



Press Release

September 27, 2017

Synergizing lubricant and cleaner action saves costs and is kinder to the environment

MAPAL uses sustainable Bonderite dualCys process from Henkel in its metalworking operations

Aalen/Düsseldorf – MAPAL Dr. Kress KG uses the innovative Bonderite dualCys process from Henkel in its metal cutting operations to produce special tooling for drilling heads in the mining industry. The synergistic combination of a water-miscible lubricant and a water-based cleaner results in a significant increase in performance while reducing energy consumption and waste generation. The process was tailored to the specific application in close collaboration between the two companies.

Over the past decades, Henkel has made many significant contributions to value creation in the metalworking industry. With its Bonderite dualCys process for metal cutting and cleaning, introduced in 2015, the company has again expanded its already strong market presence in the water-miscible lubricants segment. At MAPAL, this innovative technology has led to substantial improvements in all competitive criteria - reducing the required time, consumables and energy usage and the disposal effort, which enhancing product quality and process reliability.

“We have been partnering successfully with Henkel for many years. We are using the new Bonderite dualCys for the first time to machine special tools which an Australian end customer then uses to produce drilling heads for the mining industry. The components have up to 200 drilled holes into which we then insert hardened steel pins which are fixed by adhesive bonding. Normally, the lubricant used during the cutting operation would have to be removed from each of these holes with a solvent. With the Bonderite dualCys process, all we need to do is to blow out the holes with compressed air,” says Andreas Rotenberger from the Research & Development team at MAPAL in Aalen.

Major challenges

A global leading producer of precision tools for machining nearly all kinds of materials, MAPAL serves big name customers mainly in the automotive and aerospace industries as well as manufacturers of machinery and equipment.



LOCTITE BONDERITE TECHNOMELT TEROSON AQUENCE Ceresit



The company has production, sales bases and services partners in a total of 44 countries. In 2016, the MAPAL group had a workforce of 5,000.

The metalworking market has been characterized for some time by a series of sustained trends and challenges that determine successful outcomes in a competitive environment. In the metal cutting segment these factors include process costs, working conditions and sustainability, both of the consumables used and the process itself.

— “Many of our customers make a point of insisting on cleanliness in the working environment and have high expectations regarding easy cleaning of parts after machining to ensure that this operation will not cause bottlenecks in production,” explains Jürgen Schöllkopf, Lubricants Project Manager at Henkel Adhesive Technologies. “The characteristics of the lubricant play a crucial role here. The fluid must provide high lubricity during cutting, but allow for easy degreasing of the parts afterwards.”

— To test Henkel’s Bonderite dualCys process, MAPAL put the products through its paces in its research and development center in Aalen, to see how it would perform with constantly changing parts, machining situations, processes and materials. “The results were totally convincing in every respect. The lubricant dragout was reduced by over 50%, which not only reduced emulsion usage but also cut energy costs because the cleaning bath could be run at lower temperatures. At the same time, we are getting absolutely clean parts much faster than before and with high repetitive accuracy.

Real benefits

— Bonderite dualCys combines the advantages of the cutting fluid Bonderite L-MR 21466 with those of the neutral cleaner Bonderite C-NE 10466. The water-miscible lubricant is a very finely dispersed bactericide-free and boron-free product with high lubricity and great rinsing properties which act almost like a “prewash” during the cutting process. The micelles (emulsion droplets) are 1/5 to 1/10 smaller than conventional coarsely dispersed lubricants and can be precisely tuned. The cleaner is already effective at room temperature (recommended service temperature 45 °C) and is suitable for commonly used spray and dip applications, requiring neither boron nor formaldehyde additives for degreasing.

— And there is another plus: Instead of having to dispose of the cleaning bath, as happens in traditional processes, the bath can be completely recycled into the coolant circuit without any adverse effects on the lubricant performance. The various components of the Bonderite dualCys process all show very low, stable and predictable foaming at common water hardness levels.



They are suitable for use with most ferrous and nonferrous metals – including aluminum, aluminum alloys and titanium compounds, as well as gray cast iron and steel alloys – and provide excellent corrosion protection. In MAPAL's operations, the process also proved to be the ideal solution for filing of aluminum and titanium.

The machined surfaces are much drier and less "oily" than conventional processes, so that there is less lubricant dragout. As a result, the typical top-up rate for the emulsion is reduced from 2.0 to 0.4%. This is in addition to the fact that the make-up percentage is also up to two-thirds less than the standard amount. Moreover, the process also helps to keep the machines cleaner and drier. The pronounced rinsing action ensures that the metal shavings being carried out on the swarf conveyor are drier than in conventional processes. This results in more economical disposal while making a major contribution to sustainability.

Rapid payback

As an immediately implementable, cost-effective alternative to conventional systems, the Bonderite dualCys process can be used without any changes to existing equipment or additional investments, so that the payback is extremely quick.

"All in all, switching to the Bonderite dualCys process brings cost savings of up to 40%," says Schöllkopf. "We also offer a value calculator which can be fed with customer-specific parameters to quantify the economic advantages of using the process. The customer can see at a glance what savings can be made."

Bonderite dualCys is part of Henkel's comprehensive portfolio of process solutions for metalworking operations along the entire value chain, from casting to machining to assembly. MAPAL, for instance, also uses Loctite products from Henkel to bond the steel pins into the special tools for mining drill heads.

Andreas Rotenberger sums it up this way: "Our customers expect innovative and reliable tool concepts for maximum efficiency and economy in manufacturing with the least possible rework effort. As their technology partner, we obviously have to provide the necessary expertise in all the relevant aspects of the metal cutting processes. In pursuing this strategy, Henkel is a key partner to us, providing reliable solutions with efficient and sustainable processes like Bonderite dualCys."

Bonderite is a registered trademark of Henkel and/or its affiliates in Germany and elsewhere.

About Henkel

Henkel operates globally with a well-balanced and diversified portfolio. The company holds leading positions with its three business units in both industrial and consumer businesses thanks to strong brands, innovations and technologies. Henkel Adhesive Technologies is the global leader in the adhesives market – across all industry segments worldwide. In its Laundry & Home Care and Beauty Care businesses, Henkel holds leading positions in many markets and categories around the world. Founded in 1876, Henkel looks back on more than 140 years of success. In 2016, Henkel reported sales of 18.7 billion euros, adjusted operating profit of 3.2 billion euros. Its three top brands, Persil (detergent), Schwarzkopf (hair care) and Loctite (adhesive) generated more than 6 billion euros in combined sales. Henkel employs more than 50,000 people globally – a passionate and highly diverse team, united by a strong company culture, a common purpose to create sustainable value, and shared values. As a recognized leader in sustainability, Henkel holds top positions in many international indices and rankings. Henkel's preferred shares are listed in the German stock index DAX. For more information, please visit www.henkel.com.

Photo material is available at www.henkel.com/press.

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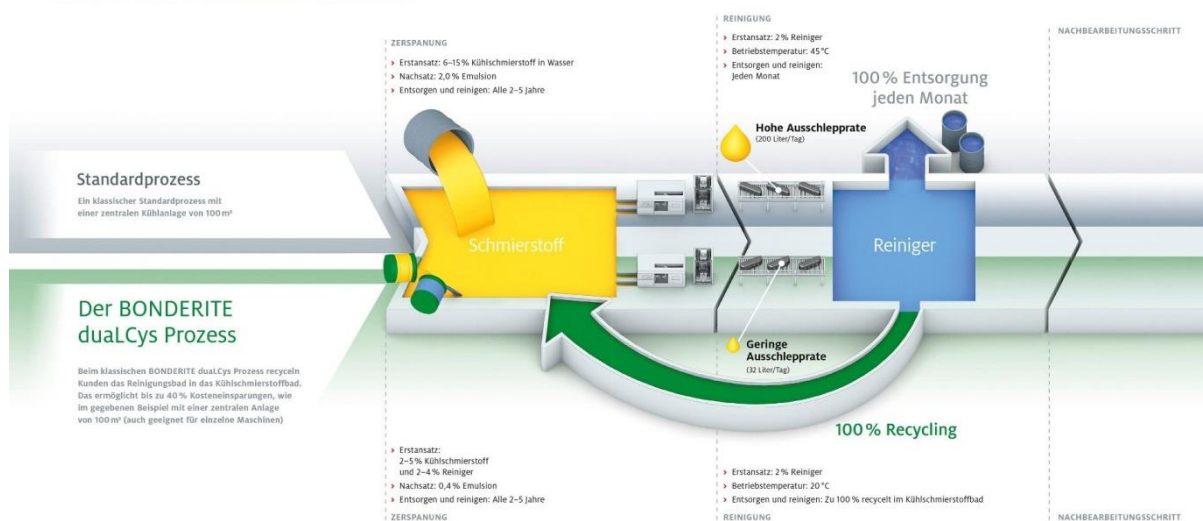


Special tools from MAPAL for manufacturing drill heads for the mining industry.



The use of dualCys eliminates the need for solvents to degrease parts before bonding.

Die handfesten Vorteile im Vergleich



The Bonderite dualCys Process from Henkel enables cost cuts of up to 40% while providing superior sustainability versus conventional metal cutting and cleaning solutions.