



Efficient Injection Molding Machines in the EVOS Series

Engineering Excellence



Application Areas of the EVOS Series



Closures



Packaging



Medical components



Technical components

On top

Bottle closures pose a challenge for many injection molding machines. The high-performance and high-precision EVOS is ideally suited for the manufacture of closures, while its large clamping surfaces provide sufficient space for molds containing many cavities.

Well packed: In-mold labeling (IML)

There is growing demand for simultaneous labeling of packaging parts during injection molding. In addition to functional advantages, this complex process provides considerable potential for cost savings.

Medical consumables

Thanks to its closed-loop lubrication system and completely sealed drive unit, the EVOS is also very well suited for use in cleanrooms.

High-precision technical components

Thanks to the versatility and flexibility of the EVOS; we offer a universal platform for the production of technical components. The EVOS can ideally satisfy the many requirements related to molding larger parts or to molds with high cavitation.

Machines in the EVOS Series

Optimum flexibility and maximum reliability

The EVOS stands for cost-efficient high-performance injection molding and, thanks to hybrid drive technology, reduced energy consumption. The machine's modular system means that the clamping unit, plasticizing unit and drive are freely selectable, making the machine customizable for virtually any application. A large number of clever detailed solutions and numerous useful options underline the high flexibility of the EVOS.

Benefits of the EVOS Series at a glance:

- Powerful
- Energy efficient
- Easy to use
- Precise and fast
- Flexible

Efficient Injection Molding

A Fascinating Tour of the EVOS

Flexible media module

The machine can be adapted to your requirements in a variety of ways.



Precise and dynamic clamping unit

Thanks to the 5-point double toggle lever and hydromechanical drive technology.

Clean mold mounting area

Completely oil-free clamping unit thanks to closed-loop lubrication system and moving mold plate support on stable linear guides.

Your advantages:

- High performance potential
- Short cycle times
- Multiple applications
- Compact design
- Maximum reliability

Modern control technology

Easy handling thanks to a process-oriented interface.

High-performance injection unit

Hydraulic injection axis with an extremely high injection rate and maximum control accuracy.

Hybrid drive technology

Innovative drive unit with adaptive drive control and optimum energy efficiency.



Clamping and Injection Unit Solutions in the EVOS Series

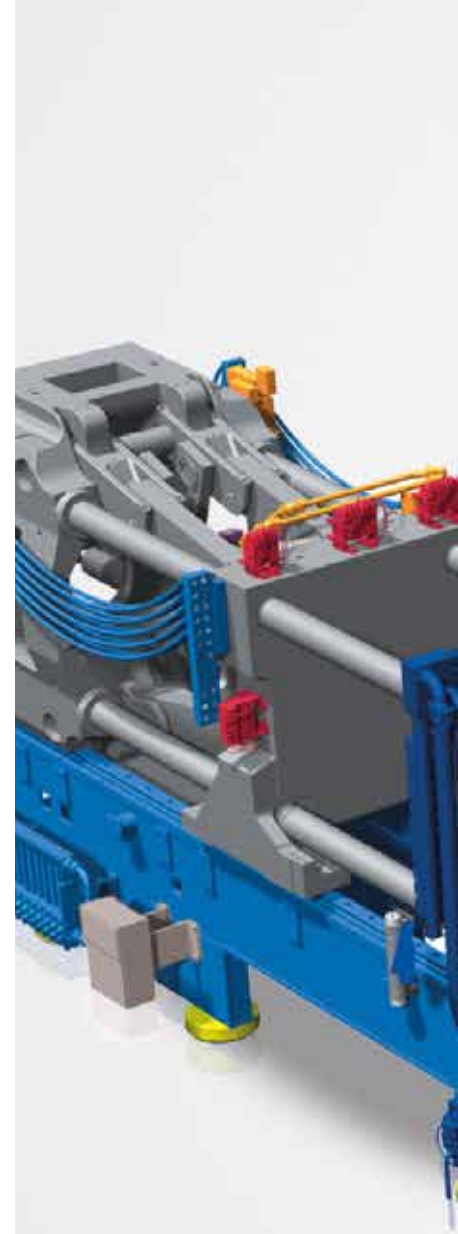
We focus on your needs by providing you with an EVOS that is tailored to your requirements to ensure maximum cost-efficiency in your production. The clamping unit, injection unit, drive and screw diameter can be optimally configured according to machine application.

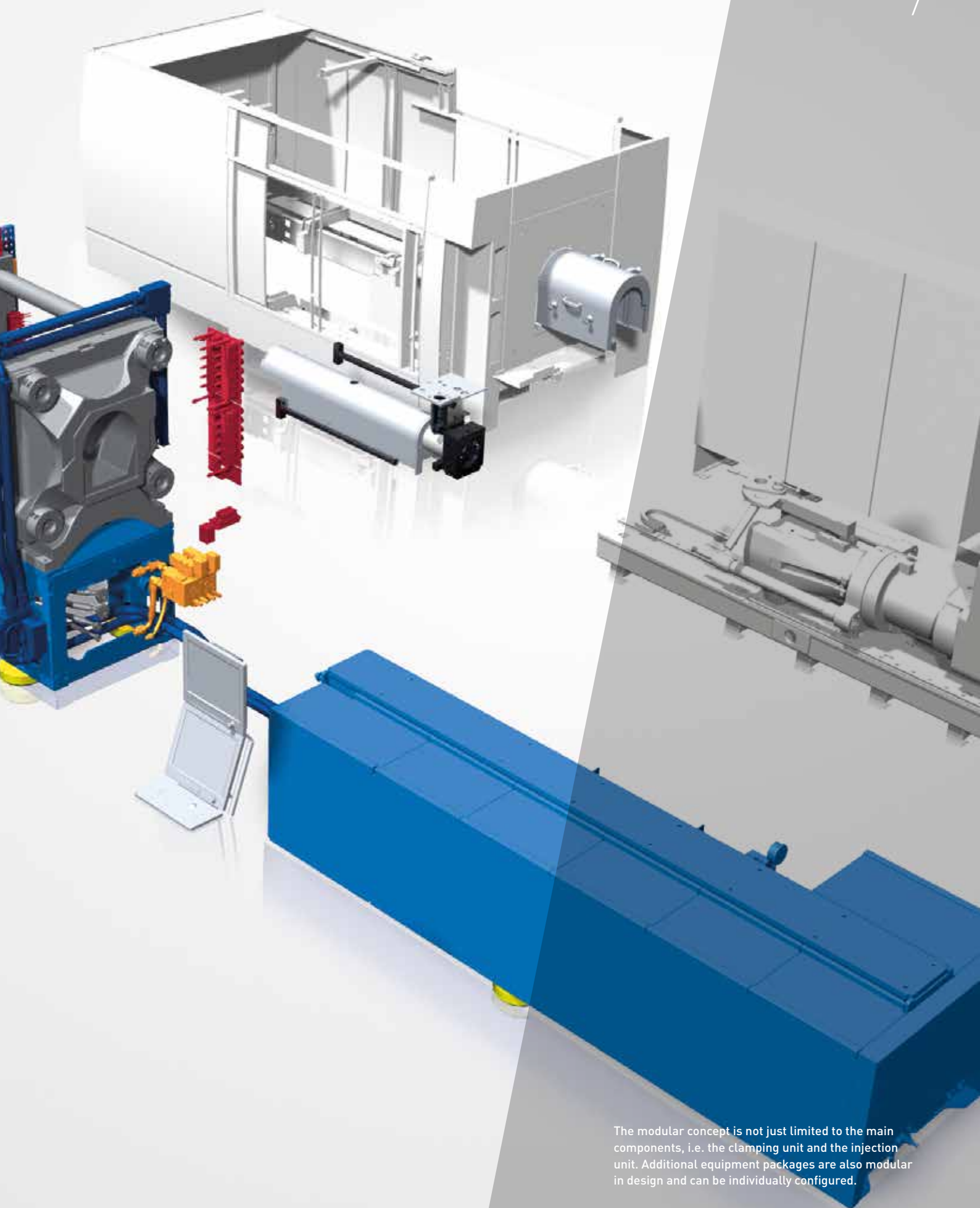
EVOS: The machine series with a modular system for universal applications

Injection unit	1000			2000			2900		4200		6000	
Screws Ø	45	50	55	55	62	70	70	80	80	90	90	100
Clamping unit												
3000 kN												
3500 kN												
4500 kN												
5500 kN												

Your benefits:

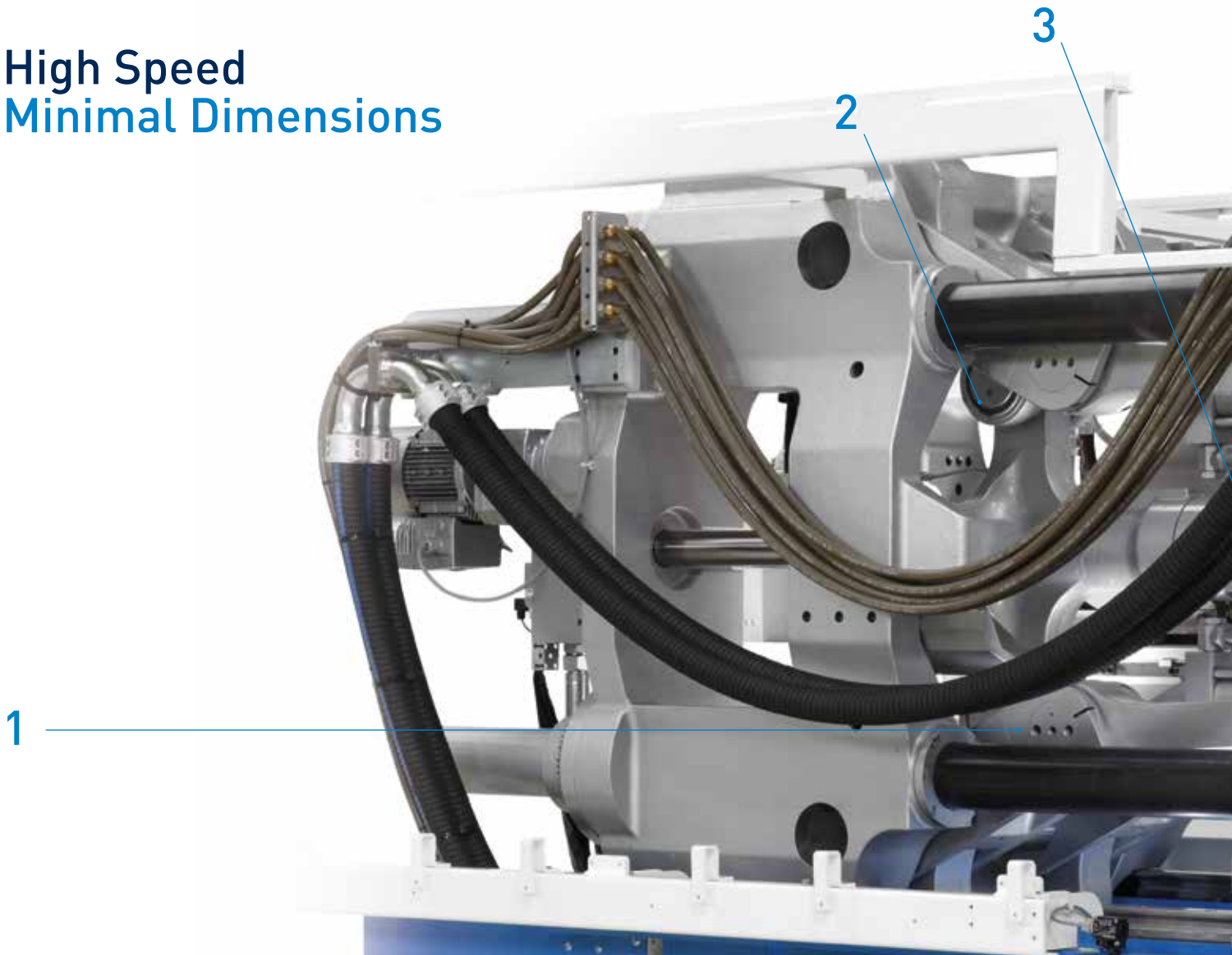
- Consistently modular configuration
- Configurable to your requirements
- Flexible upgrades for future applications





The modular concept is not just limited to the main components, i.e. the clamping unit and the injection unit. Additional equipment packages are also modular in design and can be individually configured.

High Speed Minimal Dimensions



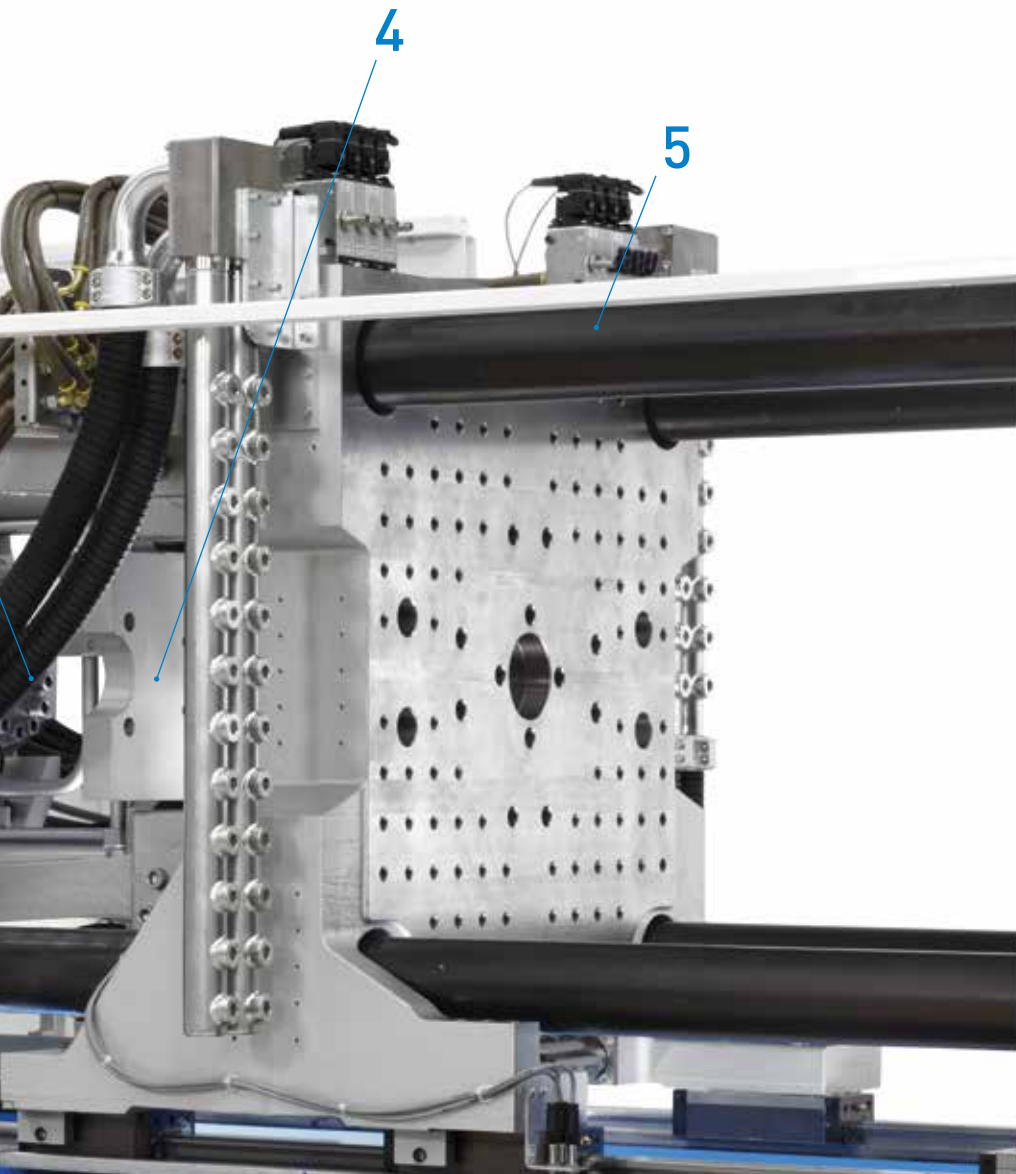
The EVOS clamping unit is based on the 5-point toggle lever system that is an established component at Netstal. Placing the inward-facing closing cylinder inside the toggle lever area has created a space-saving construction. The robust design allows high acceleration values and fast traveling speeds. Harmonious movement sequences and highly precise mold positions are achieved through digital control of the clamping unit movements.

1. Closed-loop circulatory lubrication system

The closed-loop lubrication system services the sealed bearings in the toggle lever system. Lubricating oil is cleaned continuously.

2. Centrally aligned toggle lever

The 5-point double toggle lever ensures optimal transfer of force to the center of the mold mounting area and therefore even distribution of the clamping force. The extremely stable and robust design effectively prevents deformation of the mold fixing platens.



Transfer of force through centrally inclined 5-point toggle lever



Reduced footprint thanks to inward-facing closing cylinder

3. Inward-facing closing cylinder

The closing cylinder is situated on the inside of the toggle lever system. Thanks to the space saved at the front of the machine, the machine footprint is greatly reduced. This means greater cost-efficiency with smaller square meterage.

4. Flexible ejector

Straightforward demolding of parts: highly dynamic proportional valves, which are available in three different sizes depending on the required ejection force,

regulate two cylinders. Using the optional "Booster" feature, even molded parts that are firmly shrunk onto the cores are easily demolded.

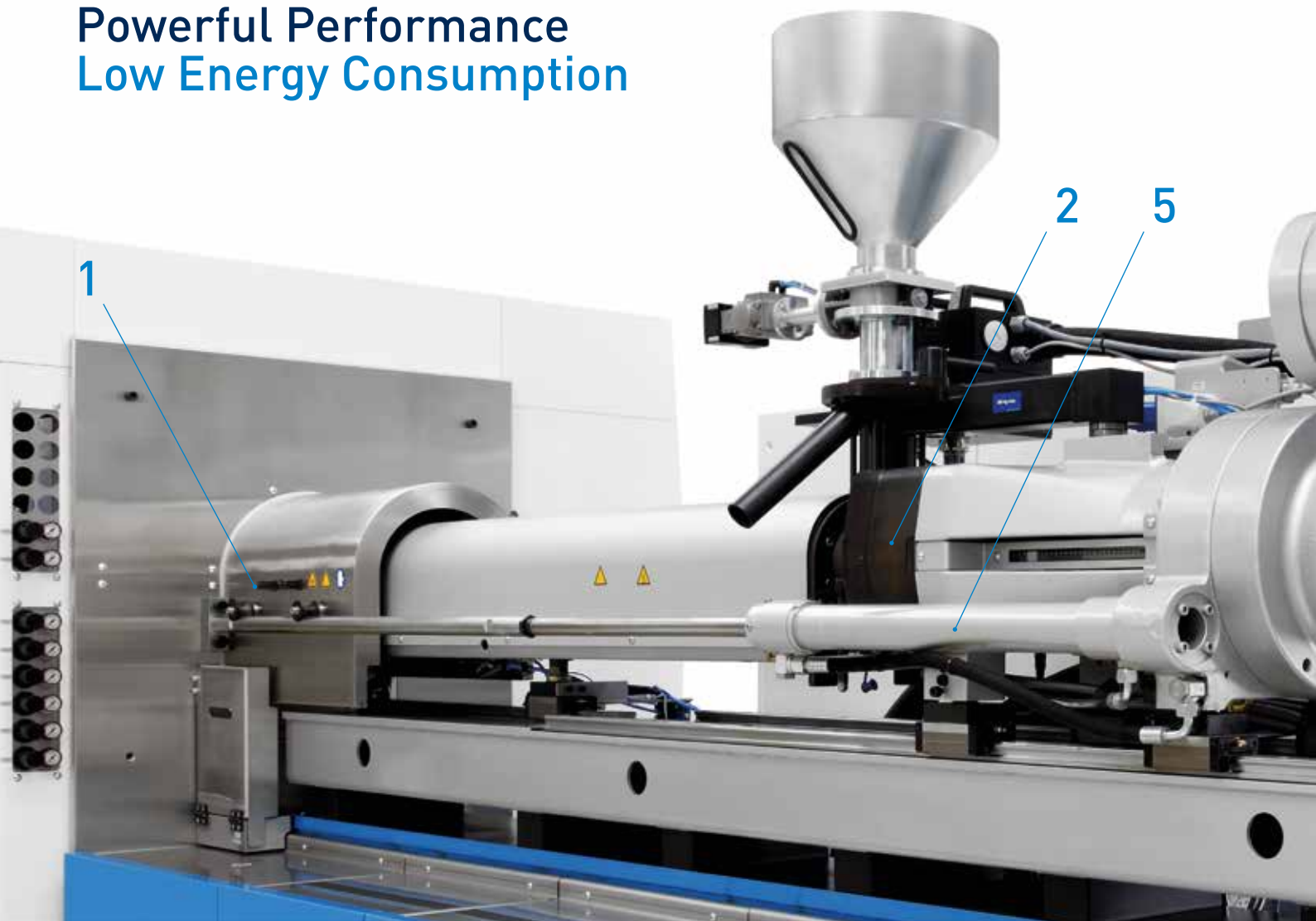
5. Extended tiebar distance

The large tiebar distance and generous opening stroke enable straightforward mounting of molds with large cavity numbers. Tiebar retraction has been radically simplified for easier mounting and removal of oversized molds.



The EVOS can be optionally equipped with a freely movable support for stack molds.

Powerful Performance Low Energy Consumption



The EVOS offers you maximum flexibility:

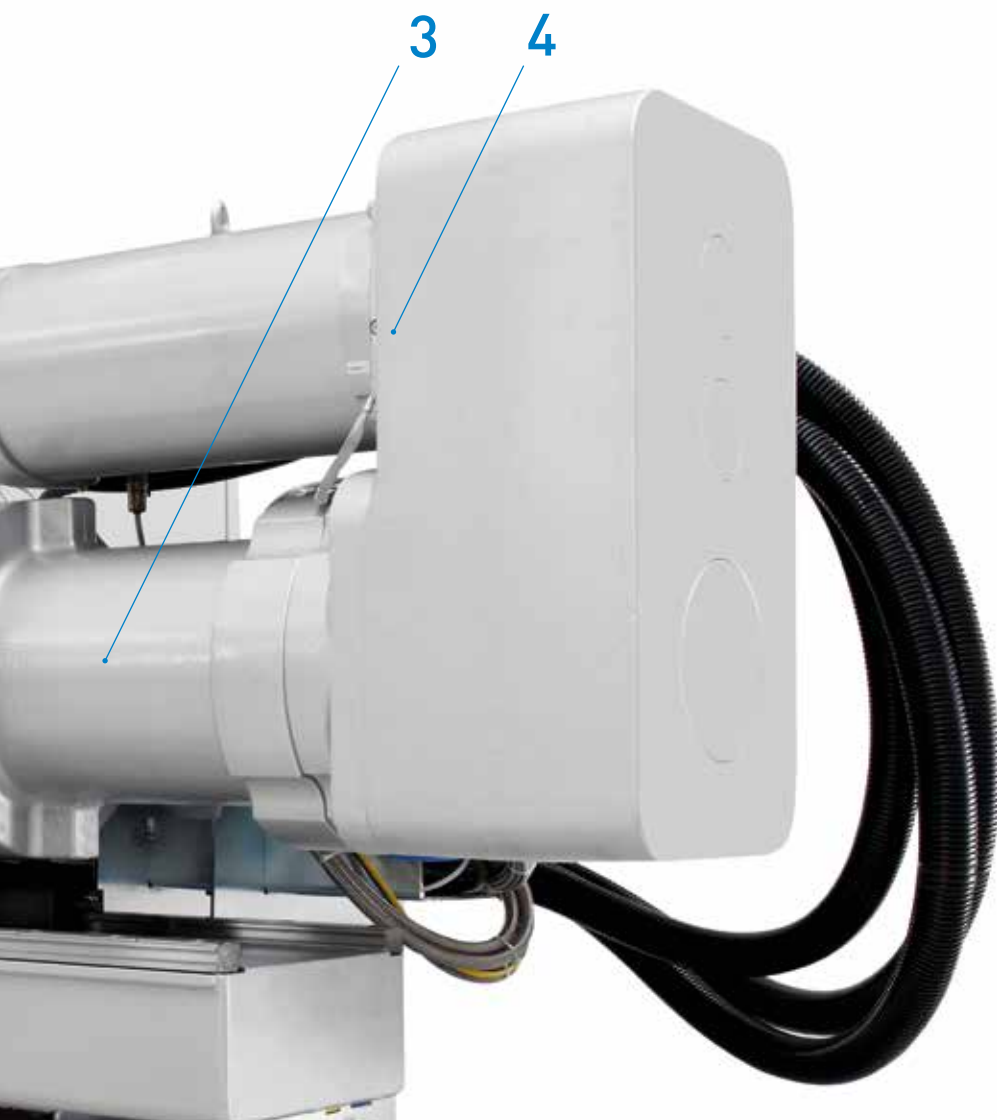
The injection process can be ideally tailored to the customers' requirements with a choice of injection unit and plasticizing unit sizes. In combination with our dual-valve technology, the hydraulic injection cylinder produces an extraordinary injection rate while the servo electric drive unit of the metering axis leads to low power consumption.

1. Actively controlled nozzle needle valve

Before injection molding takes place, the shut-off nozzle is opened through pneumatic activation, thus allowing an extremely dynamic injection process.

2. Simplified plasticizing unit change

The plasticizing unit is equipped with a special clamping system. Thanks to easy accessibility from above, the plasticizing unit can be changed without any great effort. All necessary connections also have a plug-in design.



Optimized process control thanks to an actively controlled nozzle needle valve



Injection control: extremely dynamic thanks to state-of-the-art valve technology

3. Powerful injection axis

The injection axis is driven hydraulically by means of two highly dynamic valves, which ensures extremely high acceleration values, a high level of injection performance and precise control characteristics during the injection and holding pressure process. The concept also ensures a high degree of accuracy and reproducibility of the metering stroke. Up to three different screw diameters are available for each injection unit size to ensure an optimal selection of screws for any application.

4. Servo electric screw drive

The metering axis is available in two different performance classes, Speed and Master, and is powered by a servo motor and spur gearing. The torque achieved in "Master" mode is higher compared with the already high standard rate.

5. Integrated stroke measuring system

The compression axis meets the highest requirements in terms of dynamics and positioning accuracy. The stroke measuring system is integrated in a cylinder of the injection unit carriage.

Twin-valve technology

Highly dynamic servo valves with a flow rate of up to 2 x 550 l/min and a response time of max. 11 ms: this technology makes it possible to reach top injection speeds up to 2,200 m/s. Boasting acceleration of up to 20 G, the EVOS also sets standards in regard to dynamics. However, the machine's high positioning accuracy is still maintained.

Innovative solutions, optimum energy efficiency
The high efficiency of the clamping unit can
be attributed in large part to the low-friction
movements of the moving mold plate.



Low Energy, High Performance Efficient Drive Concept

Energy efficiency has been greatly improved thanks to the new drive concept for the EVOS Series: Thanks to the innovative, adaptive drive unit, unprecedented energy savings are made when using hydraulic and hybrid injection molding machines.

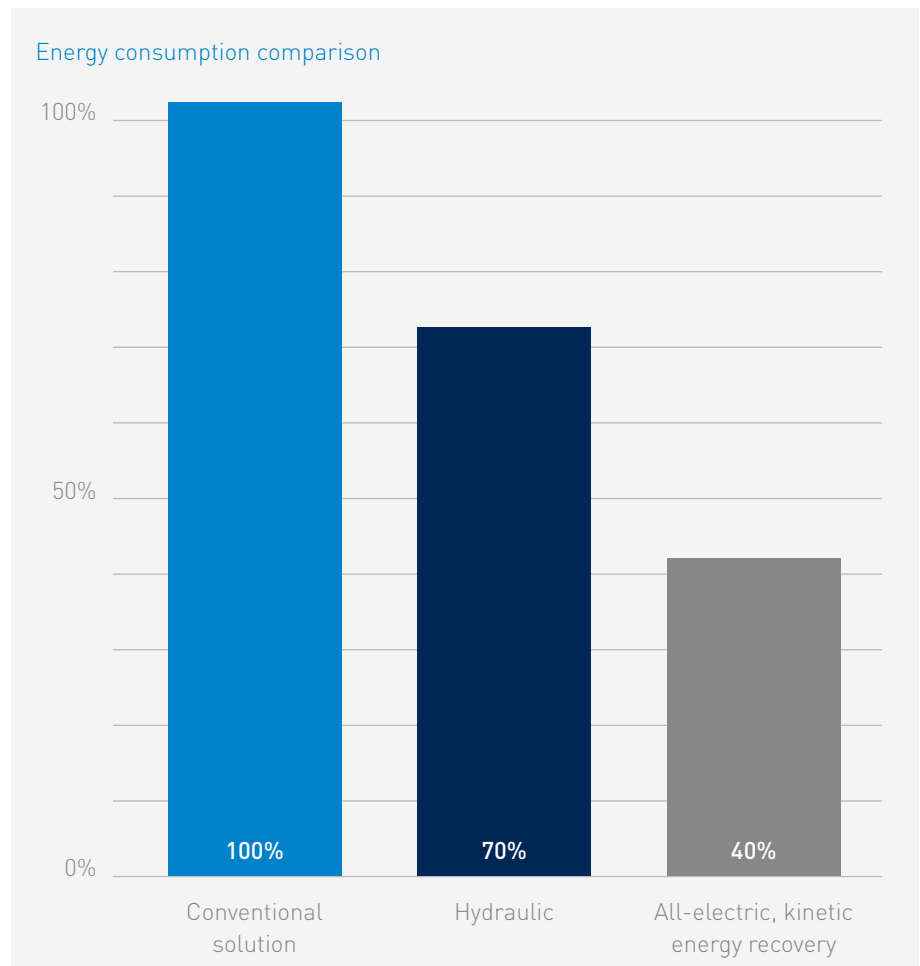
Main features of Netstal drive technology:

- Adaptive drive control
- Interconnected power converters
- Optional operating point at maximum efficiency

Based on its low consumption values, the EVOS is a machine that stands for maximum cost-efficiency. When the adaptive drive unit is used, energy savings of up to 30% can be achieved compared with conventional hydraulic machines. If an all-electric machine is used, efficiency is increased again by around a further 30 percent.

Energy efficiency is more than just a buzzword

It is anticipated that energy costs will rise further in the future to become the second most important cost factor after material costs. Netstal is committed to developing innovative systems and solutions that ensure optimal energy efficiency at maximum productivity in line with our motto: "Low Energy, High Performance".



Simply Clever Maximum Media Flexibility

Pneumatic valves

The pneumatic valves are installed close to the consumer to ensure faster reaction times.

Hydraulic controls

The connections for hydraulic auxiliary mold controls can be installed either on the operating or non-operating side of the machine.

Cooling water distributor

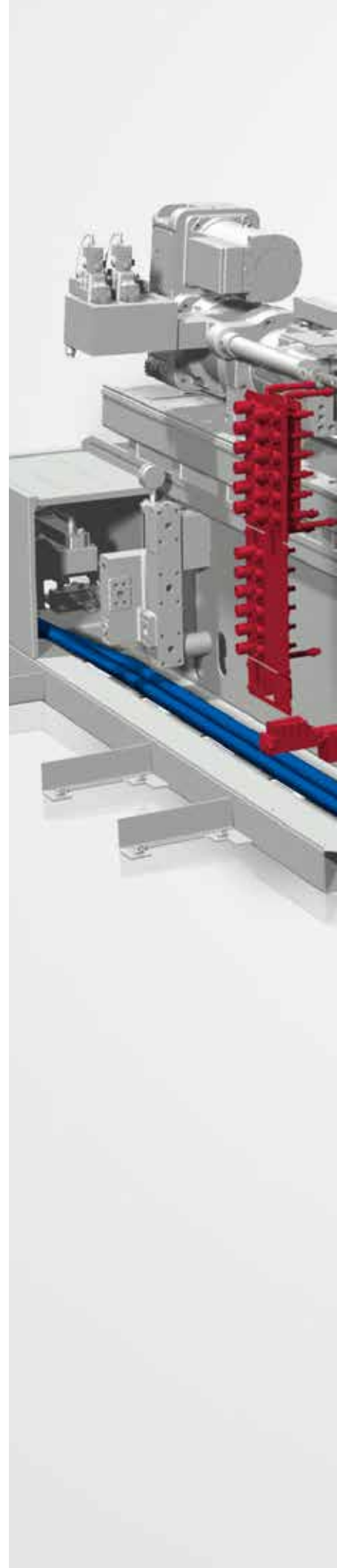
Depending on the mold, cooling water distributors are available for any position on the mold plates. The distributors are protected against corrosion and an optimal flow rate is guaranteed thanks to the use of ball valves.

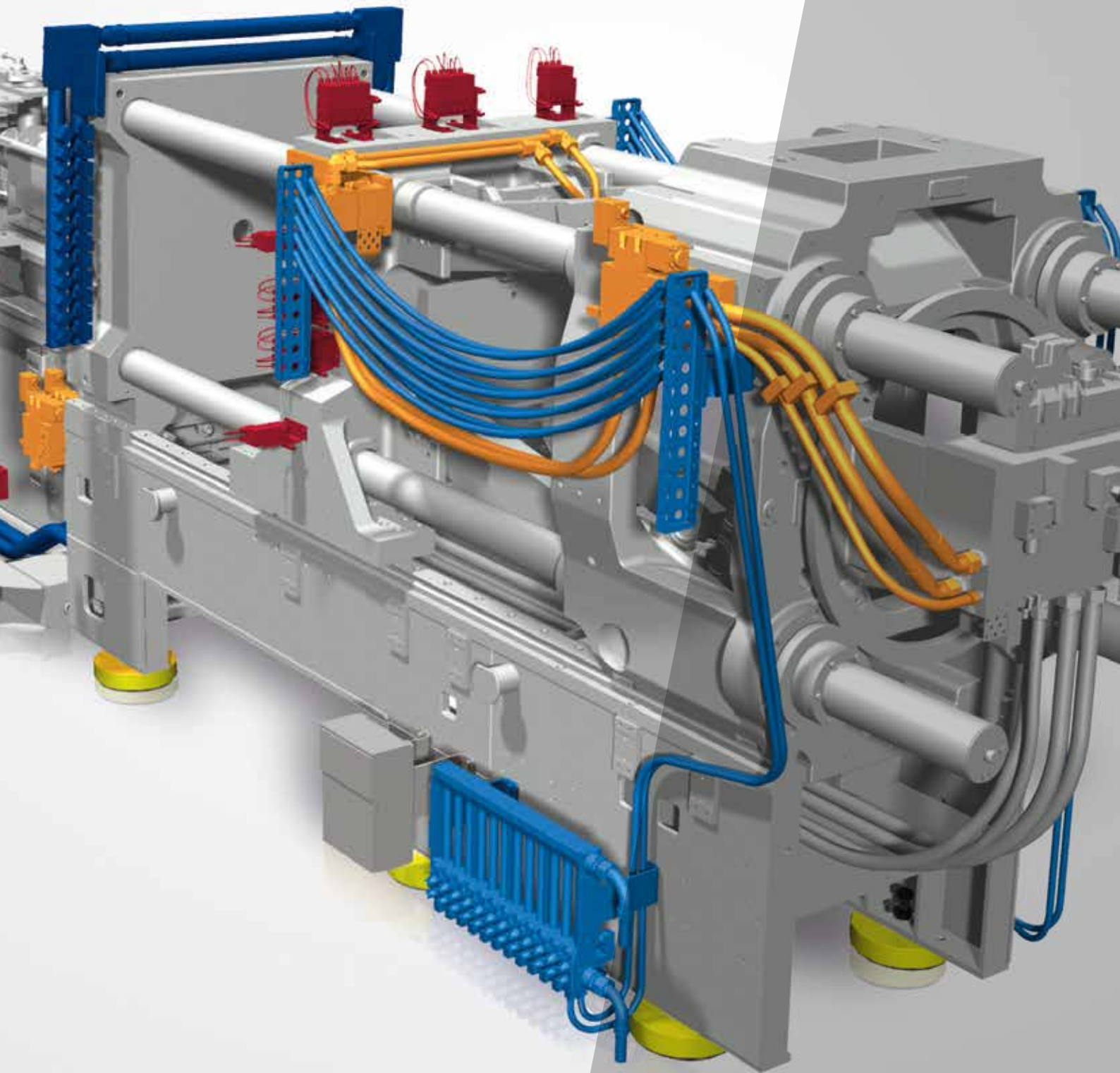
Socket outlets

Multiple socket outlets with integrated circuit breakers can be installed in various positions on the machine to connect peripheral devices.

Your advantages:

- Easy accessibility
 - Easy to use
 - Extremely easy to maintain
 - Maximum cost-efficiency
-





The EVOS can be customized in a variety of ways for use in many different applications.

DSP Control

Efficient and user-friendly

The proven DSP control provides the operator with efficient support in programming the production process.



Robust and efficient operating unit

The proven operating unit in the DSP control is based on Windows and features everything that is required for user-friendly and efficient access to all machine functions. The high-resolution 15" TFT monitor provides a perfect overview and a large viewing angle even with poor lighting conditions. The operating unit is swivel-mounted and the keyboard can be simply folded away if required.

Stable keyboard with a shortcut function

The control keyboard is designed for maximum efficiency. The keys are backlit and therefore visually display the status of the relevant machine components. They also have a clearly discernible pressure point, thus ensuring safe manual operation of the machine.

Segment display

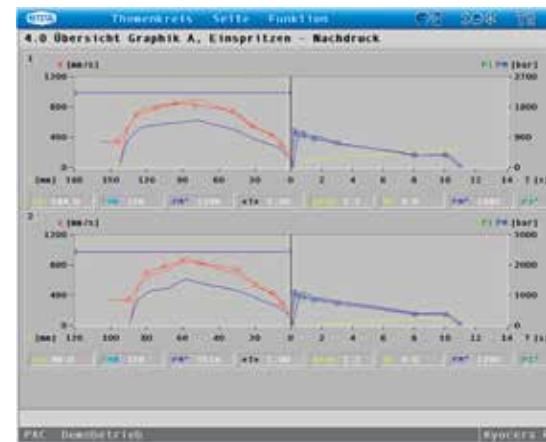
Thanks to the pop-up segment display, you always obtain an overview of the most important components in the currently running production cycle.

Graphic programming of the injection molding process

Due to the unique presentation of the injection molding and holding pressure cycle, and the option of graphic programming, the filling process – an extremely important part of this cycle – can be programmed and controlled very precisely.



Current overview of the machine status and the most important ACTUAL values.



Easy graphic programming of the injection molding cycle with Graph-Track.

Our Worldwide Expertise is your Advantage Service & Solutions



The Netstal service department provides you with full support throughout your machine's entire life cycle. By providing solution-driven services and products – for example commissioning, troubleshooting, spare parts supply and customer training – we can help you achieve optimal production efficiency and thereby secure your investment. In this way we aim to build a lifelong partnership which works to your advantage.

Start-up

- Assembly
- Commissioning
- Training courses
- Teleservice

Utilization

- Spare parts packages
- Troubleshooting
- Hotline
- Preventive maintenance

Optimization

- Application advice
- Retrofitting
- Energy consulting
- Process consulting

Phase-out

- Overhauling and refurbishing
- Modernization
- Relocating machines
- Second-hand machines

Netstal

A strong brand in a unique global group

Premium high-performance and high-precision Injection Molding Machinery and system solutions

Netstal is an international provider of premium high-performance and high-precision Injection Molding Machinery and system solutions. Our customers are always impressed by the innovations and services that we provide, as well as by our efficient and performance-driven technological approaches for the beverage, packaging and medical technology sectors in particular. Our production systems are all characterized by the same attributes: speed, precision, reli-

ability, user friendliness and operational efficiency. We are constantly refining our technological standard of excellence and, thanks to our innovative technologies, we are able to offer high-performance production systems to our customers.

There for you around the world

With eight subsidiaries and around 30 distributors, our global presence guarantees optimum customer proximity. This means that we are able to address your individual needs as quickly as possible and provide you with a comprehensive and customer-oriented service.

Individualized service

While our customer service supports you with a range of solution-oriented services and products, it also excels as a provider of "classic" services thanks to its high reliability and quality standards. Be it commissioning, troubleshooting or customer training – make the most of our first-class services.

You can find additional information about Netstal at: www.netstal.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.kraussmaffei.com



**Powerful.
Flexible.
Energy Efficient.**
Machines in the EVOS Series

The EVOS possesses all the typical traits of a Netstal machine: speed, precision, reliability, user-friendliness and, above all, cost-efficiency. It was developed for complex applications and increases your manufacturing process productivity. The idea here is as follows: The more efficient the sequences, the more profitable the process as a whole.

The EVOS boasts a range of innovative technological features that make high-performance injection molding more efficient than ever before. The main modules, comprising the clamping unit, injection unit, drive, safety cover and control, are perfectly coordinated and geared toward efficient production.