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Media release

Netstal presents a medical technology application with seamless quality monitoring at Fakuma

(Näfels, September 10, 2024) Using a fully integrated high-end production system for COC syringes, Netstal demonstrates how production quality and safety can be guaranteed 100 percent. The key to this is the seamless recording and documentation of all relevant process and quality features.

At the Fakuma, Netstal will be producing 10 ml syringe barrels with Luer-Lock adapters made of COC using an all-electric Elion MED with a clamping force of 1750 kN. The part weight is 7.8 g and the cycle time is around 20 seconds. Netstal processes a material from Topas through a precision mold with 8 cavities from Fostag. The seamless monitoring of the thermal processes in the mold is carried out using technology from Mouldflo. Material preparation and feeding is ensured by a system from motan colortronic. HB-Therm provides the latest generation of Thermo 6 temperature control units. System partner SKA is providing the fully automatic handling system consisting of high-speed side removal, parts depositing and an integrated thermal imaging camera for recording the demolding temperature in the area of the Luer-Lock connection. Another integral part of the automation is the complete recording of process and quality parameters and their aggregation to a unique identifier using a QR code. The injection molding machine is also connected to the MES from digital partner bfa solutions via OPC-UA / Euromap 77.

Fully electric Netstal Elion for highest precision and maximum production efficiency

The choice of injection molding machine is an essential prerequisite for permanently assured production quality. With its robust construction designed for maximum reliability, the all-electric Elion MED 1750 offers the ideal prerequisites for unique precision, reproducibility and purity in the medical production environment. The enormous control accuracy is ensured by high-performance mechanics, high-precision measurement technology and sophisticated control technology. The latest Axos 9 control generation also ensures efficient control in the injection molding process with a sampling rate

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of 2 kHz. The guided Smart Operation button control ensures smooth operating processes in the production environment and high production efficiency.

During the injection molding process, a lot of characteristic data is generated that provides information about the production quality. A large number of process parameters are available in the control system, which can be evaluated, displayed and monitored. The main focus is on the shaping phase. The quality of the molded part is largely determined during this injection and pushing forward phase. Continuous monitoring of all relevant parameters ensures compliance with the validated tolerance limits. Histograms are used to detect a possible deviation trend at an early stage and issue a warning.

Netstal RFC ensures shot weight within the validated process window

Manufacturing processes in medical technology are usually validated and must be kept within the specified tolerance limits. Netstal deliberately avoids software-based adaptation of setpoint specifications, as this can lead to the validated process window being exceeded or undershot. Netstal's solution is called Responsive Filling Control (RFC) and is based on a force-dependent pressure changeover. The technology works with highly accurate and dynamic sensor technology, which is developed and produced exclusively for Netstal. The integrated force control offers ideal conditions for high-precision process control, as it is independent of the material properties and ensures a constant part weight within the tightest tolerances.

Seamless monitoring of the cooling water supply

In addition to the process parameters controlled by the machine, the thermal processes in the injection mold are of great importance for component quality. In medical technology, solutions that can measure and evaluate temperatures and water flow per connection on the mold are becoming increasingly popular. Netstal relies here on the system from market leader Mouldflo, which uses specially developed measuring manifolds to ensure seamless monitoring of the cooling water supply. Based on the vortex principle, the flow rates of each individual cooling circuit are recorded and monitored using highly sensitive sensors. In addition, the water temperature in the flow and return of

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each cooling circuit is measured. This information provides a comprehensive overall picture of the thermal processes in the mold, which must remain within the validated process window at all times.

The SKA handling system removes the finished syringes and places them on a conveyor belt. The system communicates with the machine via the Euromap 77 interface and provides additional, quality-relevant process indicators. A thermal imaging camera is used to measure the temperature around the Luer lock adapter of the syringes. The aggregated data from the entire injection molding process is assigned a unique identifier. Each data set can be traced with a displayed QR code.

NET_PM_Fakuma2024_IMG1.jpg
To be seen live in production at Netstal: The Elion MED 1750

NET_PM_Fakuma2024_IMG2.jpg
Netstal manufactures 10 ml COC syringes with Luer-Lock adapter on its Fakuma booth

Further information and pictures in print quality can be found at: www.netstal.com

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Cultivating values, creating value

Netstal stands for globally leading high-performance injection molding technology. The Netstal brand goes back to our founding site of the same name in the canton of Glarus, Switzerland. We employ over 500 people at our headquarters with production plant in Näfels and in our subsidiaries. Netstal has been part of the Krones Group since 2024.

We offer manufacturing companies in the packaging industry, beverage industry and medical technology high-performance machines which work extremely efficiently, with absolute precision and maximum reliability. We are continuously developing these solutions and deliberately incorporating innovative technologies. Because we feel jointly responsible for ensuring that our customers produce efficiently and sustainably. That is why we are driving the development of digitalization and the circular economy with our expertise and experience. We have focused our portfolio on performance, precision, and quality. Customers can find Elios and Elion series injection molding machines with clamping forces between 800 and 10,000 kN, the PET-Line preform system for up to 144 cavities, and turnkey system solutions from a single source. Our quality management is certified according to ISO 9001 and our accredited calibration laboratory meets the requirements of ISO/IEC 17025:2017.
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