SYNERGY

Completely flexible, universal in application.

SynErgy: user-friendly high-performance injection moulding for one-component and multi-component applications.

NETSTAL

SWISS MADE

Perfectly packed: in-mould-labelling (IML)
Joining the moulded product and the label by the moulding process doesn't just bring functional advantages, it also holds a considerable potential to reduce costs. The higher demands imposed in the foodstuffs sector as regards packaging, decoration and functionality lead to a growing use of the in-mould-labelling process.

Clinically pure: medical mouldings
Whether syringes, pipettes, petri dishes or system solutions such as inhalers or insulin pens are concerned: they are typical applications for a SynErgy. The whole range of these machines is laid out to cope with the requirements of a clean-room production.

Twice as good: multi-component moulding
Combining different materials or colours is by now a well-established technique in many areas of injection moulding. With its SynErgy 2C, Netstal is offering a powerful solution also for these applications.

ypically Netstal: demanding applications.

In the more recent past, injection moulding of plastics has attained an eminent significance. New application possibilities keep coming up in all important areas of technology. The consequence is that ever higher demands are imposed on the production processes.

Already for decades Netstal has been devoting itself with much success to the particularly demanding applications. This is how the proverbial Swiss Quality and precision workmanship have become the hallmark of Netstal-Maschinen AG.

All injection moulding machines made by Netstal stand out by the same five basic attributes. These are: speed, precision, reliability, user-friendliness and economic efficiency.

Thanks to these performance characteristics Netstal's SynErgy range with clamping forces from currently 600 to 8000 kN is firmly established in the world market. As a user-friendly high-output machine, the SynErgy reveals its capabilities to the full extent especially when it comes to complex mouldedarticles and moulding processes.

Packed in the appropriate medium: DVD and Jewel Boxes
An advancing branch of the industry. Packaging products for all types of data carriers represent a growth market. The mouldings must be highly precise and weight-optimized, and they must be produced at short cycle times. Another typical case in which the SynErgy excels.

Special in its performance,

All models of the SynErgy range display the typical properties of a Netstal machine: speed, precision, reliability, user-friendliness and economic efficiency.

The particular performance capability of this range is the result of numerous individual features. Three of these, however, stand out especially.

Closing unit 1

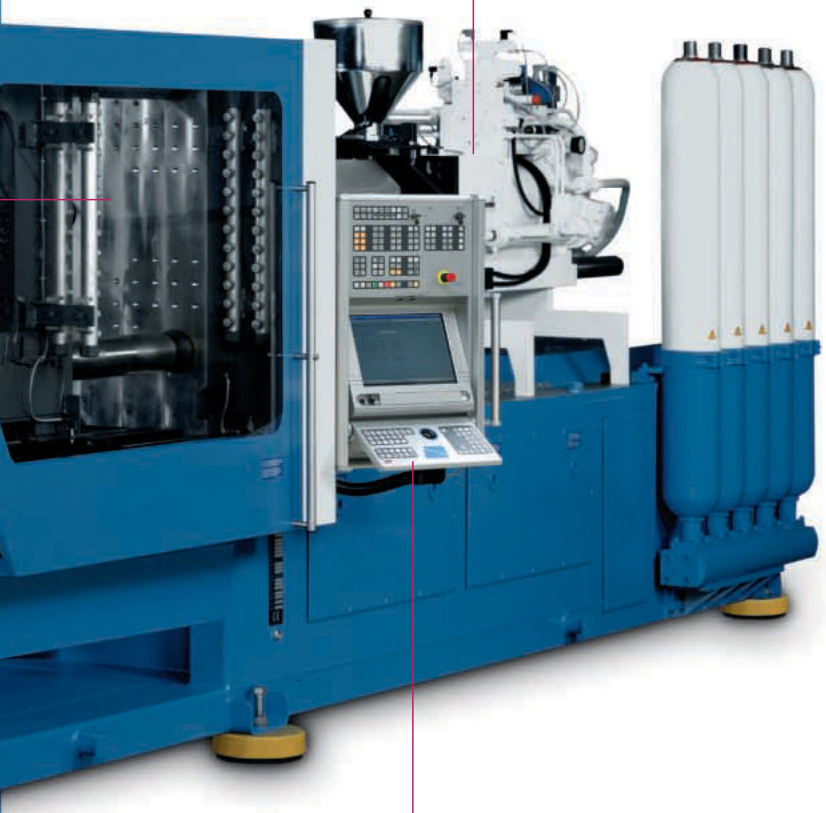
1 Rugged: mould closing unit
The sturdy execution of the 5-point toggle lever guarantees fast movements and minimal wear, also in the mould. Two important factors in the striving for a low cost per piece.

2 Flexible: injection unit
The injection unit is trimmed for performance entirely: laid out for a wide spectrum of applications, it provides the required plasticizing capacity and permits to adapt the drive values individually.

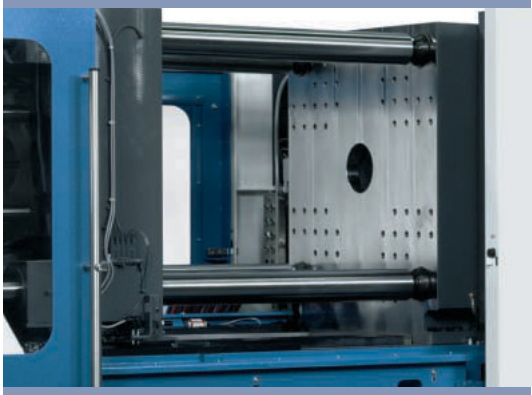
3 Straightforward: control
The new, integrated operating unit is equipped with a high-resolution TFT screen. All elements are clearly arranged, the operator guidance easy to handle and very convenient.

strong in its technology.

Injection unit **2**



3 Control



Solid mould closing unit

Injection unit for highest plasticizing and injection capacities

New operating unit with integrated sequence display

The interaction of the forces.

The name SynErgy refers to the interaction of the forces. Netstal selected it for the underlying concept: the SynErgy range offers five substantial strengths from which every user benefits. The interaction of these performance characteristics of the SynErgy guarantees high returns.

Speed

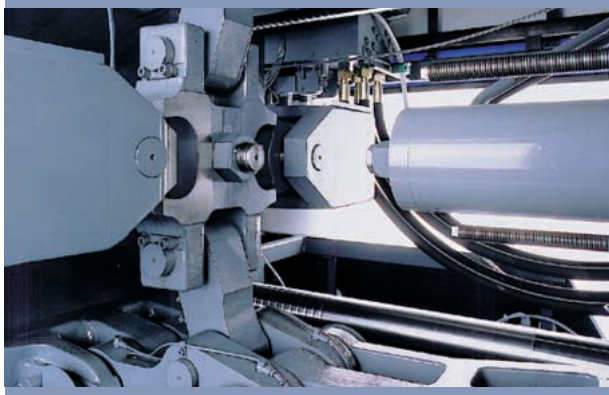
- Fast movements
- Short mould movement times thanks to the 5-point toggle lever
- High injection capacity

Precision

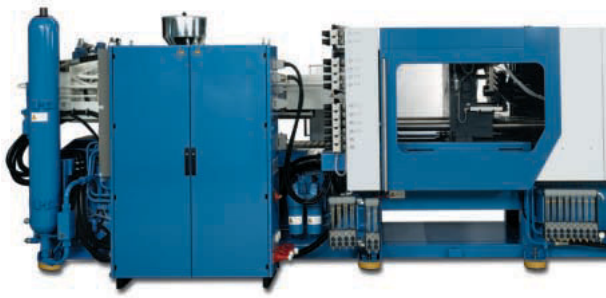
- All sequences are perfectly reproducible
- Intelligent, exact closed loop control of the process
- Exact closed loop temperature control

Reliability

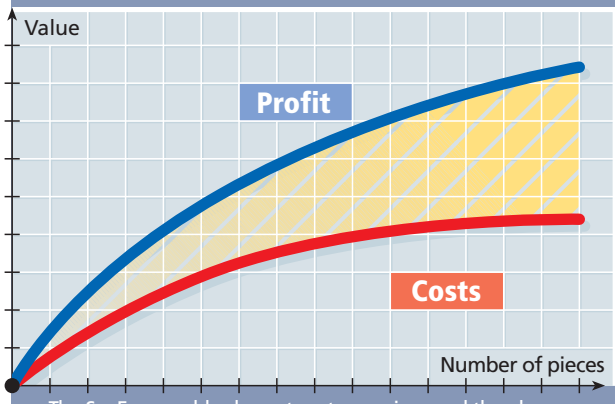
- Robust execution
- Stable mechanical sequences
- Comprehensive inspection of all components and assemblies before delivery



Fast and precise movements thanks to the 5-point toggle lever of solid design



Good accessibility of the machine from all sides



The SynErgy enables lowest costs per piece and thereby maximum returns

User-friendliness

- Safe and simple operation
- Ergonomic layout of all elements
- Easy programming with clear overview
- Excellent access to the mould compartment

Economic efficiency

- Lowest reject rates
- Low cost per piece
- High return on investment

SYNERGY

High performance

Netstal successfully extended the top end of its SynErgy range from 5000 to currently 8000 kN clamping force and earned much praise for this measure. The "large SynErgy machines" are in the meantime firmly established in the market.

They are based on a modular design. The separation of mould closing and injection unit enables a customized specification of the machine, so that every user gets the most effective combination covering the particular requirements.

1 Hybrid drive

All injection units feature an electric motor for the screw rotation, while the remaining consumers on the machine are operated hydraulically. In other words, the machine is based on a hybrid drive concept.

2 Two-part execution

Mould closing and injection unit are separate, enabling an individual combination of the two elements to suit the applications on hand. A modular principle in the interest of maximum economic efficiency.

3 Short dry-cycle times

The "large" Netstal machines achieve a high efficiency also because their dry-cycle times are extremely short.

on a big scale.

Bladder accumulators enable parallel process sequences under constant pressure

Separate mould closing and injection unit based on the modular principle

Bottle closures – a typical application

Typical applications

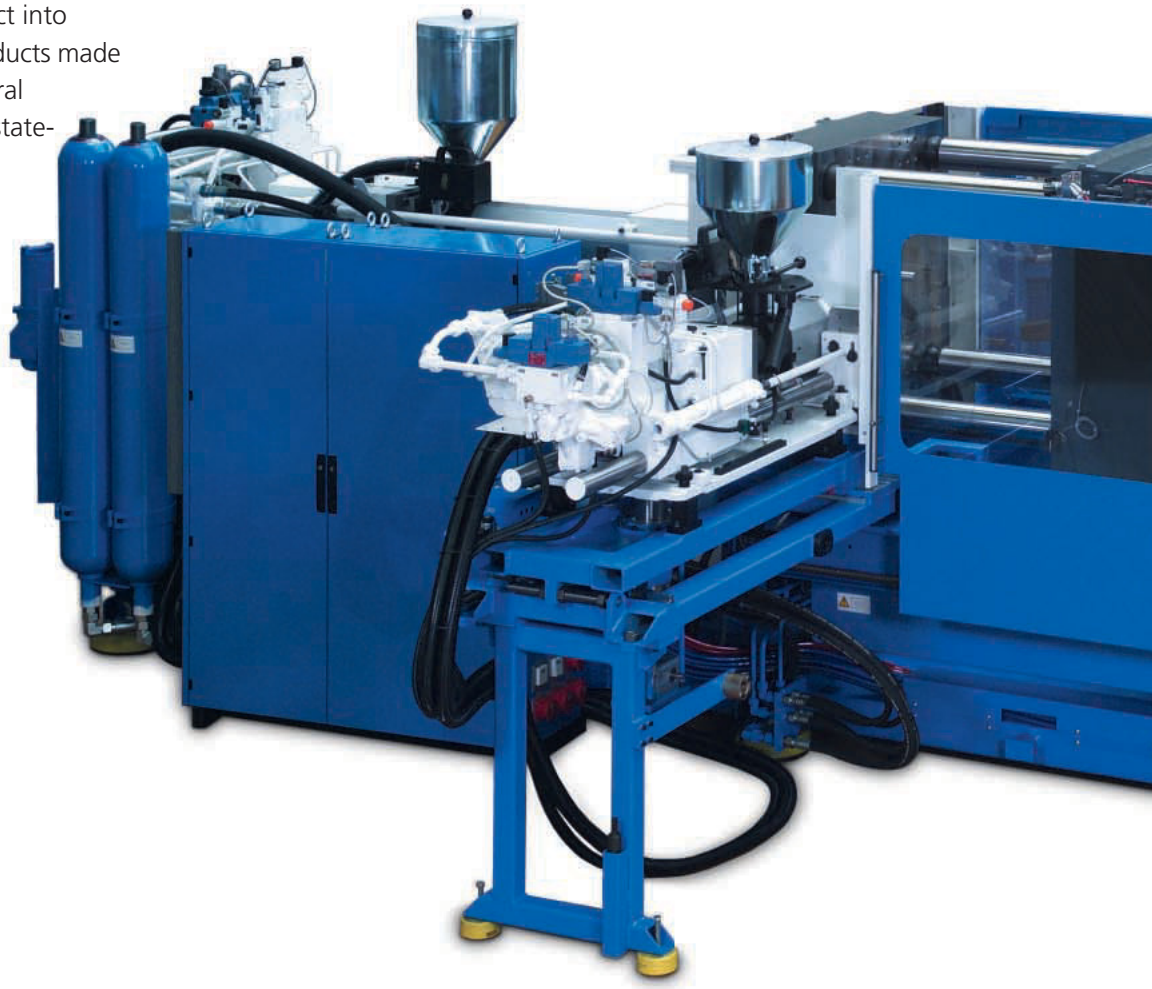
- Decorated packaging products (IML)
- Fast-cycling thin-walled parts
- Complex, highly precise technical moulding
- Medium packaging products (for DVD, Optical Discs)
- Bottle closures

More colours. More components

Today, modern injection moulding means more than just providing answers to technical issues. In many areas the design of the moulded article plays a decisive role for the success of the product in the market.

Multi-component injection moulding takes this fact into account. Moulded products made from one or even several components are now state-of-the-art technology.

Netstal has laid out its SynErgy 2C range to cope with practically all techniques and processes. A wide spectrum of applications is covered with the clamping forces from 600 to 8000 kN and the injection unit combination possibilities.



Flexibility in the arrangement of the injection units

In standard execution the two injection units are arranged in L-shape because this is often the most efficient solution. However, other arrangements are readily available if the application on hand requires this.

Flexibility in the process

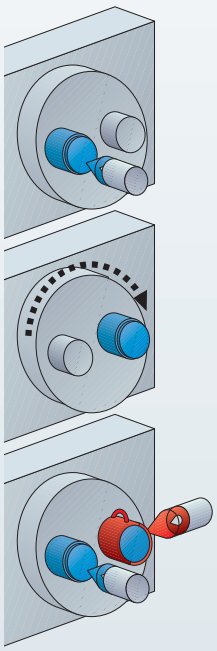
Both injection units can inject in parallel or independent of each other, i.e. simultaneously, in sequence or offset time-wise. The processor can also define which injection unit is to inject first.

Overview of all processes.

OVERMOULDING

Rotary plate technique

After injection of the first material component the rotation to the finishing position takes place where the plastic moulding is completed.

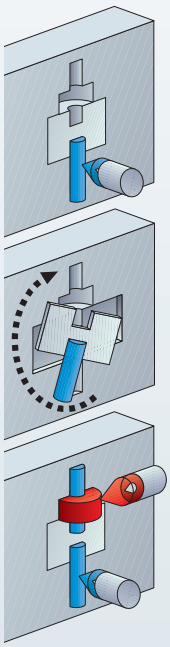


Application examples:

Drinking cups
Handles
Closures
Seals

Index plate technique

For applications in which the geometry of the moulding needs to be adapted by the second component on both sides. This technique offers a good deal of freedom in the design of the product.

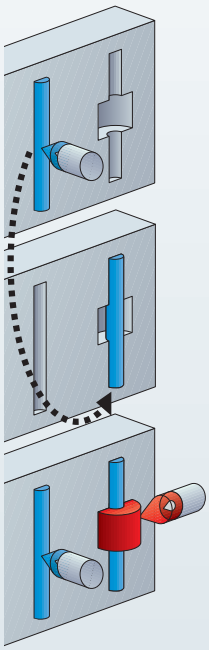


Application examples:

Adjustment wheels (automotive)
Ball pen handles
Tooth brushes
Letter openers

Transfer technique

A handling device transfers the advance moulding to the finishing position and affords maximum freedom in the design of the first and second component.



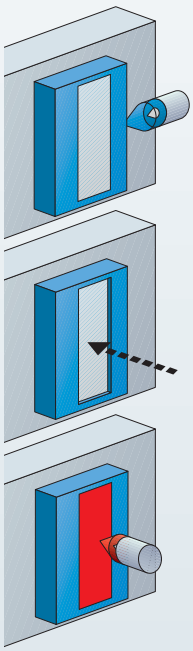
Application examples:

Transport rollers for printers
Technical parts
Tooth brushes

BI-INJECTION / CO-INJECTION

Slide technique

After injection of the first material component, a slide is drawn inside the mould to provide new space for the second material component.

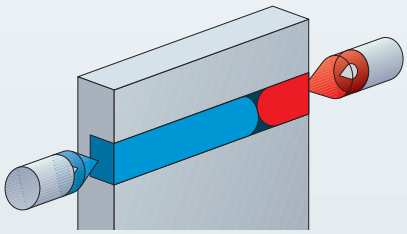


Application examples:

Seals
Closures
Sealing lips

Bi-Injection

Both materials are simultaneously injected into one cavity. The choice of the gate location and the cavity's geometry are decisive for the distribution of the material.

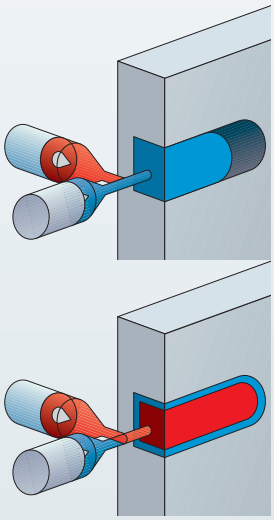


Application examples:

Mainly products whose functionality is in the foreground; the flow of the material cannot be controlled

Co-Injection

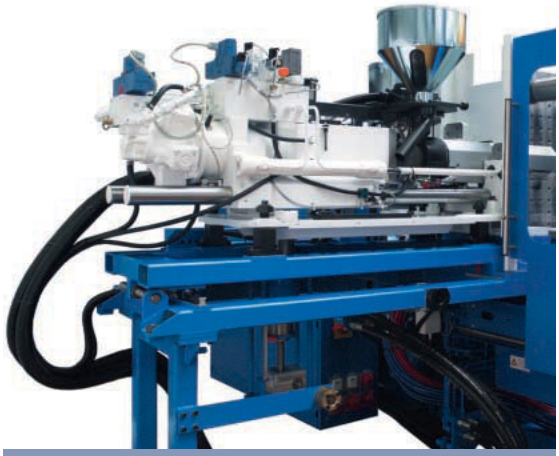
Demanding process control in case of thin-walled moulded products. A process perfectly tailored to the capabilities of the SynErgy 2C! Optimal for processing recycled plastic in combination with high-grade material for the surfaces.



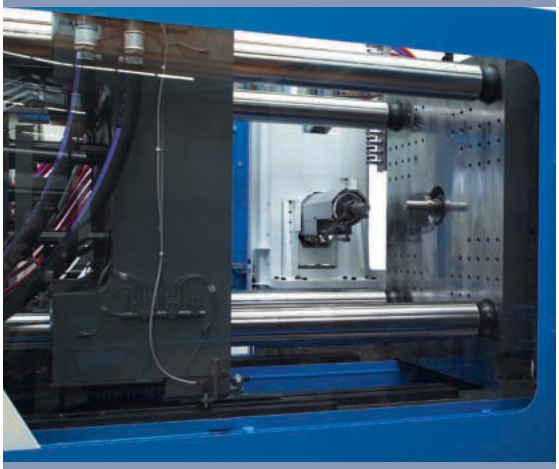
Application examples:

PET preforms
Housings
Automotive products

More possibilities.



The second injection unit is firmly connected to the base frame in L-shape



View of the mould compartment with the nozzle of the second injection unit

New operating unit with sequence display of both injection units

Clear overview of the control

The actions of both injection units can be followed on the monitor at the same time, so that control and programming inputs are considerably facilitated.

High performance in the system.

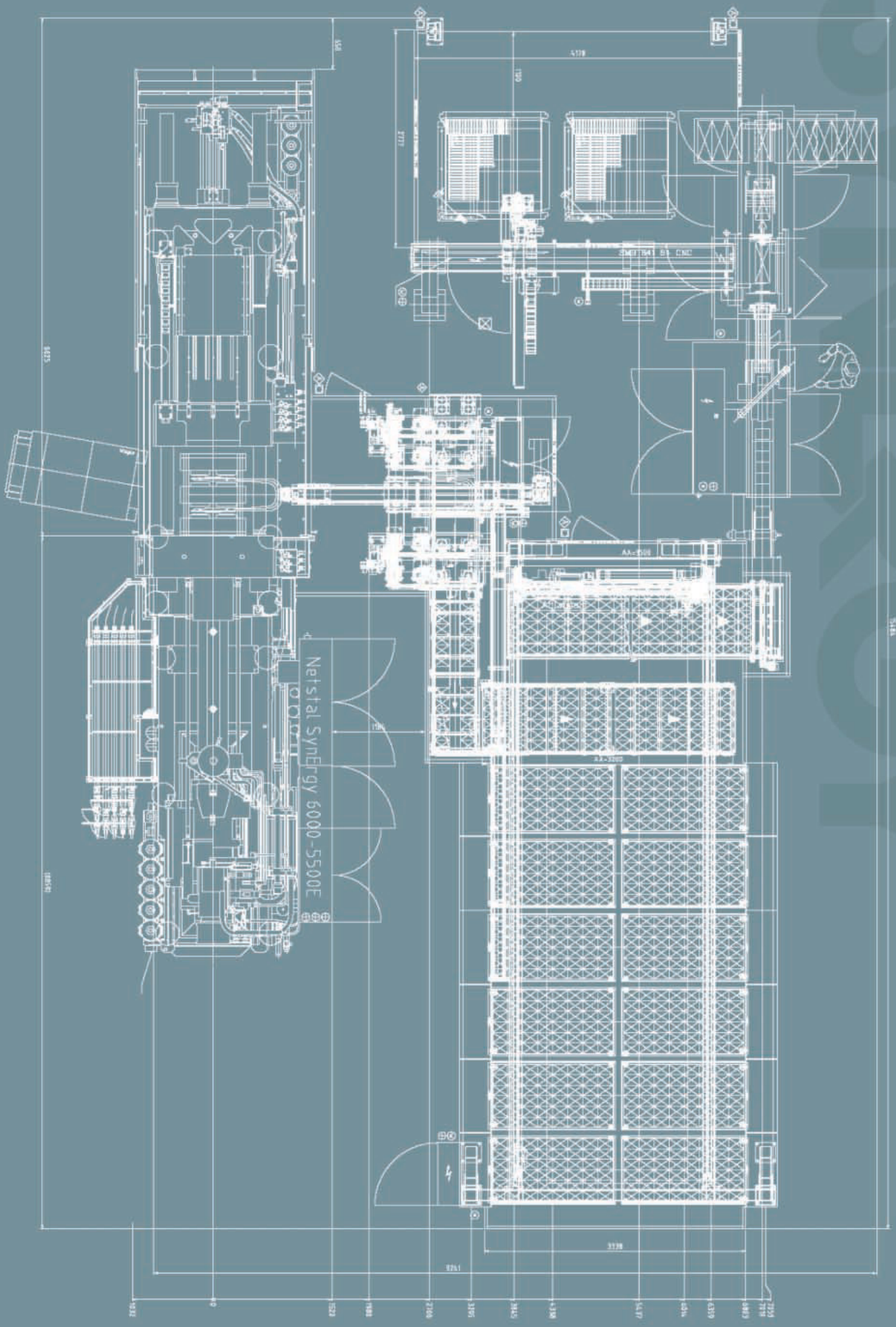
To many modern injection moulding applications there is more than just selecting the machine. What matters in these cases is the optimal configuration of a complete production system of which the moulding machine is an important success factor, of course. Beyond this, however, solid know-how is required to pick the right mould, handling and onward processing devices.

Prerequisite to an efficient production is that all these system components are ideally matched. Netstal is well prepared to cope with this issue and able to offer complete system solutions. We rely on a wide network of competent partners and are always in a position to assemble the most appropriate system for the particular customer's products.

Competent for: individual systems
Netstal supplies individual injection moulding systems configured to meet specific requirements.

Typical applications: bottle closures, decorated packaging products, medical mouldings.

Competent for: repetitive systems
Our experts are highly experienced also in the planning and implementation of repetitive systems. Typical applications: media packaging such as DVD boxes (2+2 or 4+4-imps.), CD boxes, Jewel Boxes, Slim Boxes, petri dishes, etc.



Consultancy with a systematic approach
Get in touch with us. We advise you intensively and in detail on the most efficient system for your purposes on the basis of a SynErgy.

Comprehensive: Netstal

The services surrounding Netstal's actual core business, the manufacture and marketing of injection moulding machines, are becoming ever more important in view of the customers' increasing call for extra value. Netstal has identified this need at an early stage and developed a label which stands for the comprehensive services offered under the name of "Netstal Support Concept".

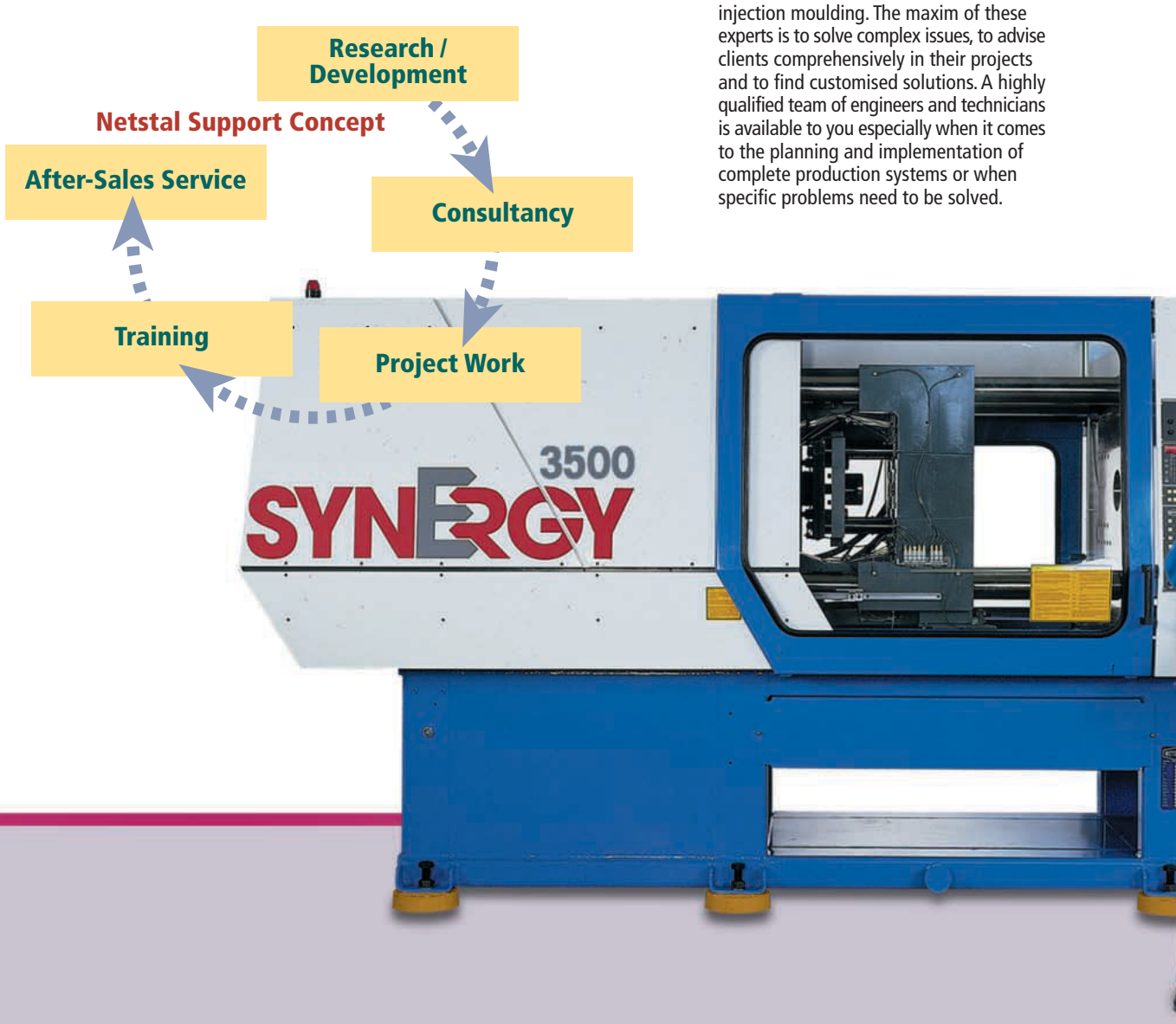
Service doesn't start with the purchase of a machine, and doesn't stop thereafter, either, for a very long time. The "Netstal Support Concept" has been initiated to provide our customers with comprehensive support from A to Z. Important parts of this are Netstal's Tech-Center in Näfels and competent customer care before and after equipment is bought.

1 Mature technology: Research & Development

Netstal invests 5% of sales in its research and development department each year. This is important on the one hand to hold the position in the international market, and on the other to live up to the promise of not just following the field, but contributing actively towards setting benchmarks again and again with innovative new and future developments.

2 Individual consultancy: Netstal's Tech-Center

The specialists employed at Netstal's Tech-Center are highly competent consultants in all application-technical and commercial/administrative matters in the context of injection moulding. The maxim of these experts is to solve complex issues, to advise clients comprehensively in their projects and to find customised solutions. A highly qualified team of engineers and technicians is available to you especially when it comes to the planning and implementation of complete production systems or when specific problems need to be solved.



Support Concept.

3 Meeting requirements: specific training

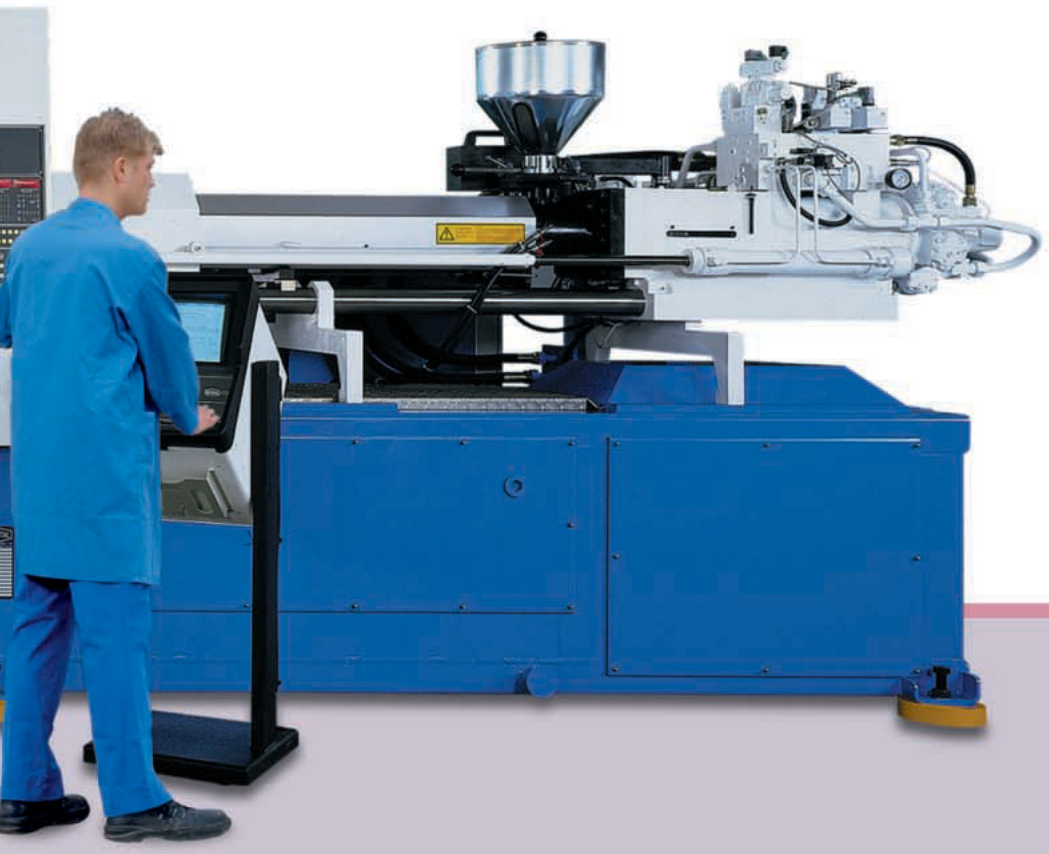
Solid training at Netstal's training centre puts you and your employees in a position to get the best out of our moulding machines and to operate them efficiently. Training courses tailored to the customers' needs are the answer. The participants' level of know-how and experience is taken into account in the planning of these courses.

4 Reliable: flexible after-sales service

Having acquired a machine, Netstal customers can count on a reliable, non-bureaucratic and fast after-sales service. Thanks to a tight sales and service network our technicians are soon on the spot to cope with any problems. Many subsidiaries and agents all over the world and the headquarters in Switzerland can offer support without delay thanks to well-trained employees and a comprehensive stock of spare parts. As an option and extending beyond the normal warranty package, Netstal offers a variety of services to meet individual requirements in the area of customer care.

5 Fast: delivery of spare parts worldwide

What characterises a good spare parts service are the total availability and quick transaction of the orders. Netstal provides these prerequisites in full with a 24-hour service on 7 days per week and comprehensive stocks of spare parts at their headquarters and with their global subsidiaries.



Research in the context of new and further developments of the products as well as application-technical process optimisation is carried out at Netstal's own labs.

Most modern infrastructures and interactive teaching are ideal prerequisites for specific, individual training.

A tight global sales and service network with nine subsidiaries and numerous agents guarantees closeness to the customer and a fast service in about 40 countries. More on this under www.netstal.com

SWISS ENERGY

For a successful future.

Netstal is one of the pioneers of the injection moulding technology and draws from 60 years of experience. Machines and production systems from Netstal stand out by their reliability, precision, speed, user-friendliness and economic efficiency.

It is not least on the basis of our global sales and service network that we guarantee lasting good relations in the spirit of a genuine partnership.

NSC
PET-LINE
Discjet
e-Jet
ELION
SynErgy

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