



Perfectly tailored to your needs Life Cycle Service

Engineering Passion

Krauss Maffei

Facts and figures

Application areas



Plasticizing unit



Software



Retrofitting

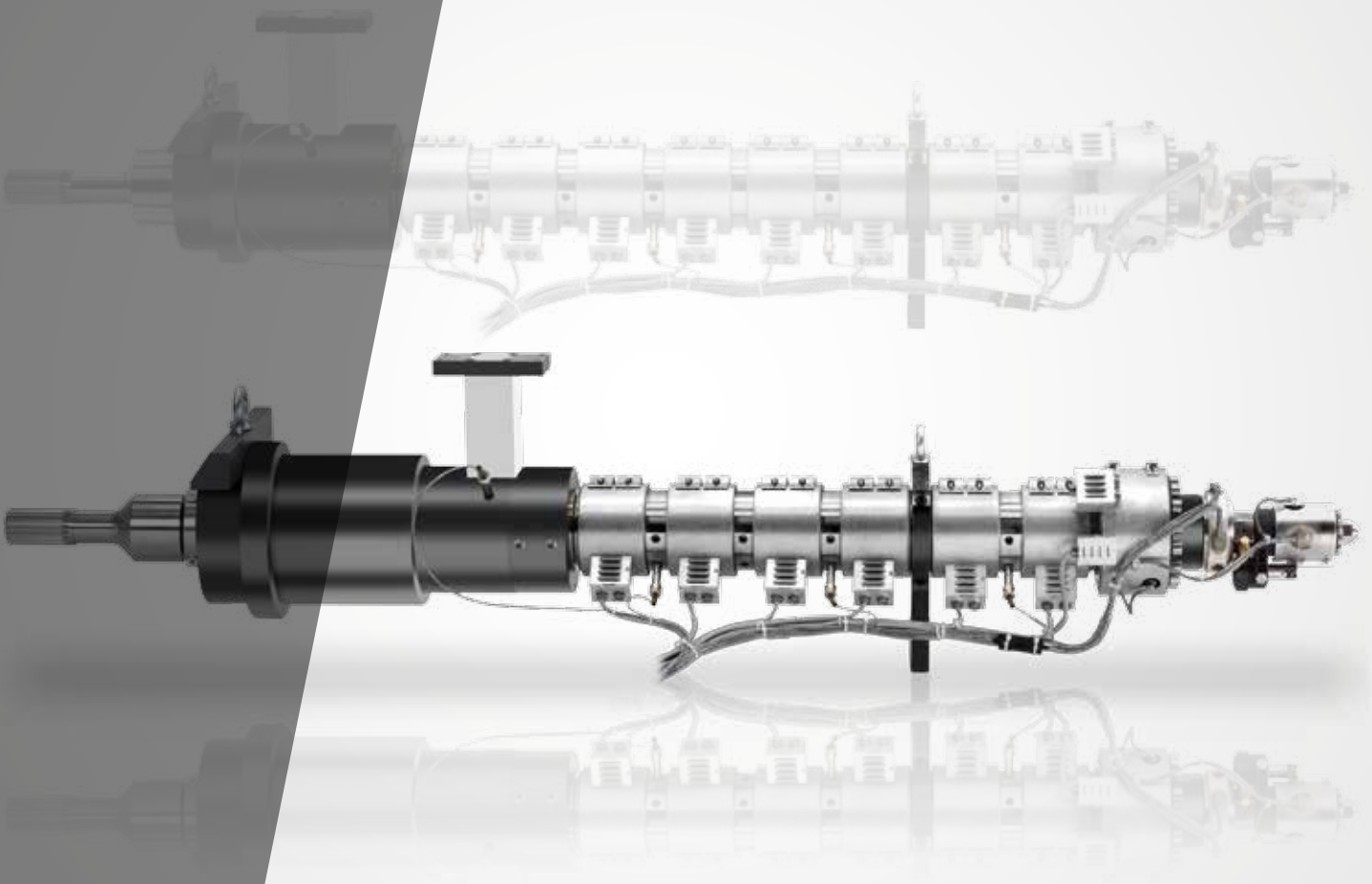


Service

Perfectly tailored to your needs Life Cycle Service

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Quality gains by changing the plasticizing unit size Adaption Kit – the complete, drop-in solution for smaller injection volumes



The Adaption Kit substantially extends the usability of already installed injection molding machines. It is a complete plasticizing unit, including all the necessary software, one size smaller than your current plasticizing unit. Engineered as a drop-in replacement, the Adaption Kit is installed quickly and easily in the existing injection unit. Investing in an Adaption Kit will significantly increase the flexibility of your production.

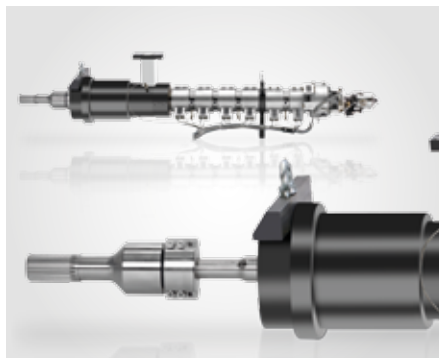
New capacities and improved quality thanks to the Adaption Kit

New molds are redefining the specifications for the production system. Individual modifications to the injection and plasticizing units are needed to achieve product quality, because new products, materials and mold technologies often result in far smaller shot volumes.

The Adaption Kit, engineered as a smaller plasticizing unit, offers a simple solution to the necessary volume change. It is designed as the next smaller injection unit size for the new application. Decisive factors influencing the design are product weight and the optimal dwell time for the melt in the barrel.

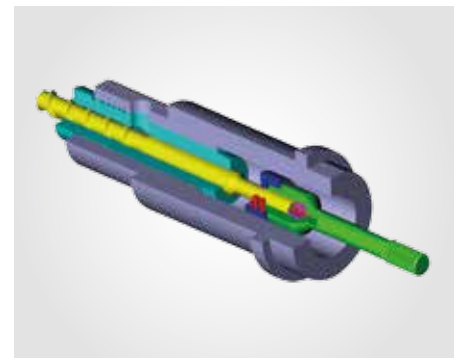
Custom combinations of screw geometry, material and surfaces offer additional potential for tuning the production solution to the product. KraussMaffei supplies the Adaption Kit as a drop-in replacement with the same installation dimensions. It is a complete unit, pre-assembled, function-tested and includes the software. This enables quick and easy changeover on site.

The Adaption Kit makes your production more flexible and improves product quality. It can be uninstalled at any time and replaced by the original plasticizing unit.



Your benefits:

- Fast and easy conversions
 - Same installation position and length
 - Extended range of uses for added flexibility
 - Better product quality thanks to optimal melt treatment
 - Complete package from a single vendor: mechanical and electrical systems, and software
-



Based on standard modules, the Adaption Kit is a complete plasticizing unit replacement: adapter flange / screw extension / barrel / screw / heater

HPS-M screw

High-performance mixing screw

The HPS-M screw raises the melt quality and makes the plasticizing process more efficient. This screw has proven its excellent value for adding color directly using masterbatches.

The screw geometry provides perfect color homogeneity, even with colors that are difficult to mix in. This eliminates the need for any additional mixing system for plasticizing and generally results in a significant reduction in the amount of pigment required.

The HPS-M screw is available for:

- All series
- Injection unit sizes: SP 135 to SP 4300
- Diameters from 30 to 100 mm

Your benefits:

- Better homogenization and gentle material processing
- Excellent melt quality, perfect color mixing
- Decreased back pressure: up to 70% lower, depending on the process
- Plasticizing with lower melt temperature
- Shorter cycle time
- Standard length, simplified screw exchange during conversion
- Lower masterbatch ratio
- Faster color and material changes, shortened set-up times
- No need for additional mixing systems and heating elements
- Lower specific energy consumption
- Available ex-stock



Mixing screw with arranged pin packages



Gentle material processing through efficient shearing/mixing part



Pin mixing screw



HPS-M screw

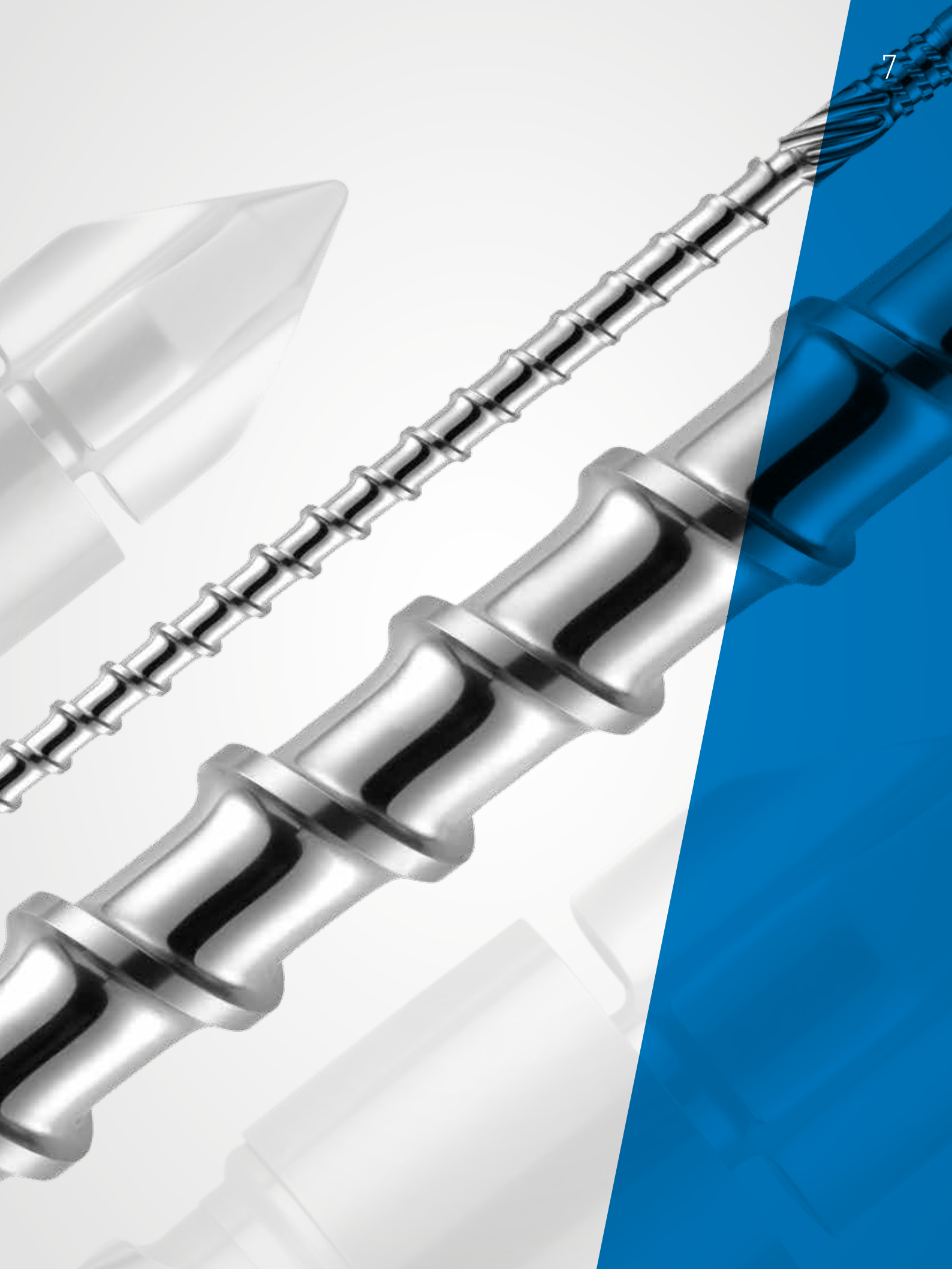


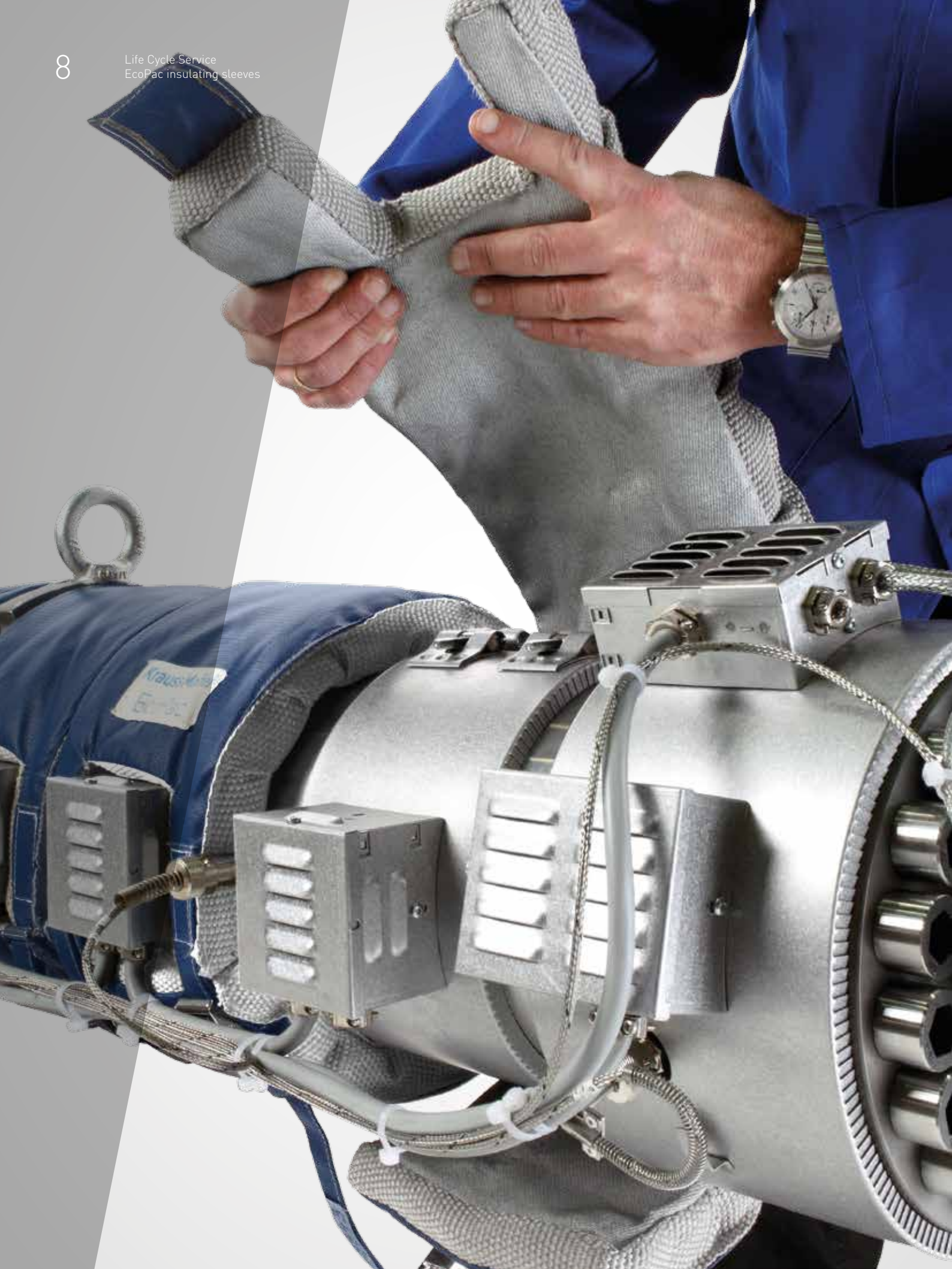
Feed zone

Compression zone

Metering zone

Shearing/
mixing part





Adding value by insulating EcoPac insulating sleeves

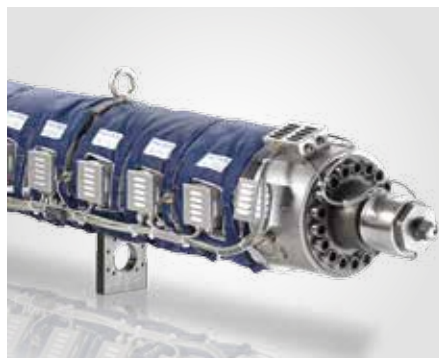
When processing thermoplastics, it is possible to substantially reduce heating energy through suitable insulation of the screw barrels because heat radiation is eliminated at the place where it arises. In addition to low heat dissipation into the production environment, shorter warm-up times and a homogeneous temperature profile in the cylinder are further advantages.

Reduced heating means less energy with EcoPac

Before thermoplastic processing starts, the barrel of the plasticizing unit must be heated to the required temperature using electric heating pads.

During the process, heat continues to be applied to the melt via the temperature control system. The heat radiated from the machine's barrel surface into the production environment represents a significant energy loss for the process.

KraussMaffei's EcoPac insulating sleeves keep this energy loss to a minimum. There are different sleeve designs to fit different heating pad geometries. Your production also profits immediately. Another immediate benefit is the far shorter warm-up time for each production start-up.



EcoPac insulating sleeves (ZE 25.50) optimize the energy balance of the plasticizing process, by saving energy directly at the plasticizing unit.

Your benefits:

- Lower energy consumption: depending on the process, savings of 20-40% are possible
- Up to 30% reduction in warm-up times
- Can be easily retrofitted on standard heater bands
- Separate sleeve for each heater band, quick and easy removal for maintenance and inspection
- Temperature-resistant up to 500 °C, so suitable for high-temperature applications
- Sleeves with easy-clean, easy-care PTFE coating
- Non-toxic
- Comprehensive product range for injection unit sizes from SP 55 to SP 101000

Updating data storage CF drive replacement for floppy disk drive

The CF card can hold up to 99 data records. KraussMaffei is offering a CF drive as a low-cost upgrade for floppy disk systems used to back up data with the MC2*, MC3, MC3-F and MC4 injection molding machine control systems. As a state-of-the-art storage medium, the CF card will simplify and speed up data exchange and data storage for you. The software that comes with the drive lets you simply copy existing data records using your PC. The complete upgrade kit makes this change-over very easy and the CF drive can then be used immediately because it is a plug & play device.

Device specifications

Dimensions (W x H x D)	25.4 x 101.6 x 146 mm
Supply voltage	5 V
Power consumption	150 mA
Interfaces	Floppy interface, jumper bar, voltage
Accessories	128 MB CF card, including software (formatting, copying), Operating instructions

Your benefits:

- Larger memory capacity:
Manage up to 99 diskettes per
CF card – 1 GB
- Easy upgrade / conversion to plug & play
solution
- Easy transfer of archive data:
PC software with copy program
- Available ex-stock

* A software update to Version 2.7 may be required for implementation on MC2 control systems. For the MC2 with 3.5" MC storage, only the drive is replaced. On all other systems, MC storage is used with a CF drive.



MC4 with CF drive



CF drive integrated into MC storage for MC2 control systems

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The efficient system tuning concept MC5 upgrade



In older injection molding machines, it's often the outdated machine control system that limits the scope for precision process control. By upgrading to the latest MC5, you will be combining advanced control technology with proven mechanical systems. This gives you the best possible basis for meeting the latest production challenges.

The MC5 upgrade combines proven mechanical systems with high-precision position control and advanced control technology. The upgrade can be carried out in stages. It includes sensitive sensors for fast-reacting process control and new cabling. A simplified operator interface with fast program structures makes set-up and operation faster and easier.

The MC5 operating system is a fast, up-to-date system with large memory capacity.

The MC5 makes it easy to integrate peripherals and link the injection molding machine into a factory IT network. This cost-effective solution lets you run ultra-modern molds and challenging processes on your existing injection molding machines.

Your benefits:

- Complete package, including all hardware
 - Simple data communication using advanced standardized interfaces
 - Customer-specific software solutions can be integrated
 - Upgrade on your premises or at a KraussMaffei plant
 - 12-month warranty
-

Enjoy greater ease of use with the MC5 upgrade: as a touchscreen or standard panel



Shorter programming times Offline programming of linear robots

The LRX on PC software for programming linear robots reduces the set-up time of the injection molding machines with new molds and applications.

By offline programming at a PC disconnected from the robot, a new program can be created locally or an existing program modified without disabling the system. The data are then simply transferred using a USB stick.

The easy and convenient operation of the MC6 user interface supports the operator in program creation. LRX on PC increases valuable production time.

Your benefits:

- Increase in productivity
- Reprogramming and modifying while production is running
- Reducing set-up times using offline programming
- Simple data transfer using storage media
- Complete documenting and simple archiving of production scenarios



For linear robots of types LRX/LRX-S and side-entry robots of type SR

System prerequisites:

- Windows 7 Service Pack 1
- Min. Intel® Celeron® G530T @ 2.00GHz
- Min. 2 GB RAM
- Min. 300 MByte of available hard disk space
- VGA graphics card with a resolution of at least 1024 x 768 pixels and 16-bit color
- Two available USB connections for data stick and license stick (dongle)

All advantages of the new MC6 control system are available offline



Familiar MC6 programming environment



Error-free program creation using the WizardX programming wizard



Easily modify and expand existing product lines in the editor

LRX on PC *KraussMaffei*
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LRX on PC
KraussMaffei

Process stability for control loops Calibration

Calibration is a defined measuring process that provides information on the quality and reliability of a control loop and its process stability. Regularly carrying out calibration and documentation of measurements establishes the foundation of trust in the production system, process control and, therefore, the product quality.



Calibration and documentation are the key to production reliability

The calibration history provides a basis for making decisions on the need for preventive action to protect sensors against aging and wear.

The following areas are relevant for calibrating injection molding machines:

- Temperature
- Pressure
- Stroke
- Injection speed
- Screw speed
- Clamping force

Your benefits:

- Documentation
 - Stable processes
 - Preventive servicing, detecting wear and tear in a timely manner
 - Planning security and cost transparency within servicing
 - Low time requirement on the system by our specialists
 - Benefits during the audit process
 - Can be combined with other services
-

Optional:

- | | |
|------------------------|--|
| Basic package | Standard inspection in accordance with a type-specific maintenance schedule, including calibration |
| Premium package | Customized additional services with complete basic package |

Your shortcut to multi-component technology Bolt-on injection units for CX and EX series machines

Multi-component injection molding delivers attractive color and material combinations – as well as added functionality – in a single-cycle process. Fewer process steps and high quality keep unit costs down, improve profit margins and give you a competitive advantage.

2-component technology has a huge range of applications

- Functional integration through different material combinations
- Eliminates assembly steps
- High bonding quality



Injection molding machine EX 160-750 with vertical bolt-on injection unit SP380 and ancillary bolt-on injection unit SP380.



Functional haptics: 2C systems produce non-slip handlebar grips in a one-step process.



Key features of power tool handles are a firm grip and brilliant looks, which can be achieved with multi-component technology, including insertion technology upon request.



2-component technology makes it profitable to mass produce disposable razors in eye-catching designs.

Your successful start in 2-component technology

Bolt-on injection units of the CX and EX Series

KraussMaffei's modular bolt-on injection units are a sure and cost-effective way to add an extra plasticizing unit and make more use of an injection molding machine you already have. Your bolt-on injection unit can be customized to suit your production projects and your existing molds.

Positioning options

- V-position: second injection unit mounted vertically on the fixed platen (FP)
- L position: ancillary injection unit mounted horizontally on the non-operator side

Drive concept

- Hydraulic with separate drive unit
- All-electric for extreme precision and lower emissions to the production environment

Flexibility and mobility

- Steplessly adjustable in the machines' longitudinal axis
- Steplessly adjustable height
- Simple mold changing, because the bolt-on unit can be moved completely out of the clamp zone
- Wide choice of plasticizing units based on our range of standard screws
- Separate control technology for complete process control and optimal settings
- Large choice of add-ons for non-standard processes or special requirements

More options on request

- Injection unit sizes up to SP4300
- Different configurations, such as Z position or parallel position



Vertical (V) configuration is ideal when space between installed injection molding machines is limited.



Having the bolt-on unit at right angles to the injection molding machine (L) is a good solution for most applications. The independent bolt-on units are simply docked onto the injection molding machines.



The all-electric version meets demand for extreme shot weight consistency for high-precision applications.

A wide choice of variant configurations for KraussMaffei hydraulic and all-electric bolt-on injection units

Injection unit	Screw Ø	Stroke volume cm ³	Model CX	EX
SP 55	15 / 18 / 20 / 22	14 – 30	L / V	L
SP 180	25 / 28 / 30 / 35	59 – 115	L / V	L
SP 380	30 / 35 / 40 / 45	113 – 254	L / V	L
SP 750	40 / 45 / 50 / 55	251 – 475	L	L



Bolt-on SP380
Krauss Maffei

Appealing retrofit for hydraulic systems Bypass flow filtration (ZE63.662)

The high performance and availability is a major influence on servicing and oil service.



The quality and cleanliness of hydraulic fluids directly affects the performance of the machine and the service lives of all components in the entire hydraulic system. Oil is a critical machine element for advanced proportional and servo valves.

Bypass flow filtration is very effective here. It continuously filters the hydraulic fluid directly from the tank regardless of the process. The low and uniform feed pressure enables stable material for separation and guarantees a high degree of cleanliness for the oil.

The filter is integrated into the control system using differential pressure switches and ensures the functionality and quality in the long-term by indicating "Filter change".

For retrofitting, the bypass flow filtration is supplied as a complete package.

Your benefits:

- Reduced maintenance and operating costs
 - Energy savings due to low friction
 - Increased system availability, process stability and productivity
 - Life of the hydraulic fluid is up to 40,000 operating hours, potentially more
 - High stability of the air release properties
 - Extended service life for full-flow filter
 - Retrofitting package as a completely integrated system solution
 - Optional: water-absorbing filter inserts
-

Quick mold change Ejector coupling (ZE 50.80)

The mechanical ejector coupling reduces set-up times by allowing quick and easy mold changing.

This is achieved by making a keyed and friction-locked connection between the mold ejector rod and the machine ejector. The coupling is located easily and quickly by the central screw joint. The connection is non-axial and automatically compensates for assembly-related axial offset, significantly reducing mold wear and stress.

The coupling system offers excellent flexibility thanks to its short and compact design as well as the comprehensive range of accessories.

Product range

Model sizes are available for clamping pressures ranging from 35 to 650/900 to.

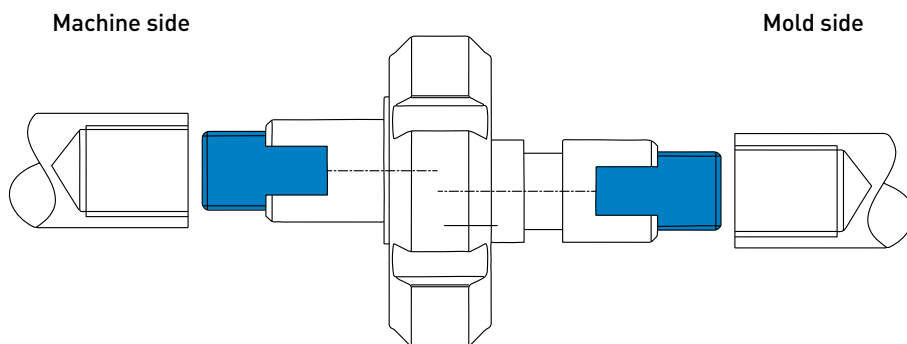
Your benefits:

- Quick coupling and release allow shorter set-up times
- Reduced wear, automatic compensation of axial offset
- Keyed and friction-locked connections
- Flexibility through modular design
- High operational reliability
- Short and compact design



Compact ejector coupling

Axial offset is compensated



Professional support for machine relocation Certainty and dependability from start to finish

KraussMaffei Service offers expert solutions for relocating your injection molding machine, whether it is a simple move from one part of your plant to another, or a complex move between plants. Expert advice and consulting at your plant will give you firm planning data to ensure your move is completed on schedule and within budget. With this certainty, you can go ahead with your project and be sure of speedy production rollout at the new site.

Thorough preparation, detailed planning and professional execution are key. Get these right and your move will be completed on schedule and within budget. KraussMaffei Service, with our know-how, experience and professionalism, are at your service here. You can rely on our know-how for certainty in planning your relocation project and firming up your dates and costs. We can give you valuable support during the move itself.

Our assistance with dismantling your machine and preparing it for transport helps avoid delays and problems from

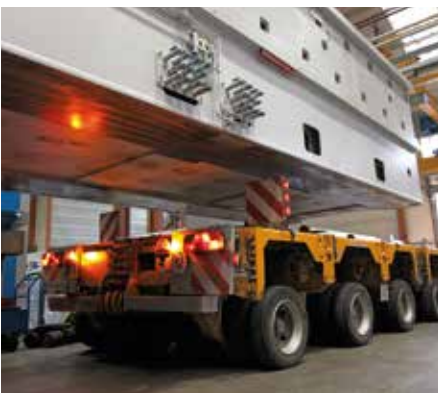
the outset. During installation, the required adaptations at the new location are carried out. These include translating the software into the relevant language, modifying safety provisions, etc. You might wish to combine the relocation with having your machine upgraded and refurbished by our specialists. We can also provide on-site training for your new staff and back-up support during production.

Recommissioning and production rollout completes your relocation project.

Your benefits:

- Central coordination of services
 - Machine data updates for the owner/ operator and manufacturer
 - Compliance with all regulatory requirements
 - Adaptation of the operator language
 - Services such as condition assessment, maintenance, inspections, upgrades and machine overhauls can be combined
-

Special tools, lifting devices and expertise ensure minimal disruption to ongoing production



Thorough preparation



Detailed planning



Professional execution



Touchscreen connection to our international expert network Teleservice with VPN technology

Starting teleservice

You activate the connection to our teleservice network by tapping a function button on the machine's touchscreen operator panel. The connection can only be set up from your machine by tapping the touchscreen button. Once the connection is established, you can dial the phone number of your service partner.



The expert network

Notice of your call appears on the screen of our service expert together with all the information from the machine file. When they pick up the phone, the KraussMaffei experts have the current status of your machine. No time is wasted and you can immediately focus on the problem. Our experts have several options for getting your machine up and running again. They can carry out an immediate remote service or make a remote diagnosis to identify any spare parts that need replacing and check their availability online. During the conversation, a necessary part delivery can be coordinated and, if necessary, assigned with a technician.





Service box with integrated firewall

The service box automatically establishes the connection to the KraussMaffei network. The integrated firewall protects your data and reliably prevents unauthorized access. The service box has four IP connections for integrating additional peripheral devices like robots, metering systems or ancillary injection units into teleservice quickly and easily.

Automatic,
fast and secure



Connection using VPN technology

The data connection takes place exclusively using a VPN tunnel. VPN stands for Virtual Private Network and is a global standard that enables communication over the Internet safeguarded against tapping and tampering. Your connection is continuously protected by this tunnel.



The central system, the VPN manager

The VPN manager is the only receiver for your incoming connection. The KraussMaffei VPN manager is a central database system that forwards the connection to the corresponding expert according to the input signal – including all required service data from the machine file.

Further information which might also interest you



To find out more about our services, please have a look at our "Service & Solutions" brochure.

You will find all brochures and flyers about our machines and technologies online at www.kraussmaffe.com.

On request, we would also be happy to send you information and technical data for our products free of charge.

For more information please contact us at:
www.kraussmaffe.com/imm-service



KraussMaffei

A strong brand in a unique global group

Cross-technology system and process solutions

Whether in Injection Molding, Reaction Process Machinery or Automation – the KraussMaffei brand stands for pioneering and cross-technology system and process solutions in plastics processing worldwide. For decades, our expertise, innovative ability and passionate commitment to plastics engineering have been your competitive edge. As a cross-industry system provider, we offer you modular and standardized systems as well as solutions customized to your needs.

There for you around the world

With our worldwide sales and service network, we offer our international customers an excellent basis for a successful business relationship. Due to the close proximity to our customers, we are able to answer your individual inquiries very quickly. We work out the best possible technical and economical solution for your product and production requirements together with you. Test our machine technology for your applications and let our experts put together an individualized service package for you.

Individualized service

Our employees from customer service, application technology and service help you with your questions and needs on every topic dealing with machines, systems and processes – around the globe, quickly and with a high level of expertise. We have developed an extensive customized service spectrum with our lifecycle design, which accompanies you throughout the entire lifecycle of your machines and systems. Take advantage of the personal interaction and flexibility we offer in our practically oriented seminars. We carry out customer-specific trainings either at your location or at our sales and service locations.

You can find additional information about KraussMaffei at: www.kraussmaffeigroup.com

KraussMaffei Group

Comprehensive expertise

Unique selling proposition Technology³

The KraussMaffei Group is the only provider in the world to possess the essential machine technologies for plastics and rubber processing with its KraussMaffei, KraussMaffei Berstorff and Netstal brands: Injection Molding Machinery, Automation, Reaction Process Machinery and Extrusion Technology.

The group is represented internationally with more than 30 subsidiaries and over ten production plants as well as about 570 commercial and service partners. This is what makes us your highly skilled and integrated partner. Use our comprehensive and unique expertise in the industry.

You can find additional information at: www.kraussmaffeigroup.com



The KraussMaffei Group has a global presence. Countries with subsidiaries are marked in dark blue. In the white-colored regions, the Group is represented by over 570 sales and service partners.

Perfectly tailored to your needs

Life Cycle Service

However you want to upgrade or modernize your machine – with our solution-driven products and advisory services we support you throughout the entire service life cycle of your machine.

Benefit from our long-standing experience and our competent advice. We assist you by providing support from a single source and thus help you extend the service life of your production system.