasticizing
for outstanding product quality

Easy access
saves service time and effort

Modular machine concept for
application-specific production
solutions

Energy-efficient hydraulics and
electrics keep operating costs down



DESIGN BASICS

Engineered for sector-specific excellence – from 35 to 650 t

The modular CX series offers you highly-effective, application-specific solutions for injection molding thermoplastics, thermosets and polyester. The high-performance plasticizing unit ensures outstanding product quality and cost-effective production.

Customized for your products and processes

The CX platform is modular, it's engineered for high flexibility and a high return on your investment. Modularity, the hallmark of the CX series, stands for easy customization to match your product specifications and production processes. KraussMaffei offers a comprehensive range of modules and variants targeted to the specific requirements of different sectors and applications, especially automotive, medical, packaging and electrical/electronics. Our outstanding know-how in these specialized areas is a launchpad for your success.

Short 2-platen clamp saves space and boosts flexibility

KraussMaffei's proven 2-platen technology reduces clamp length by 30% compared with other machine concepts. The short clamp simplifies planning for product transport systems and frees up space to implement optimal production and automation solutions.

Plasticizing units to match your materials

We offer a choice of plasticizing systems – from universal to specific high-performance systems. You can be sure of getting the most effective system for the material you are processing – and for high output and outstanding product quality. Tight process control and optimized wear protection make sure of sustained performance and product quality.



A basic CX injection molding machine:
compact, hydraulic and modular.

Energy-saving drive concept for high performance and low unit costs

The modular drive concept has been engineered for high machine performance and low energy consumption. The exact oil volume at the correct pressure is made available for each operating point. The result is higher productivity and lower costs.

MC5 control for easy, error-resistant operation and flexible production

Extensive functionality to control a wide range of machine movements, plus reliable monitoring and evaluation programs, give you great flexibility. The operator interface has been improved, making machine operation simpler and more foolproof than ever.

DETAILED PRODUCT INFORMATION

Two-platen CX clamp unit innovative solution with convincing benefits

KraussMaffei's two-platen clamp technology delivers a whole range of benefits for your business – from space and cost savings, to a far lower reject count and reduced maintenance effort.

Innovative solution with long-term value

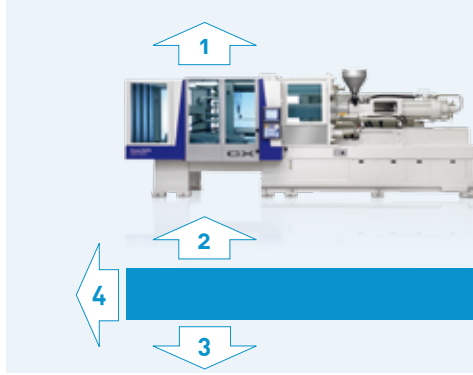
Four clamping cylinders act absolutely symmetrically, ensuring uniform clamp force distribution. Even at maximum injection pressure, there's no risk of one-sided mold opening. The fully-hydraulic clamping system, with integrated drive cylinders, ensures very fast opening and closing movements. The moving platen is supported on linear precision guides mounted on the machine bed. The result is high platen parallelism with no risk of tilting or misalignment.

Transparent machine and easy access

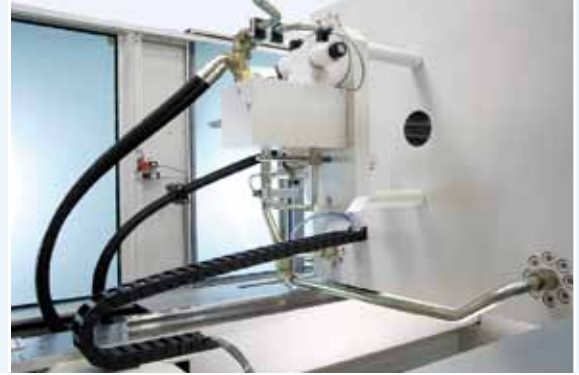
The well-designed housing has large transparent panes for a clear view into the clamp and ejector area. Front and rear safety doors can be opened separately with the door glides mounted directly on the machine bed for maximum access. The nozzle and ejector areas are accessible via separate doors. Mold changing, especially in low-ceilinged production halls, is easier because the lack of an upper support frame means molds have only to be lifted over the tiebars.



The mold zone of a CX machine has ample space for auxiliaries.



The cantilevered, 2-platen clamp makes it simple to transport products in any direction.



Easy access to the ejector area

Multi-phase locking for long mold life

The multi-phase (up to 16 phases) mold locking mechanism can be set easily and precisely. By protecting the mold against damage, it extends mold service life and helps to keep maintenance costs low – both these factors have a positive impact on manufacturing costs.

Ample clear space and clean production

The cantilevered clamp unit frees up space for integrating parts transport systems and other peripherals. The self-lubricating system eliminates the problem of parts and transport equipment being contaminated by oil and grease.

Ready for the robots

Mounting safety guards and doors on the machine bed, without a top frame, makes it easier to integrate parts removal robots and other handling systems.

Ideal for cleanrooms

The compact, cantilevered clamp up to 160 t is also ideal for cleanroom applications. Cleanroom solutions can be planned so that only the clamp protrudes into the cleanroom area. The rest of the machine and all sources of contamination are in the greyroom area. This approach is effective whether the cleanroom is a laminar-flow canopy or a fixed construction. The size of the high class cleanroom is kept to a minimum, with huge savings in capital investment and operating costs.

Ejector zone with space to spare

Ample free space behind the moving platen makes set-up and adjustment easier and faster. This area can also be used for special mold-specific solutions, for example unscrewing systems. Excellent access increases machine availability, because time is saved by reducing set-up effort and errors.

Flexibility for special requirements

Rapid advances in plastics demand increasing differentiation in injection molding techniques; many new and innovative products demand special production processes. Optical data media, for example, require specialized compression molding processes. A fully-hydraulic system is still the best guarantee for precise compression profiles. KraussMaffei's CX series offers customized solutions for your products and production processes.

CX benefits for you

- Space savings
- Lower reject count
- Reduced maintenance effort



CX series hydraulic systems – precise, flexible and modular

The CX hydraulics were also engineered with the focus on reliability, low manufacturing costs and a futureproof investment. All components – from the pump drives to the control valves, and from the control systems to the soundproofing were integrated with this in mind.

Energy-saving pump drive

At each processing stage, the pump drive makes available the precise oil volume necessary to generate the required pressure. Actual pressure is measured in the pump and instantly adjusted. This approach reduces energy consumption to a minimum.

Fast-reacting pumps

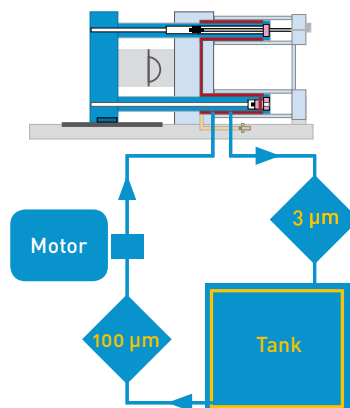
The pressure- and flow-regulated pump achieves very fast response times. The variable-delivery pumps react to calls for rapid changes in speed as efficiently as to calls for very small changes in pressure, eg, during the holding-pressure phase.

Dependable control valves

All speed and pressure variables for the CX machine control are entered as digital values. The electrically activated proportional valves, monitored by an additional internal control circuit, ensure high repeatability and are capable of maintaining set values over long production runs. The outcome is repeatable production cycles and highest product quality. For extremely tight control even in very demanding applications, CX machines can be fitted with a separate control valves for the injection and plasticizing processes. Pressure and speed are closed-loop controlled for absolutely repeatable processes.

Optional BluePower module for minimal energy consumption

BluePower is a package of tools and products that KraussMaffei offers for reducing energy consumption on CX machines. One of these is the BluePower servo drive. We offer the option of fitting the hydraulic system with servo technology for CX machines from 35 to 650 tonnes. The servo drive is coupled with a constant-delivery pump. The pressure and volume of oil can be flexibly controlled by changing the rpm of the servo drive. This servo drive is characterized by high efficiency and low throttle losses. Especially in slower cycles with long periods of idling – for example, during cooling times – this option can reduce the machine's energy consumption by as much as 50%.



With its high-efficiency filtration unit, the CX hydraulic system is engineered for long operating periods between oil changes and highest machine uptime.



As flexible as your production tasks: the CX Hybrid with its all-electric injection unit for high-precision cleanroom production.

Optional modules for enhanced performance

In the basic CX models, a hydraulic pump generates the pressure and the oil volume for all machine movements. For more performance, or parallel machine movements, KraussMaffei offers pressure accumulators and additional pumps as options. We also offer hybrid drive concepts with electric screw drive, electric injection unit and an electric ejector. These options are another aspect of our determination to offer you high-performance machines closely matched to your product requirements.

A sure investment for your future

We've made it easy to swap components and to upgrade your CX machine for expanded functionality. Quick and easy upgrading by means of plug&play-type modules puts you in a strong position to take advantage of business opportunities as they arise.

Effective noise reduction, service-friendly engineering

The pump unit is completely enclosed in a soundproof housing, to reduce noise emissions. Housing panels can be removed individually for access, making the CX extremely service-friendly. Access to all hydraulic elements, wherever they are located, is fast and easy. Less time spent on maintenance and repairs makes a significant difference to machine availability.

CX benefits for you:

- Low manufacturing costs
- Reliability
- Modular upgrade options

ADDITIONAL PRODUCT INFORMATION

CX machines – compact and flexible production systems

KraussMaffei's CX series covers our small and medium tonnage machines (from 35 to 650 t). We offer an extremely wide choice of clamp and injection unit combinations. You benefit from machines which are the best possible match to your specific production requirements.

Application-specific machines for productivity and quality

An individually configured CX machine operating within the ideal processing window ensures optimal productivity and quality. At one end of the spectrum are “universal“ machines for a very wide application range; at the other end are application-specific machines delivering peak performance for a specific application. We have the right solution here – and for everything in between.

Tonnages and injection unit combinations

Typ	SP 55	SP 100	SP 180	SP 380	SP 750	SP 1000	SP 1400
CX 35	15/18/20/22	20/22/25/28	25/28/30/35				
CX 50	15/18/20/22	20/22/25/28	25/28/30/35	30/35/40/45			
CX 65		20/22/25/28	25/28/30/35	30/35/40/45			
CX 80		20/22/25/28	25/28/30/35	30/35/40/45	40/45/50/55		
CX 110			25/28/30/35	30/35/40/45	40/45/50/55		
CX 130			25/28/30/35	30/35/40/45	40/45/50/55	50/55/60	
CX 160			25/28/30/35	30/35/40/45	40/45/50/55	50/55/60	
CX 200					40/45/50/55	50/55/60	55/60/70

Typ	SP 1000	SP 1400	SP 2000	SP 3000	SP 4300	SP 6100	SP 8100
CX 250/300	50/55/60	55/60/70	60/70/75				
CX 350			60/70/75	70/80/90			
CX 420			60/70/75	70/80/90	80/90/100		
CX 500				70/80/90	80/90/100		
CX 575/650				70/80/90	80/90/100		
CX 575/650 two-part						85/95/105	95/105/115

Configure your optimal injection moulding machine, with over 150 basic variants available.

Products and applications



Automotive

CX series injection molding machines have the versatility to meet the diverse requirements of the automotive components industry for high-precision components. One example that stands for many: interior trim element.



Medical

The medical technology industry was quick to appreciate the potential and advantages of injection molded plastics – and to invest in advanced machines, like the CX, to produce the required high quality successfully. One example is this unbreakable vaccine container.



Electrical/electronics

Plastic components are indispensable across the electrical and electronics industries – they can be mass produced at low unit cost on CX machines. One example is this heat-resistant housing for an iron.



Packaging

Injection molded packaging elements guarantee safe and sure transport for a huge diversity of items – and CX machines are ideal for packaging applications, including production of recyclable storage and transport containers in many shapes and sizes.

KraussMaffei offers you the benefits of maximum modularity

Configure your ideal injection molding machine from over 150 basic variants and over 500 options. You'll get the perfect machine for your business. For a 160 t machine, for example, we offer a choice of 18 screw diameters.

More options for performance and flexibility:

- Injection pressure up to 3000 bar specific
- High-temperature plasticizing up to 450 °C
- Increased screw rpm (hydraulic)
- Electric screw drive
- Extra pump for ejector/core pulling
- Accumulator for increased injection pressure
- And much more

CX X-Form for compact high-tech

The CX series with its two-platen technology and good all-round access, is ideal for integrating complex peripherals in tight spaces. One outstanding example is the X-Form process, which is based on a CX machine. X-Form is a multi-component process incorporating all three of KraussMaffei's core competences.

Space to expand

A CX injection molding compounder is used to produce TPU-X. CX machines ensure good access to the injection unit and clamp, with ample space for bolt-on units, like the second injection unit required here.

Easy integration of components and handling robots

Generous daylight between the tiebars and free space behind the ejector make it easy to integrate turntables or sliding tables in the molds. A handling robot, that makes maximum use of the free space above the machine, can be installed without problems. It's even possible to plan a product drop zone beyond the moving platen – inside the machine housing with the clamp closed. This system illustrates how it's possible to integrate all key production steps in the smallest possible space.



What is X-Form? Where are the economic benefits of switching to an X-Form process?

The X-Form process makes it possible to produce parts with the elasticity and high resilience of natural rubber and other elastomers. The innovative process, in a single manufacturing cell, combines extrusion, injection molding and a reaction process. A specially developed thermoplastic polyurethane (TPU Elastollan® from Elastogran) crosslinks to form TPU-X in the reaction stage. The successful process is the outcome of careful harmonization of the material formulation, the multicomponent mold technology, the automation and the injection molding compounder.



CX 300-1400 IMC X-Form: 22 square meters is all it takes to integrate all key value-adding steps in this system for producing substitutes for metal/rubber composites.

The X-Form process opens the way for substantial cost savings in producing high-quality parts that combine rigid and flexible materials. The thermoplastic/X-Form composites are an attractive alternative to metal/rubber composites.

By integrating the injection molding compounder in the multicomponent molding process, KraussMaffei opening the way for new applications and new market potential. An X-Form product

weighs around 40% less than a equivalent steel product, the quality is much better, and unit manufacturing costs are lower thanks to the very fast cycle times. (Cycle times are faster by a factor of four or five compared with times for a plastic/rubber composite.) Potential applications for X-Form composites include valve covers and other covers with integrated seals, motor mountings, vibration absorbers and substitution of other metal/rubber composite parts.

CUSTOMER BENEFITS

The CX series – an investment that pays off in process benefits, higher performance and cost savings

Outstanding machines and competent support from our experts make KraussMaffei the right choice. As your partner, we'll help you to get new ideas and projects moving fast and successfully. Consider some of the benefits the CX series can deliver for your business:

A clean machine for a low reject count

The grease-free 2-platen clamp means a clean mold area and no risk of lubricant contamination of molded parts. Higher yields boost the return on your investment.

Maximum uptime with a transparent machine

Transparent guard panels and a large field of view make it easier to follow mold, ejector and nozzle operation. Problems can be picked up speedily, and easy access lets operators and service technicians work fast and accurately. Set-up and service times are shorter and availability increases.

Modularity for highest performance

A wide choice of standard modules and upgrade options gives you an application-specific machine with maximum performance and availability.

Space-efficient : CX machines with their ultra-short clamp units.

Easy access for a service-friendly machine

Cover panels can be removed quickly and individually for easy access to all machine components. Easier, faster service and maintenance means higher machine availability.

Lowest mold wear for a long service life

The clamp unit, constructed as a rigid box with precision guide elements, ensures 100% platen parallelism and optimal support for the mold. Combined with efficient mold locking, this system reduces wear on the mold. The result is higher productivity and lower service and maintenance costs.





Stable processes for lower unit costs

Precise and reliable hydraulic systems result in stable processes over long production runs and increased system availability. Higher productivity cuts unit costs.

Premium melt quality for high product quality

Wear-protected plasticizing units with extra-long service lives ensure outstanding melt quality and long-term repeatability. Yield and quality are consistently high. Meeting your production targets helps to keep your costs under control.

Errorproof operation for high availability

The operator-friendly, flexible MC5 control system makes for easy and error-resistant machine operation. Machine availability and productivity increase and costs drop.



SERVICE WORLDWIDE

Service, support and spare parts – when you need them, where you need them

Rely on us for a fast and competent response to all your service needs anywhere in the world. Whatever you need – from troubleshooting and training to spares or repairs – we're on the job.

We're dedicated to supplying service quality on a par with the outstanding quality of our machines and systems. We offer far more than spare parts and hotlines. We'll work with you to choose the best and most cost-effective solution for your operation. We'll help you test new applications and we'll plan customized service packages.

All-round service

Our service offering is broad. We'll configure your system, install and commission it, train your staff, plan measures to minimize your downtime risk and maximize productivity, and carry out maintenance, repairs and upgrades. You'll find us fast, reliable and competent. Our hotline is manned by highly-trained and experienced service technicians. If necessary, we'll get a technician to you quickly. Remote diagnosis, interfacing directly with your machine's control system, can be a practical alternative. Spares for all important wear parts are available at short notice. We're continuously expanding our service network to speed up spare parts shipment. Talk to us about the right service solution for your business.

Customer trials and prototyping in our test lab

The Injection Molding Division operates a test lab fitted with the latest machinery and equipment. We can run trials, produce prototype parts and fine-tune processes on your behalf. We can work with you to test and evaluate processes, machines and equipment in order to identify the best approach for a particular project. Our highly-qualified application engineers are there to help you.

Training with high hands-on content

Courses are held in our lab and training centre, or, optionally, on your premises. We offer clearly-structured basic and advanced training in operation, process control and maintenance for KraussMaffei injection molding machinery. On request, we'll plan and hold special courses on topics of your choice. All participants spend a high proportion of their training working hands-on with original KraussMaffei machines. A well-structured training program produces skilled operators and technicians, which will positively impact your up-time and productivity.

Contact for training:

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At your service worldwide



How to contact us

Apart from email you can contact us on the service hotline or by post at this address:

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Injection Molding Service

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Germany

KraussMaffei is a premium partner for the plastics and rubber processing industries worldwide. KraussMaffei machines and systems are used wherever plastics and rubber are converted into products. As a knowledge-driven technology company, we build on many decades of experience and a strong commitment to research and development.

The CX series from KraussMaffei is a range of small and medium tonnage, all-hydraulic injection molding machines. Their dominant feature is the two-platen clamp that produces a compact machine with very good all-round access. CX machines with KraussMaffei's efficient hydraulics deliver highest precision and performance over very long service lives. With 150 basic versions and over 500 expansion options, CX machines are outstanding players in many applications and sectors and in processes from simple to very complex. Tough and versatile, CX machines offer you cost-effective, product-specific solutions.

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