The Highest Standards of Application and System Expertise
Medical Technology

Engineering Excellence
The Highest Standards of Application and System Expertise

Here at Netstal, focus on the applications of our customers is paramount. Netstal has many years of experience as a partner for complete system solutions and, thanks to our extensive partner network, we are in a position to offer our customers turnkey systems.

Our high level of flexibility and comprehensive knowledge base distinguish us as the ideal partner for your system solutions in the medical technology sector. The following example gives an impressive demonstration of how this can benefit you:

One of our customers had made a plastics analyzer from two injection molding machines and then connected these to a further automaton. The disadvantages of this process were that it was very time-consuming, the error rate was high and it meant that a lot of rejects were produced. Of course, this resulted in higher material costs and lower output.

Thanks to our application and system expertise, we worked with our partners to develop a fully comprehensive solution with which the customer was very pleased. Today, this component is manufactured by the customer using only one injection molding machine that assembles the halves when they are still in the mold. It was therefore possible to reduce cycle times by 40%. Thanks to this customized process, no additional processing step or automaton is required, efficiency has been improved considerably and output has seen a marked increase.
Medical Technology
Our Expertise – Your Benefits

Netstal has many years of experience in the development of application-specific system solutions for our customers. Our professional partners, who are experts in their fields, help us meet the demands of the medical technology sector. We work with these to develop specific solutions based on injection molding machines specially optimized for medical applications.

Your benefits at a glance:
– Extensive experience in the development of system solutions
– Professional partners to meet high demands
– High process flexibility
– Top parts quality
– Highest production efficiency with maximum reproducibility
Blood collection tube
Blood collection tubes are used in medicine as containers when taking and processing blood samples. They also make it possible to easily transport blood samples and store them for short periods of time.

Insulin pen
Insulin pens can be used by diabetes patients to administer precisely measured doses of insulin.
Disposable syringes
A syringe is a medical instrument that is used to administer liquid medicines – these are known as injectables.

Petri dishes
Petri dishes are mainly used in laboratories in the cultivation of microorganisms and when growing cell cultures. They are made from laboratory glass and plastic and come in a range of different sizes.
Maximum Efficiency and Cleanliness Injection Molding in Cleanrooms

In medical manufacturing, production in cleanrooms is essential in the production of sterile or “clean” parts. Whoever takes the present and future requirements for quality and efficiency in the medical and pharmaceutical industries into account will quickly recognize the advantages of this production environment and, despite all the difficulties associated with this type of production, follow the recommendations of GMP guidelines.

As the requirements for the manufacture of plastic parts for medical and pharmaceutical applications are much higher than those for technical parts, the comprehensive monitoring of conditions in cleanrooms is a top priority in quality assurance. Only the continuous monitoring and control of temperature, air humidity and pressure parameters can ensure a constant production environment. Particular attention must, of course, be devoted to the “cleanliness” of a clean room. Compliance with bacterial count and particulate loading limits is key to the manufacture of products that are both particle-free and sterile. This is guaranteed by a documented, qualified and validated cleanroom culture in a company that is active in the medical and pharmaceutical industry. The positioning of particle sensors and control of the air filter system are just as important here as employee training and employee discipline with regard to the practices of air-locks and cleanroom clothing.

In terms of economic efficiency, the design and planning of cleanrooms based on pharmaceutical guidelines, where both the production and packaging of products take place in these cleanrooms, means that a subsequent time-consuming and expensive sterilization process can be avoided completely.
Excellent Machine Technology from Netstal
Efficient Benchmark Solution

Our excellent machine technology is the basis for your success. The standard version of the fully electric ELION has established itself as the efficient benchmark solution for medical applications.

Consistent cleanroom suitability
Consistent cleanroom suitability, high process capabilities and top injection speeds make this customized injection molding machine the most commonly used core element of complex production systems for the manufacture of pipettes, petri dishes, insulin pens and all other plastic parts in the medical technology sector.

The Elion is therefore ideal for use in cleanrooms in accordance with cleanroom class ISO 7. The requirements for a higher cleanroom class can be met with just a few additional options.

Benefits of the ELION with MED-Kit
- Laminar flow hood over moulding area
- Clean purge → patented Netstal nozzle fume hood
- Covers to prevent disruptions to laminar flow
- Closed drag chains
- Galvanized mold platens
- Encapsulated and water-cooled servo motors
- Media distribution (water, air, power) flexible and fully integrated into the safety cover
- Machine raised to facilitate cleaning of floor underneath
- Optimized sheet metal surface design and special coating for ease of cleaning
- Mold water circuits monitored using flow sensors for increased quality assurance

Netstal system know-how for medical applications
In the case of medical applications, a very long and intensive development period is usually required before production can begin. In order to devise completely integrated system solutions that meet strict qualifications and guidelines, close collaboration with our customers at an early stage is absolutely essential. Our specialists understand the different qualification procedures and ensure that important and indispensable documentation is also implemented safely and precisely for the purpose of reproducibility.

Your benefits
- Product development and optimization
- Prototype validation
- Equipment selection (machine, mold, automation/assembly, material feed, cooling, conditioning, inspection systems, raw material ...)
- Project engineering
- System integration
- Pilot production

www.netstal.com/products/elion
Key Requirements
Quality Assurance and Documentation

Quality assurance plays a major role in pharmaceutical manufacturing, because even the slightest quality deviations can directly affect the health of the consumer.

Guidelines for the quality assurance of the production processes and environment in the production of pharmaceutical drugs and active ingredients are summarized under the term GMP (Good Manufacturing Practice).

A GMP-compatible quality management system serves to guarantee product quality and ensure that the mandatory requirements of public health authorities for the marketing of the product are met. Relevant guidelines have been issued by bodies such as the European Medicines Agency (EMEA), the FDA in the USA and the International Conference on Harmonisation of Technical Requirements for Human Use (ICH).
How are responsibilities divided between Netstal and the customer?
With regard to GMP guidelines and tight schedules, production processes make it difficult for the plastic injection molding industry to perform all necessary calibrations by itself. Netstal supports you with an optimum solution for the entire calibration process that is based on our extensive metrological know-how and experience.

Your benefits
- Netstal guarantees FDA/GMP compliant calibration
- You save time, money and resources
- Use of calibrated measuring instruments tailored to your machines
- Preparation of FDA/GMP compliant documentation
- Any defects are recorded in a log
- Defects are corrected after consultation with the customer

Customer’s responsibilities
- Machine design planning (1)
- Detailed functional description
- On-site qualification
- FAT (Factory Acceptance Test)
- URS (User Requirement Specification)
- Product requirements document

Netstal’s responsibilities
- Machine design planning (2)
- Document preparation [P&ID, E&I]
- DQ (Design Qualification)
- PQ (Performance Qualification)
- Installation
- Installation at customer site
- Approval
- UQ (Operation Qualification)
- SAT (Site Acceptance Test)
Solution-Oriented Applications in Pharmaceutics and Diagnostics
Our Expertise for Your Success

The requirements faced by manufacturers in the medical technology sector in terms of cleanliness, precision, short cycle times and low material costs are challenging. Collaboration with Netstal and its professional partners is crucial to the success of your project—we are here to help you meet these high requirements.

Our specialists always take a holistic approach to complex projects and focus on the specific requirements of medical and pharmaceutical manufacturing. Pipettes are some of the most precise volumetric measurement tools found in laboratories. The number of diagnoses made has increased considerably as a result of technological advances, especially in the area of DNA analysis, as well as a steadily growing world population and the lifestyle diseases associated with it. It is therefore essential to automate the diagnostic process. Such automation requires the utmost precision of the pipette tip—something that we have already factored into the manufacturing process.

Tight tolerances for the following are observed in particular: geometric fidelity, wobble and smoothness. The conductivity of the plastic used allows the automated detection of liquids in test tubes.

The lancet device consists of multiple components made from a range of plastics as well as metal and is a tool used to draw a blood sample in order to identify various blood characteristics. This has multiple applications, such as determining when insulin should be administered to diabetes patients or ascertaining white blood cell levels, which is an indicator of an infection in the body. To minimize the size of the puncture site, modern lancet devices are now fitted with an adjustable depth needle. The highest levels of precision and reproducibility are therefore crucial.

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Pipettes
Pipette tips are part of a laboratory tool designed to dispense liquids. The plastic pipette tips used in diagnostics are disposable.

Lancet devices
A lancet device is a medical implement that quickly punctures the fingertip to obtain a blood sample. The device consists of multiple components made from a range of plastics and metal.
Netstal Life Cycle Services –
A Partnership to Last a Machine’s Lifetime

Netstal customer service provides you with optimum support throughout the entire life 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.

**Start-up phase**
- Commissioning
- Training
- Maintenance consultation
- Parts finder

**Optimization phase**
- Upgrades
- Energy optimization
- Production optimization
- Remote support

**Utilization phase**
- 24-hour spare parts hotline
- Inspection
- Calibration
- Hotline – technical customer service

**End phase**
- Relocation of production
- Overhaul
- Rental and lease machines
- Trade of used machines
Netstal
A Strong Brand in a Globally Unique Group

Premium high-performance and high-precision injection molding technology and system solutions
Netstal is an international provider of premium high-performance and high-precision injection molding technology 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, 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 a 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.

You can find more information on Netstal at: www.netstal.com

KraussMaffei Group
Comprehensive expertise

Unique selling proposition Technology
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
Focus on the applications of our customers is paramount here at Netstal. It is in the medical technology sector in particular that the requirements made of plastic parts are especially demanding. Our technical specialists are well-placed to advise you on specific regulations and can provide you with the best possible support. Our solutions are developed to the highest quality, to achieve the shortest cycle times and at the lowest material cost. So it’s no wonder Netstal is your first port of call for highly advanced medical solutions.