



Source: Ralf Baumgarten

Lubricants in the metalworking industry are used to dissipate heat during machining.

How to get the correct dosing of cooling lubricants

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Cooling lubricants are essential in machining metals for reducing heat and to remove chips. To achieve efficient results during production, it is important to use the correct cooling lubricant dosing. This can be achieved with a proportional dosing device.

In the metalworking industry, lubricants are used to dissipate heat during drilling, milling, cutting, grinding and other machining processes. They are also used to flush chips away from the surface area of the workpiece and improve surface quality. The areas of energy efficiency and sustainability are important considerations in selecting a fluid for this application and this has led to the development of new cutting fluids.

With the successful launch of the innovative two-component-process Bonderite Dual-Cys, Henkel Adhesive Technologies has set a new benchmark in the development of metalworking lubricants. Synergies between lubricant and cleaner are used to reduce costs, improve performance, save energy, reduce waste and improve working conditions.

In this new dual process, the cleaning bath is 100% recycled into the cutting lubricant. The pro-

cess enables a type of pre-cleaning with low foaming at low cleaning temperatures in the tooling machine.

Martin Desinger, Business Development Manager for Machining Lubricants at Henkel, comments: "Recycling the cleaning solution instead of disposing of it and using the synergies between the cleaner and the water-soluble cutting fluids results in high lubrication performance, superior purity of the parts and excellent corrosion protection."

For companies, the use of Bonderite Dual-Cys results in cost reductions of up to 40% due to more efficient use of coolant, water and energy consumption as well as reduced disposal volumes. To further increase the energy efficiency and sustainability of the tooling machine, Henkel recommends the use of the LDT Dosatron Proportional Pumps for routine dosing of the lubricants.

LDT Dosiertechnik of Hamburg is a leading distributor in the supply of non-electric dosing pumps, offering its customers over 25 years of experience. The company was founded in 1991 in Hamburg and for the past 25 years has been operating within the dosing-pump industry in Germany and Europe. High expertise, a comprehensive range of products, fast response times and short delivery times have been the driving force behind the company's continued growth. In the anniversary year of 2016, LDT Dosiertechnik moved to new premises with a servicing workshop and expanded warehouse capacity. Since the founding of the company, LDT Dosiertechnik has become a market leader for non-electric proportional dosing pumps in Germany.

The operating principle of the Dosatron proportional dosing pump

The Dosatron proportional dosing pump works with a volumetric hydraulic motor that provides continual injection of the liquid or soluble concentrate. It uses water pressure to operate and only requires connection to the water supply. The concentrate for dosing is drawn in independently from the water supply and is mixed with the drive water. The dosing quantity always stays proportional to the water throughput, as per the manually adjusted dosing rate, even if there are flow or pressure fluctuations in the water supply system. Furthermore, the metering accuracy of the pump is not affected by piping lengths, which simplifies its installation.

The proportional dosing system combines the functions of a water meter, dosing pump and mixer into a single unit with a design that does not

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Henkel Adhesives and Bonderite

Henkel Adhesives is a provider for adhesives, sealants and functional coatings.

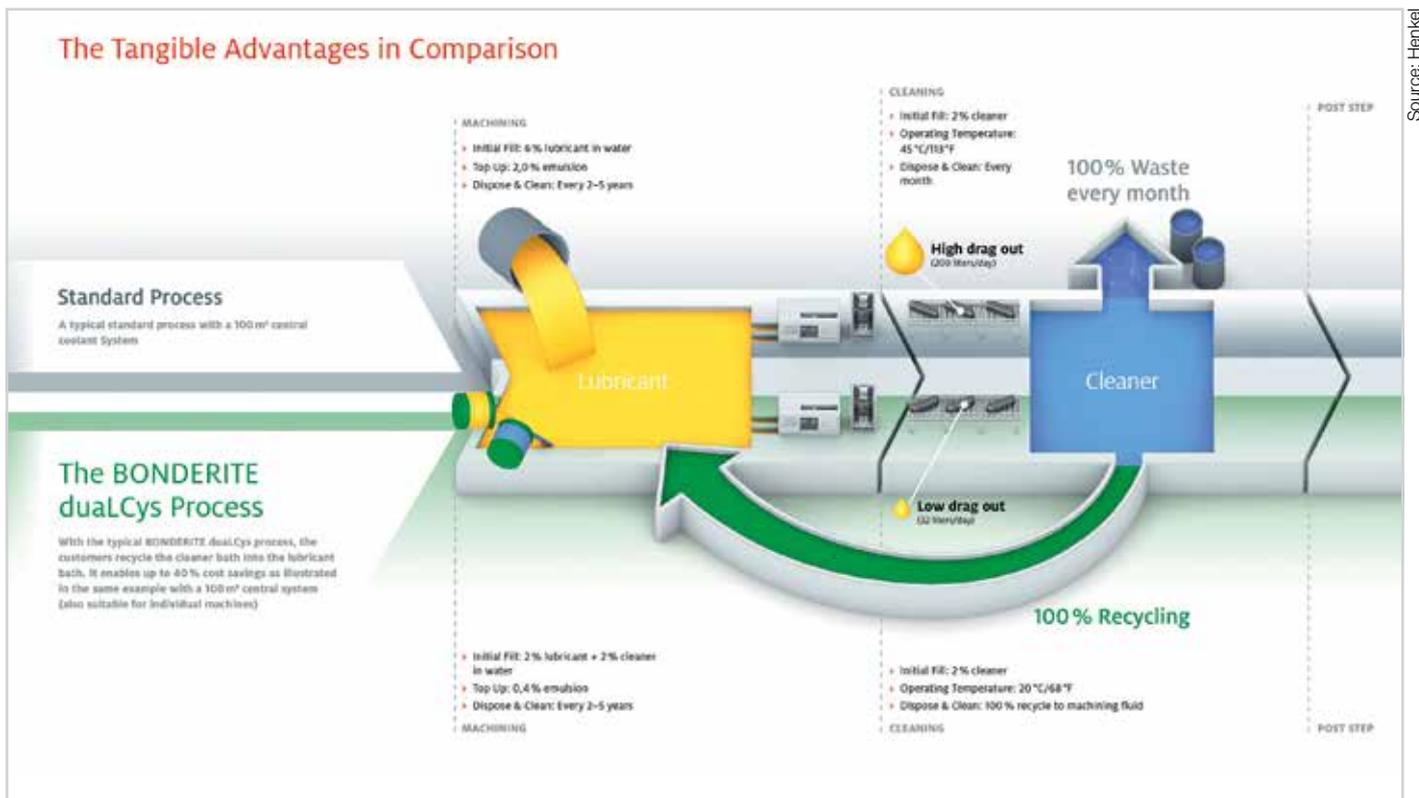
According to the company, it offers a comprehensive portfolio of tailor-made solutions for its industrial customers and high-quality consumer and in addition various professional products. It is represented worldwide by its global team of partners with the aim to deliver best-in-class service.

One of the areas where Henkel Adhesives is present is Release coatings are release coatings. These are specified by manufacturers worldwide in a variety of plastic and

rubber moulding processes. When applied to a mould, the release coatings form micro-thin, thermally stable surfaces that are chemically bonded to the mould surface, resulting in multiple, contaminant-free releases and reduced manufacturing costs.

Bonderite is one of Henkel's brands responsible for surface technology and process solutions including lubricants for forging, forming and machining, as well as cleaners, metal pretreatment and coatings. Bonderite's customers come from various industries like automotive, aerospace, agricultural and construction.

allow for any dosing errors. The dosing system is simple to operate and has low maintenance requirements. Its compact form gives flexible installation options including mounting as a single metering device directly on the tooling machine, as a metering device on a mobile metering carriage together with a concentrate container, or mounting at a central location as a filling station. It is available in a selection of housing materials with a choice of seal elastomers to suit the application needs. ATEX certification is also available for use in po-



The Bonderite Dual-Cys process in comparison with the standard process with a 100 m³ central coolant system.

Source: Voigt



A DT Dosatron dosing cabinets for two concentrates.

tentially explosive atmospheres as well as FDA certification for food safety applications.

In co-operation with Henkel, LDT Dosiertechnik has created a special solution that satisfies even the most stringent requirements. The use of the water-powered pump, which requires no electric supply or other utilities such as compressed air, offers customers further potential to reduce energy and installation costs.

Martin Desinger says, “Thanks to the excellent co-operation with LDT, we have succeeded in developing a tailor-made ‘plug and play’ system, which meets all requirements of our customers and different packaging sizes. This is exactly the flexible and safe solution we were looking for.”

For the Bonderite Dual-Cys process, two proportional pumps are connected in series. Feed pumps are used to load lubricant into the tooling machine. The LDT Dosatron dosing pumps are then used to make up the coolant mixture and refill the recycled solution to maintain the desired concentration.

Individual units to complete plug-and-play packages

The first proportional pump draws cleaning concentrate into the water stream and mixes it with the water. This water-cleaner solution is then passed through the second proportional pump, which further mixes the solution while drawing in the cutting fluids. The result is a well-homogenized mixture that is supplied ready for use, volumetrically to the tooling machine to replenish evaporation losses and replace drawn-out lubricant.

Martin Desinger adds: “Previous dosing systems have not been able to reliably and correctly produce the low levels of subsequent quantities of our Dual-Cys process. In addition, the use of different packaging sizes from the canister to the IBC (Intermediate Bulk Container) tote must also be ensured. High reliability, long lifetime of the devices and exact dosage according to the motto, ‘... What I set

comes out at the end of the tube...’ were of utmost importance in our Dual-Cys process. Measurements with a diverse selection of customers have resulted in a deviation of +/- 0.05% from the set value – a first-class result!”

These innovative dosing devices can be integrated as individual units into existing systems at the customers’ premises. Alternatively, they can be supplied as plug-and-play packages in the form of complete, non-electric dosing cabinets.

“Furthermore, the dosing devices are characterised by the fact that the pipeline system for the filling hose can be almost endlessly long, which drastically minimises the required number of dosing devices,” says Desinger. “Thanks to its compact footprint, the whole system can also be designed as a mobile safety pan for two drums. Everything is quick and easy to assemble (“Plug & Play”) and all required screws and other connections are included. In addition, the package includes a timer to prevent overflow, return flow protection, water meter, flow limiter and a filling gun. The dosing cabinet is also lockable to prevent unauthorised access or tampering,” the business development manager concludes.

The benefits of combining the Bonderite Dual-Cys process and the LDT Dosatron Proportional Pumps are already being recognised in the marketplace.

The Sales & Marketing of LDT Dosiertechnik comments: “In addition to individual proportional pumps, the compact dosing cabinets are increasingly being requested and sold beyond the borders of Europe. In January 2017, the first dosing units for Henkel India were delivered and we await further inquiries from home and abroad. Our extensive warehouse, located in our new company building, means we can usually meet even rapid delivery expectations of our customers.”

Ability to produce low levels of subsequent quantities

Martin Desinger concludes: “As a globally operating company, we have found a sales partner in LDT Dosiertechnik that can deliver our common idea to our customers worldwide - and very quickly! Having a partner that is straightforward to deal with, reliable and very responsive is very important to us.

In addition, the price-performance ratio fits - which is 100% to our customers’ benefit. We are looking forward to providing our customers with the steadily growing Dual-Cys with high-quality and reliable dosing systems, especially as the LDT proportional pumps support the sustainability concept of our Dual-Cys process.” The combination of the Bonderite Dual-Cys process and LDT Dosatron Proportional Dosing Pumps offers machine tool operators a great deal of benefits. In addition to cost reductions and quality improvements provided by the new two-component process from Henkel, energy savings are achieved from the use of the current-free dosing devices. Overall, the system offers reliable, repeatable performance that will help improve plant availability, lower operational costs and, with less waste, improve the sustainability of machining processes.

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