

# Uncompromising

**THE FAMOUS SCHNAPPS GLASS** per hour is a typical amount for minimum quantity lubrication. However, in conjunction with a highly volatile lubricant it triggered several problems for a supplier to the pharmaceutical industry.



1 High-precision dosing systems ensure 2 Quality is the be all and end all as far as Eckardt is concerned; exhaustive tests precede commissioning.

Belonging to the Swiss Dätwyler Group, the Dätwyler Sealing Solutions division is an established supplier of customized caps and sealing solutions with 16 production locations and more than 5600 employees worldwide. Their products are utilized in the pharmaceutical industry, automotive supplier industry, in the consumer goods market as well as in construction and civil engineering projects.

The Dätwyler location in Ittersbach near Karlsruhe, Germany, concentrates on products for the first of those sectors named above. This is where the company exclusively produces caps and seals on state-of-the-art stamping machines for the pharmaceutical market. As the tools run at high speed, their regular lubrication is a significant precondition towards achieving the highest levels of process reliability and minimum downtimes.

## Stringent requirements

At the same time, there is one very important requirement: “The pharmaceutical seal must be absolutely free of oil”, explains Stefan Leichtweis, Tool Shop Manager at Dätwyler in Ittersbach.

“To achieve this we use a vanishing oil that must be dosed in quantities kept as low as possible.” However, the process used – Dätwyler utilized pneumatic nebulizers – had been increasingly less able to meet their requirements in this regard. “The consumption of lubricant grew continuously, so we began to think hard about how we could further optimize the process and reduce lubricant consumption”, Mr. Leichtweis summarizes the growing dissatisfaction with the efficiency and economic viability of this process step.

On the lookout for an alternative the Dätwyler team came across minimum quantity lubrication (MQL).

The process can be deployed for both cutting and non-cutting metalwork. The objective is to dissipate the frictional heat created at the tools and to improve lubrication.

That not only reduces the susceptibility of the tools to wear, but also the thermal load of the production plant as a whole; at the end of the day that also affects the uniformity of quality of the manufactured products. To lubricate according to this principle requires high-precision dosing systems that apply the lubricant precisely where it is required. At the same time

it is possible to apply the smallest conceivable quantities, which not only reduces the overall consumption but also guarantees no residues of lubricant find their way from the tool to the finished product.

## Reproducibility pushes efficiency

As they are able to call on the appropriate level of plant engineering know-how in-house, the Dätwyler team themselves installed the MQL system designed to meet the requirements of the diverse production processes. “A particularly important aspect in this case is the repeat accuracy of the lubrication patterns, because the diversity of products means we have to change stamping tools

very quickly. Which is why the parameters of the tools are coupled to the associated lubrication parameters via our machine control system – and are made available immediately for the next setup process,” Mr. Leichtweis explains.

“Amongst other aspects, we are specifically able to determine how much oil the dosing pump delivers per stroke throughout the respective process. Previously, we had the laborious task of making this setting by adjusting a setscrew.”

## The valve does the dosing

The dosing process has a central role to play in this scenario – and in particular the valves responsible for ap-

## MINIMUM QUANTITY LUBRICATION (MQL)

MQL requires a lot less oil than normal quantity lubrication; nevertheless, despite greater productivity it increases tool life in comparison with dry production processes many times over. And it goes without saying that not only are the procurement costs lower, but also the disposal, storage and cleaning costs are lower by comparison with those of normal quantity lubrication.

plying the lubricant. This is where Dätwyler places its trust in the technology offered by the manufacturer Eckardt Systems based in nearby Bretten.

Eckardt focuses a great deal of attention on the field of minimum quantity lubrication. The company stocks special valves that can be installed for quantity requirements from 2–40 mm<sup>3</sup> per stroke. They are primarily used to produce profiles, stamping contacts and forming threads.

“The maintenance aspect plays a significant role in the field of minimum quantity lubrication. It is true that the quantities of lubricant used are small, but as a rule we are dealing with high frequency production processes and large production numbers”, explains Daniel Assmann, Sales Manager at Eckardt. “Accordingly, it is important that the dosing units operate with as little wear as possible and at the same time deliver exactly the right quantities of lubricant required.” For that reason MQL nozzles from Eckardt are fitted with non-contact seals.

### **Tested and approved**

Comprehensive advice provided by Eckardt taking into consideration the specific conditions on site provided the basis for the system concept. The first step was to create a prototype that was initially subjected to intensive testing on a single stamping machine, with particular attention being paid to flexible and precise dosing. After successfully completing the test phase, the lubrication system entered series production and was rolled out on all of the stamping machines in the plant.

The advantages for the daily production process became obvious immediately: “Until now, we had to physically top up the oil at the beginning of every shift; that now happens automatically. And that saves us a lot of working hours every year. As a consequence our employees are able to attend to other tasks and can rely on the fact that the tools are lubricated seamlessly and reliably”, Stefan Leichtweis summarizes.

The conversion by the Baden-based company has also proven its worth

**»We save oil, working hours and disposal costs.«**

Stefan Leichtweis,  
Tool Shop Manager at Dätwyler

from an economic point of view. “This has resulted in two very big advantages for us: First of all, we are able to save enormous amounts of lubricating oil consumed during daily operations; and secondly, because we know the demand patterns for each individual process we are much better able to plan how much oil we will need all told and are able to use this as a basis for exact cost calculations.”

Bearing the whole picture in mind, the plant experts at Dätwyler are all agreed that future extensions to the stamping technology will also be equipped with the dosing system that has already proven it worth.

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