



Performance, newly driven Machines of the ELIOS Series

Engineering Excellence



Application areas of the ELIOS series



Delicatessen containers



Pails and lids



IML stadium cups



IML containers and lids



Injection compression molding
(up to 25% material savings)



Flower pots



Multi chamber cups



Cartridges and tubes

Clamping/injection matrix

Injection units (screw diameter in mm)

Machine model / clamping force (kN)	SP 1000			SP 2000			SP 2900		SP 4200		SP 6000	
	45	50	55	55	62	70	70	80	80	90	90	100
ELIOS 4500	■	■	■	■	■	■	■	■	■	■	■	■
ELIOS 5500	—	—	—	■	■	■	■	■	■	■	■	■
ELIOS 6500	—	—	—	—	—	—	■	■	■	■	■	■
ELIOS 7500	—	—	—	—	—	—	—	—	■	■	■	■

Machines of the ELIOS Series

You can manufacture perfect thin-walled packaging at the lowest unit costs with ELIOS high-performance machines. The fastest cycles, dynamic injection and top process stability are the keys to success.

The highlights of the ELIOS Series at a glance:

- Clamping force range 4500–7500 kN
- Fast dry cycle times between 1.5 and 1.9 seconds
- Generous mold installation dimensions
- Stable design
- High-performance injection units
- Top precision and repeatability
- Flexible equipment options



Resource-preserving technology that increases your competitiveness:

- Energy recuperation from the clamping unit leads to the lowest energy consumption
- Increased precision reduces rejects significantly
- Increased overall performance provides substantial material savings

Performance, newly driven

A fascinating tour of the ELIOS

Generously dimensioned mold installation space

Easy installation of large stack molds and molds with large numbers of cavities.



Floor-mounted safety cover

All safety covers on the ELIOS can be easily removed for maintenance work.

Optimum ease of operation

All operating elements are designed for optimum ergonomics and the highest operator convenience.

Easily accessible injection unit

Optimum access is guaranteed to all the operating elements of the injection unit, such as material feeder, plasticizing unit and nozzle area.



The latest control technology

Innovative and user-friendly aXos controller.

The inner value of the ELIOS

Absolutely convincing

Most of the innovations and proven features of the ELIOS are hidden inside the machine. In combination, these create a complete package that sets new standards for performance and efficiency.



Flexible media fittings

A wide variety of possibilities for adapting the machine to your needs.

5-point twin toggle with patented drive technology

High-speed electric clamping unit with hydro-mechanical assistance for the build-up of the clamping force.

Clean mold installation space

Absolutely oil-free clamping unit thanks encapsulated lubrication system and supporting of the moving mold plate on sturdy linear guides.



Powerful injection unit

Hydraulic injection axis with extremely high injection performance and high-precision control characteristics.

Hybrid drive technology with recuperation

Highly efficient main drive with adaptive drive control and energy recuperation from the clamping unit.

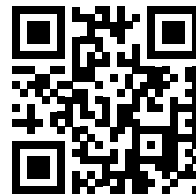
Servo-electric screw drive

The dosing axis is available in two different performance classes: Speed and Master. The drive comes from a servo motor and spur gear.

Your benefits

- Clamping force range 4500 to 7500 kN
 - Fast dry cycle times (1.5 seconds*)
 - Maximum precision and reliability
 - Outstanding energy efficiency
 - Optimum user orientation
 - Robust and stable design
-

* ELIOS 4500 (according to Euromap)



Much more information and a fascinating 3-D animation video can be found at www.netstal.com/elios or scan the QR code directly and immerse yourself in the world of the new ELIOS.

High clamping force Enormous speed

For the drive of the sturdy 5-point twin toggle of the ELIOS, we have developed a particularly innovative and energy-efficient concept. The intelligent combination of the dynamic electric drive with the powerful hydro-mechanical assistance allows very high speeds with high clamping force. And best of all: The ELIOS is just as precise and reliable as any other Netstal machine.

Patented dual drive concept with energy recuperation

The travel movements of the 5-point twin toggle are performed fully electrically. Two parallel-acting cylinders are thereby moved pressure-free and support the electric drive with the necessary power during the build-up of the clamping force. This innovative concept also enables a recuperation of the kinetic energy, resulting in a very low electrical energy consumption.

Encapsulated circulatory lubrication system

The closed lubricating system supplies oil to the sealed bearings of the toggle

system. The lubricating oil is permanently cleaned.

Centrally positioned toggle

The 5-point twin toggle ensures an optimum transmission of the force into the center of the mold installation space, and hence uniform distribution of the clamping force. The extremely sturdy and strength-optimized design effectively prevents any deformation of the mold plates.

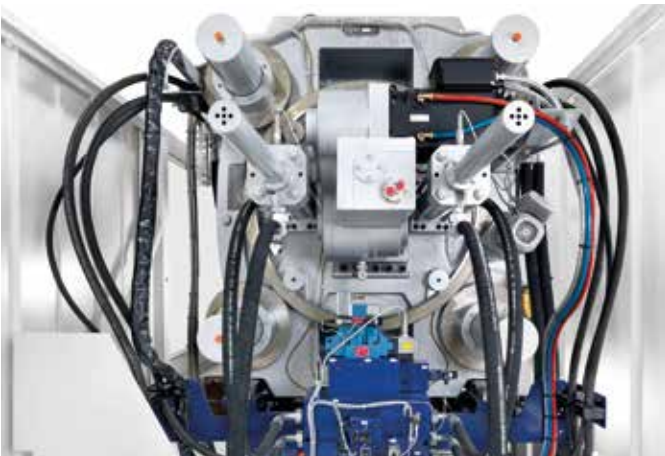
Flexible ejector

The versatile ejector allows trouble-free demolding of the produced parts. Two cylinders are controlled by highly dynamic

proportional valves. These are available in three different versions, depending on the desired ejector force. The generously dimensioned ejector plate covers all Euromap standard positions, offering great flexibility.

Increased column spacing

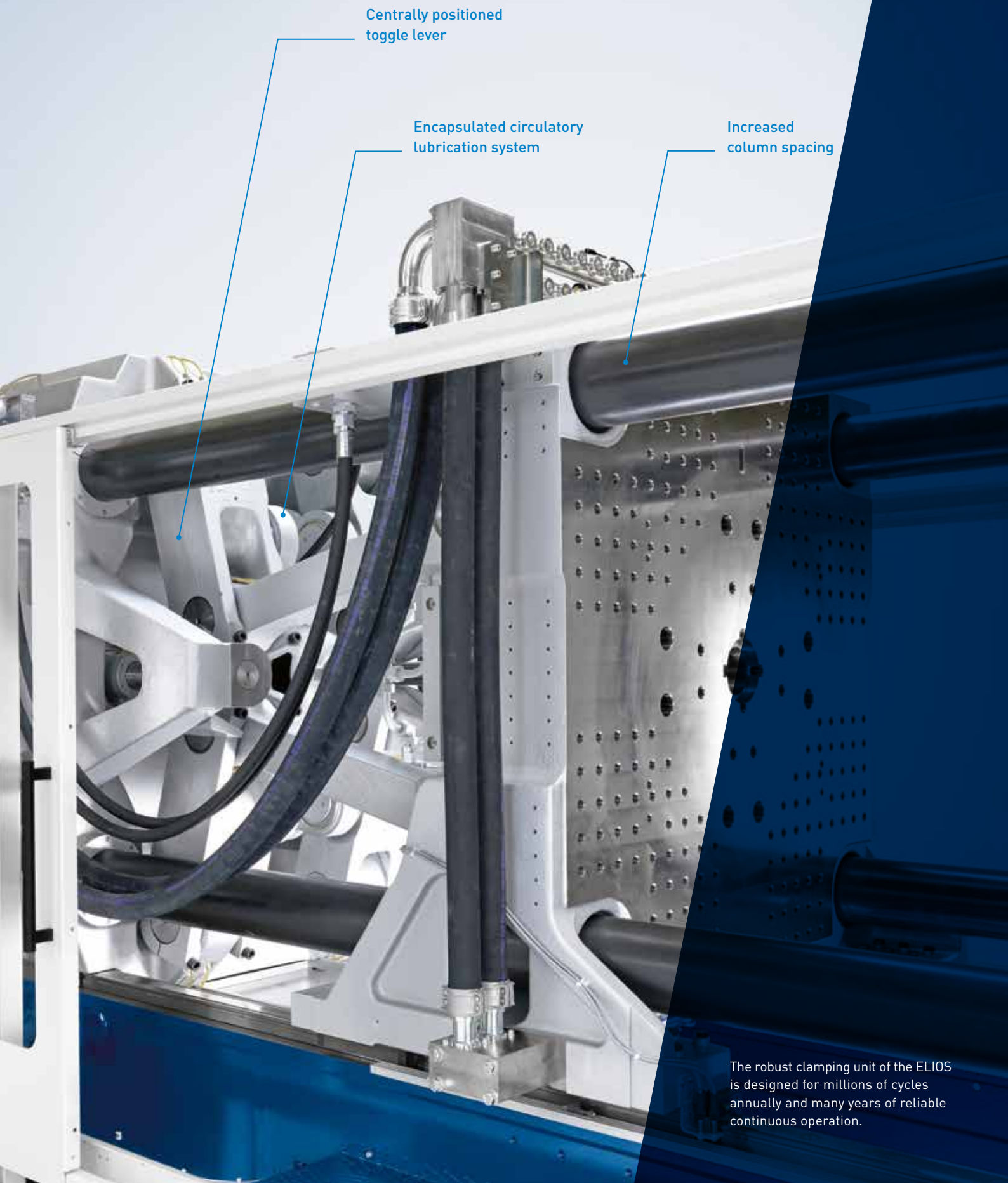
The large distance between the columns and the large opening stroke simplify the installation of stack molds and molds with large numbers of cavities. Furthermore, the mold area is optimally prepared for horizontal part removal using handling devices.



Patented electric drive with hydro-mechanical assistance for the build-up of the clamping force



Versatile and flexible ejector



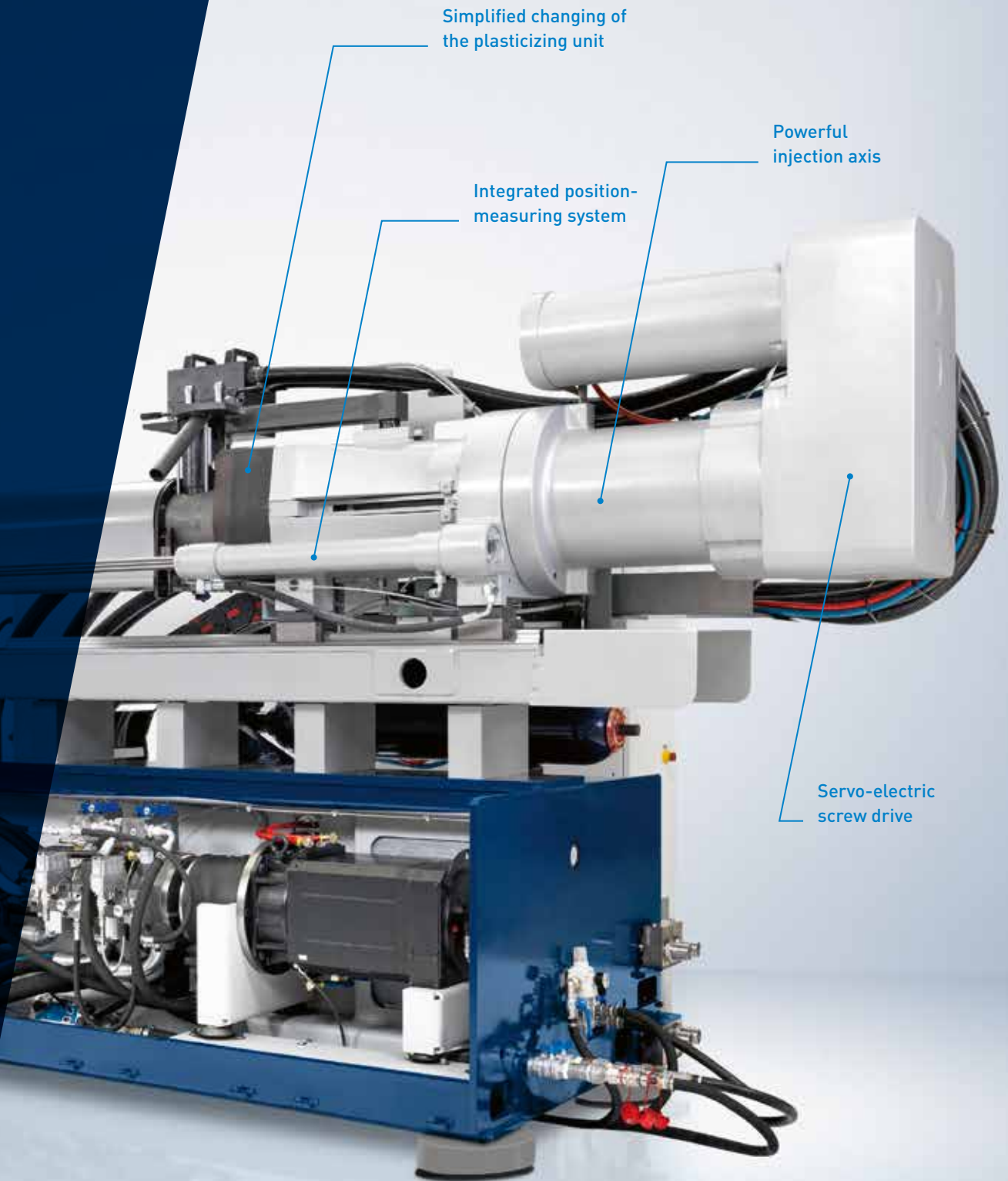
Centrally positioned
toggle lever

Encapsulated circulatory
lubrication system

Increased
column spacing

The robust clamping unit of the ELIOS is designed for millions of cycles annually and many years of reliable continuous operation.

Dynamic, powerful and precise.
The hybrid injection units provide
the extra performance that
is needed.



Fast and precise injection

Low energy consumption

The ELIOS offers you high flexibility: The injection side can be optimally tailored to the demands of your application with a variety of injection unit and plasticizing unit sizes. The hydraulic injection cylinder in combination with the two-valve technology ensures an exceptional injection performance, while the servo-electric drive of the dosing axis contributes to a low electrical energy consumption.

Actively controlled shut-off nozzle actuation

Thanks to its active pneumatic actuation, the shut-off nozzle opens before the start of injection and thus permits an extremely dynamic injection process.

Simplified changing of the plasticizing unit

The plasticizing unit is equipped with a special clamping system. Thanks to the good accessibility from above, the plasticizing unit can be easily replaced. Furthermore, all the necessary connections have couplers.

Powerful injection axis

The injection axis is driven hydraulically by means of two valves connected in parallel that guarantee very high acceleration values, high injection capacities and

precision control characteristics during the injection and hold pressure process. The concept also permits high precision and reproducibility of the metering stroke. For an optimum choice of screw for the respective application, up to three different screw diameters are available for each injection unit size.

Dynamic twin-valve technology

Two highly dynamic servo valves each with a flow rate of 550 l/min and a reaction time of max. 11 ms allow impressive injection rates of up to 2,200 mm/s. With an acceleration of up to max. 20 G, the ELIOS also sets standards with respect to dynamics, but without neglecting the high positioning accuracy.

Servo-electric screw drive

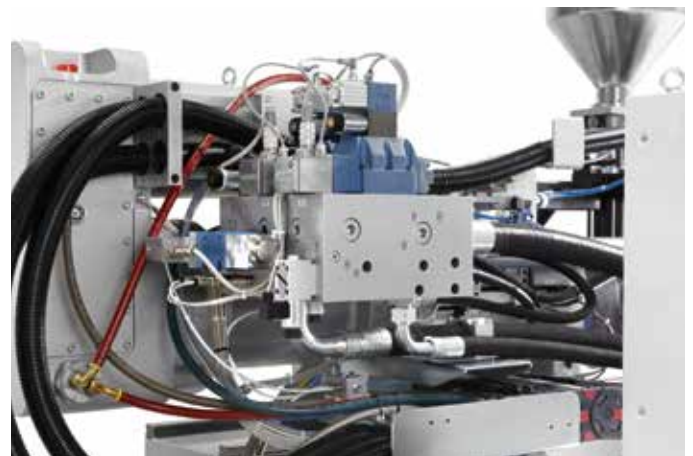
The dosing axis is available in two different performance classes: Speed and Master. The drive comes from a servo motor and spur gear. The "Master" option offers increased torque compared with the already high performance of the standard version.

Integrated position-measuring system

The hunt axis meets the highest demands for dynamics and positioning accuracy. The path-measuring system is integrated into the hunt cylinder.



Actively controlled shut-off nozzle actuation

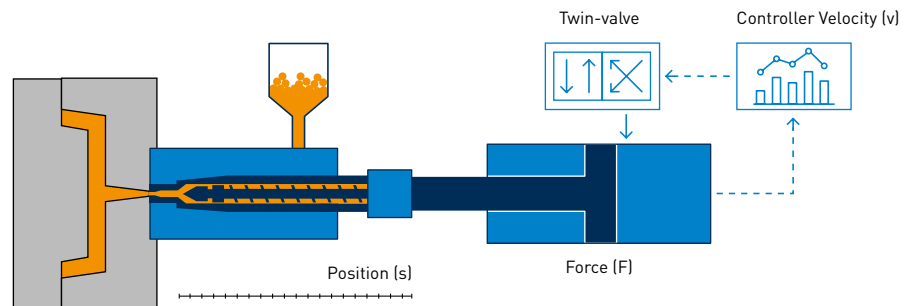


Two valves for dynamic injection

Responsive Filling Control (RFC) Top precision in all conditions

The Netstal brand has always stood for high-speed, high-precision applications with top repeatability within a very narrow tolerance range. Thanks to the Netstal-specific RFC injection control system, users benefit from the best overall equipment effectiveness on the market.

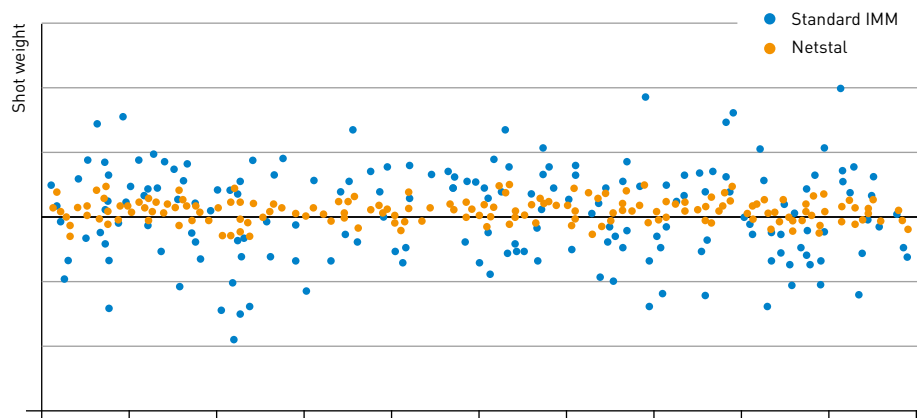
The hybrid injection units of the ELIOS series are equipped with highly precise sensors for distances, forces and pressures that were developed exclusively for Netstal and break all processes down to the thousandths of each unit of measurement. The RFC injection control system (based on SYCAP technology) achieves maximum control through the dynamic resolution of rules in millisecond cycles.



Because all sensors we use measure with great precision, continuously and in a coordinated manner, the machine can optimally control the entire injection process at any time. This is where the lightning-fast power control system from Netstal comes into effect. Force dependent v/p changeover is the most reliable method for overcoming material variations – and not just during very fast cycle times.

Responsive Filling Control ensures top injection dynamics and, at the same time, a particularly precise process control. The entire system features a very robust design and operates with particularly little friction. There is a reason why Netstal machines have been considered the most precise and reliable machines on the market for decades.

Responsive Filling Control (RFC) is based on highly precise and dynamic sensor technology that was developed and manufactured exclusively for Netstal. The integrated force control provides ideal prerequisites for a very precise process control.



The force dependent v/p changeover occurs independently of material properties and, as a result, allows consistent part weights within very narrow tolerances.

Your benefits:

- Faster cycle times
- Fewer rejects
- Greater availability
- Top overall equipment effectiveness



The RFC injection control is individually adjusted for each injection unit size.

Modular Design

Clamping unit and injection unit combinations

We are guided by your needs and configure a tailored ELIOS to achieve the highest profitability of your production. Depending on your application, the clamping unit, injection unit, drive and screw diameter can be optimally combined.

Modular flexibility

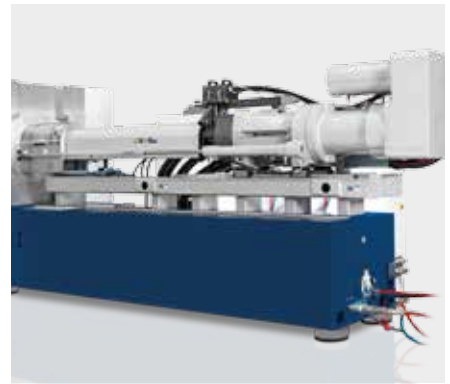
We can meet your individual needs with the modular system of the ELIOS series. Depending on which injection unit, screw, clamping unit or drive you need, we can meet your requirements exactly thanks to our modular machine concept.

Across the entire series, 33 combinations of clamping forces, injection units and screws are available. Depending on the model, four or five drive modules with an output between 31 and 83 kW are available.

The consistently modular design allows the implementation of basically any application. You will produce with outstanding quality and benefit from the efficiency of an optimally adapted Netstal machine.



Clamping unit



Injection unit



Drive unit



Screws

Your benefits

- Design of all machine components based on customer requirements
- Top overall equipment effectiveness
- Future security
- Optimum maintenance friendliness

Simply clever Maximum flexibility of the media

We have designed the ELIOS to be so flexible that you can react to new demands at any time. Thanks to the high flexibility of the media and the optimum accessibility of the connections, the ELIOS can be adapted to new applications with a minimum of effort.

Pneumatic valves

The pneumatic valves are installed near the consumer to ensure shorter reaction times.

Hydraulic controls

The connections for hydraulic mold auxiliary controllers can be mounted on either the operating or the non-operating side.

Cooling water distributors

Depending on the mold, cooling water distributors are available around the mold plates. The distributors are corrosion-protected. The use of ball valves guarantees optimum flow rates.

Socket outlet boxes

Socket outlet boxes with integrated circuit breakers can be placed at various positions on the machine for the connection of peripheral devices.



All media connections are right there, where they are needed

Your benefits

- Optimum accessibility
 - Simple operation
 - Extremely maintenance-friendly
 - Optimum cost-effectiveness
-

The innovative aXos control technology supports an intuitive operation and allows the machine to perform at its best.



Smart Operation

simple. fast. safe.



aXos Controller Innovative and user-friendly

With a high-performance and flexible controller, you can get the maximum performance from your Netstal machine. aXos was developed to meet the increasingly complex demands of current and future applications. Innovative functions support the simple, quick and fault-free operation in the production environment.

User-friendly sequence editor

The sequence editor allows even complex processes to be easily and graphically programmed and displayed. The unique context menu (Corona) provides efficient assistance here.

Efficient component manager

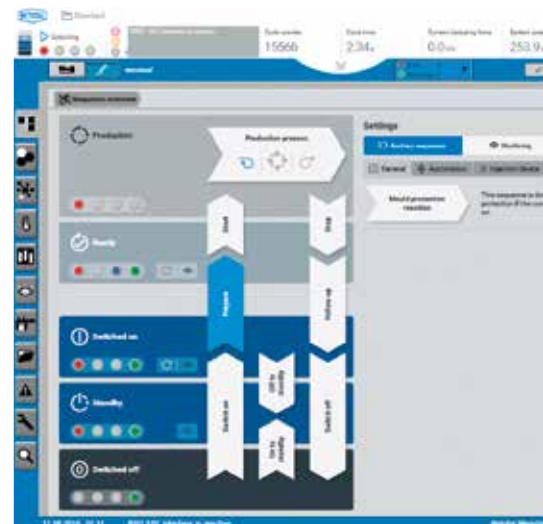
The term "component" stands for all the actuation axes (main and ancillary axes) of an injection molding machine. The clearly arranged component manager acts as a control center for the efficient parameterization of the components.

Ergonomic control keyboard

The control keyboard provides simple and efficient navigation elements for quick access to the required system processes. The keyboard is ergonomically designed and can be folded away during maintenance.

Smart Operation

The new "Smart Operation" option allows a simplified and secure operation of the machine in the production environment. With just two buttons, you can take the machine to the operating mode and back. Operating errors are reliably avoided. Smart Operation lastingly increases the overall equipment effectiveness of your injection molding production.



New sequence overview with Smart Operation

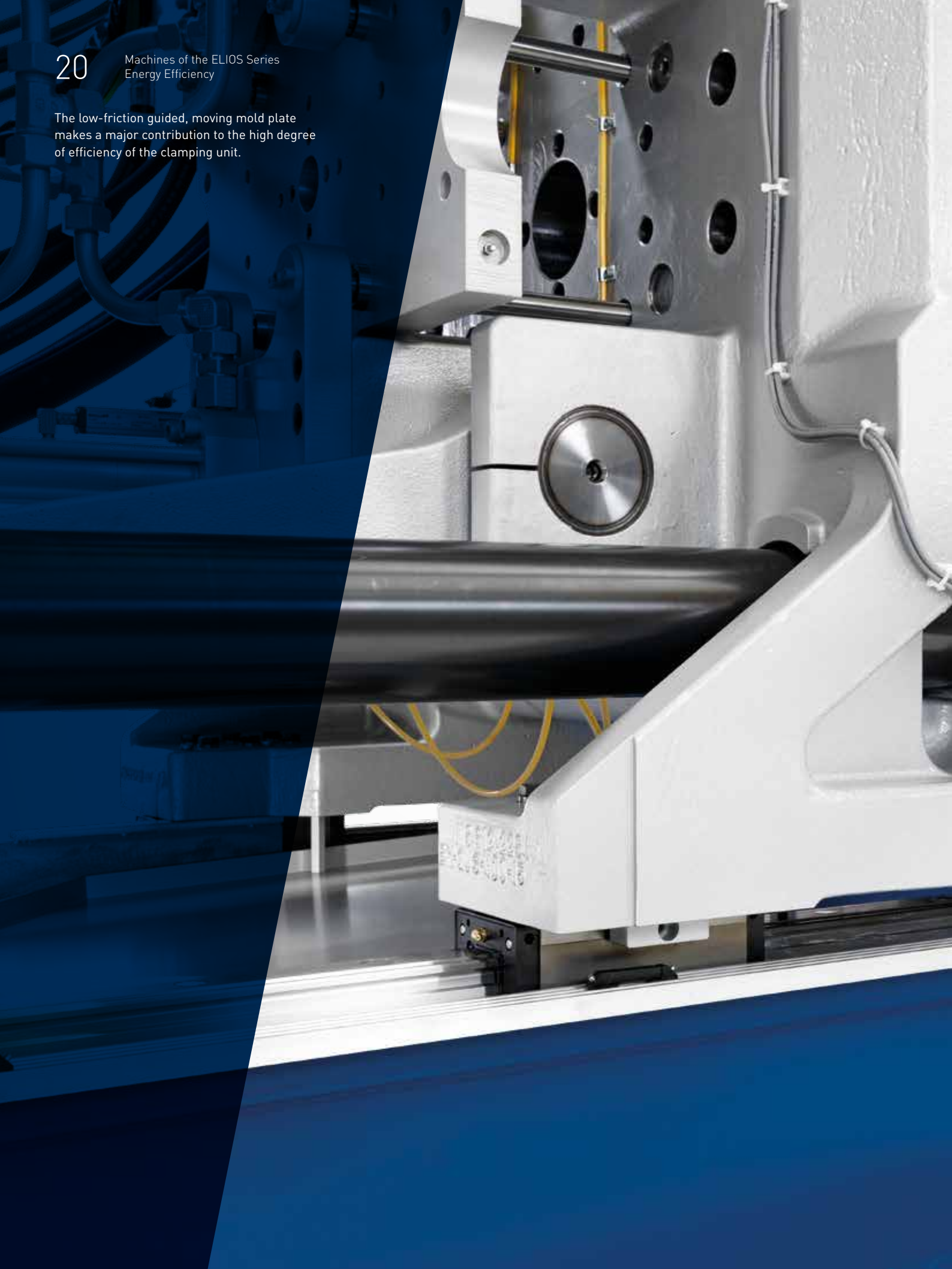
Clever control panel

The control panel offers a whole range of functions to support the user in operating the machine during day-to-day work. The combination of monitor and membrane keyboard is a development that has been patented by Netstal.

Well-organized dashboard

The individually configurable overview page provides all the important information at a glance. The operator recognizes immediately whether the process is running stably and within the tolerances.

The low-friction guided, moving mold plate makes a major contribution to the high degree of efficiency of the clamping unit.





Less energy, optimum cost-effectiveness Hybrid technology with energy recuperation

A low energy consumption allows enormous savings to be achieved in the operation of your injection molding machine. That is why we at Netstal have given intensive consideration to the subject of energy efficiency. The goal was to combine the energy-saving advantages of electric drives with the high power density of hydro-mechanical drive concepts. The result: When it comes to electricity consumption, the machines of the ELIOS Series are among the most thrifty injection molding machines with hybrid drive technology.

Main features of the Netstal drive technology:

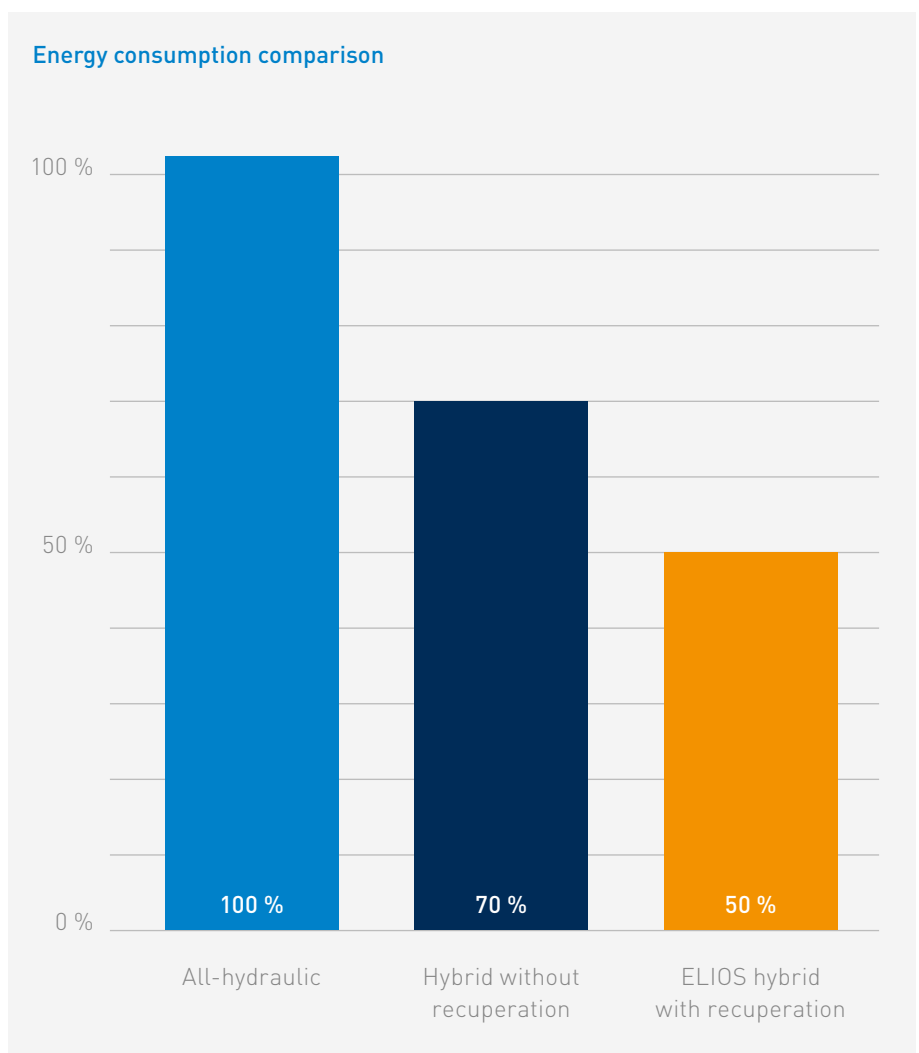
- Recuperation of kinetic energy
- Adaptive drive control
- Interconnected power converters
- Optimum operating point with maximum efficiency

ELIOS hybrid technology with recuperation

The kinetic energy generated during the braking operations flows into the electric motor of the main drive where it is converted into hydraulic energy and stored. Because the energy thus recuperated is used in the overall system again, an energy saving of up to 50 percent can be achieved even under full load compared with an all-hydraulic machine.

Your benefits

- Up to 50 percent less energy consumption
- Outstanding cost-effectiveness in high-performance applications
- Competitive benefits



Worldwide competence to your benefit

Service & solutions



Netstal's customer service provides you with optimum support throughout the entire lifecycle of your machine. Our solution-oriented services and products such as commissioning support, troubleshooting, spare parts supply and customer training optimize your production efficiency and secure your investment to create a lifelong partnership that works to your advantage.

1. Start-up

- Installation
- Commissioning
- Training
- Teleservice

3. Optimization

- Application consulting
- Retrofitting
- Energy consultation
- Process consultation

2. Use

- Spare parts packages
- Troubleshooting
- Hotline
- Preventive maintenance

4. End phase

- General overhaul
- Modernization
- Machine relocation
- Second-hand machines



e-Service

Netstal's free e-Service provides you with versatile electronic service functions around the clock no matter where you are. Access to machine-specific documents, rapid 3D spare part identification with direct ordering, an integrated ticket system and many other features provide you with an additional way of safeguarding your production efficiency at the highest level.

Netstal

A strong brand in a globally unique group

Premium high-performance and high-precision injection molding and system solutions

Netstal is an international provider of premium high-performance and high-precision injection molding technology and system solutions. We impress our customers with constant innovations and services, as well as with highly efficient and performance-driven technological approaches, in particular for the beverage, packaging and medical technology industries. Our production systems are all characterized by the same attributes: Speed, precision, reliability, 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.

Worldwide presence

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 comprehensive and customer-oriented service.

Individual 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.

Further information on Netstal can be found at: www.netstal.com

KraussMaffei Group

Comprehensive know-how

USP technology³

With its KraussMaffei, KraussMaffei Berstorff and Netstal brands, the KraussMaffei Group is the world's only supplier of the machine technologies integral to plastic and rubber processing: Injection molding technology, automation, reaction technology and extrusion technology. With over 30 subsidiaries, more than ten production facilities as well as around 570 sales and service partners, the Group is well represented internationally. That is why we are the only professional partner you need. Take advantage of our extensive and unique know-how in the industry.

Further information can be found at: www.kraussmaffeigroup.com



The KraussMaffei Group operates globally. Countries with subsidiaries are marked in light blue. The Group is represented by over 570 sales and service partners in the white-colored regions

**Powerful.
Fast.
Precise.**
Machines of the ELIOS Series

Powerful, fast, precise, energy-efficient and user-oriented: With its innovative drive technology, the ELIOS Series sets new standards in high-performance injection molding.

The result is more than fascinating: up to 750 tons clamping force, 1.5 seconds dry cycle time (ELIOS 4500, measured according to Euromap) and an energy efficiency that has never been achieved before.

Add to that Netstal's proven precision, reliability and user friendliness and you get a highly productive premium system as a successful solution to demanding packaging applications.

Performance, newly driven.