

# Molds for Medical Technology

## Satisfying the growing demand for productivity in the field of medical consumables

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### Stack Molds Double Output and Reduce Waste

In the field of medical consumables, the productivity requirements that must be met by manufacturers are constantly rising. Manufacturers find themselves caught between the conflicting priorities of ever-increasing demands from customers in terms of quality and reliability, and the constant pressure to reduce unit costs. In recent years, manufacturers have countered this trend with an increased demand for stack molds. At one Swiss mold manufacturer, the proportion of stack molds produced is now more than 30 percent.

The growth of the world's population, increasing urbanization, aging societies, and increasing self-medication are among the reasons that the demand for medical consumables constantly continues to rise. At the same time, manufacturers have limited production space, and the costs of this space are always rising. This is particularly the case in countries where production costs are already relatively high, but has also become an important cost factor in growth markets such as China. This has created a demand for increased productivity per square foot of production space, coupled with higher demands in terms of production volumes and output. These requirements are met by stack molds, which use two mold-parting surfaces within a single mold, doubling the capacity of an injection molding machine. These systems are able to achieve this with the same mold mounting surface and almost the same clamping force as a non-stack mold.

### Complex Systems

Stack molds are complex systems, and as such they have a demanding set of maintenance requirements. Schöttli, a Husky company based in Diessenhofen, Switzerland, supports its customers across the world in the use, commissioning, and maintenance of stack molds. Following several years of providing customer training, the mold manufacturer recently opened its own academy to satisfy the increasing demand for training. Maintenance is always preferential to repair, so customers are specifically trained to perform the required maintenance measures in a timely manner. This results in a seamless production process and higher system availability, which in turn reduces unit costs.

### Form Alignment

As with conventional molds with very deep mold halves, the alignment of the individual mold segments in stack molds is crucial to the quality of the injection-molded parts and the lifespan of the mold. At the commissioning stage,

the manufacturer shows customers how they can align molds to achieve an optimum production flow. The molds include systems that support the customer, helping them to precisely configure and check the molds, and to continually monitor the production process and make adjustments: monitoring systems with sensors, for example, help to ensure that both mold halves are optimally aligned during the injection molding process. The sensors continuously record and evaluate data to detect possible deviations at an early stage. In addition, Husky provides a stack mold carrier with harmonic linkage, ensuring accurate mold alignment and making it easy to install, remove and service the mold. The center section carrier and moving platen travel on linear bearings located on the machine base, allowing for fast, clean operation.

### Electrical Drives

The trend towards electrification in the injection molding process is especially noticeable in the medical market, with an increasing proportion of fully electrical machines. The use of electrical drive concepts is also increasing for molds. Clearly defined pathways within molds allow for quick, efficient, and repeatable sequences. The advantages are clear—in the sensitive medical market, many systems operate in clean rooms where oil-free molds contribute to a reliable, particle-free production process. Furthermore, electrical drives require less energy and can be integrated into existing control systems. Programmable control devices allow movements to be triggered independently and in parallel. Using the shortest possible reach and stroke distances within the molds leads to a reduced cycle time. The possibility to limit the load and monitor torque reduces wear and tear and increases the service life of the mold.



Fig. 1: 96+96-fold stack mold for 5ml centric luer slip barrel



Extruder barrel, 5 ml

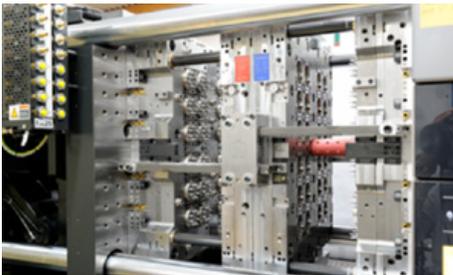


Fig. 2: 192+192-fold stack mold for external protective cap



External protective cap



Fig. 3: 72+72-fold stack mold with 6 servo motors for closing cone



Closing cone

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### About Schöttli, a Husky company

Schöttli, a Husky company, is a globally-positioned specialist in the development and manufacture of high-precision and high-performance molds, as well as integrated system solutions for the volume production of plastic injection mold parts in the medical, closures, and thinwall packaging industries. Schöttli was acquired by Husky Injection Molding Systems in December 2013.

### About Husky Injection Molding Systems

Husky Injection Molding Systems is a leading supplier of injection molding equipment and services to the plastics industry. The company designs, manufactures and integrates the industry's most comprehensive range of injection molding equipment, including machines, molds, hot runners, auxiliaries, and integrated systems. Its value-added services include preform development, factory planning, customer training, systems integration and complete asset management. With more than 40 service and sales offices and employing approximately 4,000 people worldwide, Husky supports customers in over 100 countries.