

Case Study

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Henkel's long-life odorless Bonderite L-MR cutting fluids for metalworking are giving Husqvarna and the environment a sustainability boost

Cool, lubricated and smell-free machining

Each year, around 8 million individual metal parts are produced at the Husqvarna Group's hometown location in Sweden for its premium outdoor power tools, which include chainsaws and trimmers. To ensure that both productivity targets and a safe and healthy environment for its workforce are achieved, the Group turned to Henkel's new generation bactericide-free cutting fluids to provide a smart solution to an increasing bacteria and odor problem during machining. Three years on, the team at Husqvarna endorses Bonderite L-MR as a major sustainability tool for the metal industry.

Computer controlled production: calm, clean, well-organized

The "Die-casting and Machining" department at Husqvarna's extensive manufacturing facility in Huskvarna, Sweden, is responsible for producing a variety of aluminum and magnesium parts, including crankcases, flywheels, cylinders, oil pumps and clutch covers. It uses key processes such as melting, casting, machining, honing and painting before assembling parts into the final product.

The department is highly automated, and includes massive casting machines as well as a significant number of Computerized Numerical Control (CNC) machines. These are driven by computers and thanks to the use of high precision robotics, they are able to carry out a range of necessary drilling and milling activities, controlled by skilled operators.



A major feature of a CNC machine is that it can carry out a number of different production steps without having to stop/start the machine. Since some of these steps require the use of a number of different tools – such as drills in different sizes, saws, etc. - multiple tools are mounted into a single machine. The machines work at very high speeds and temperatures. Therefore it is important to use a cutting fluid to provide the necessary cooling and lubrication during the machining.

However, the use of cutting fluids comes with a major issue. Like milk, cutting fluid emulsions will “go off” over time. Especially during inactive periods, bacteria grow, multiply and die – causing a bad odor. Apart from emitting unpleasant smells, bacterial contamination is a risk to workers. So it needs to be dealt with. When the smell gets bad, the cutting fluid baths need to be replaced, sometimes as frequently as twice a year, generating waste and costly downtime.

Jens Gustafsson, Process Engineer at Husqvarna, explains “Cutting fluid is an essential part of the machining process, as it ensures that tools and work pieces are sufficiently cooled and lubricated. This enables us to meet the necessary close tolerances while at the same time giving us the benefits of effective operation and long tool life. Three years ago – in the Husqvarna spirit of innovation – we decided to stop simply accepting the issues arising from bacterial contamination and to tackle the problem with a more sustainable solution.”

Smart solution: Bonderite L-MR bactericide-free cutting fluid

The team at Husqvarna knows that to find smart(er) solutions you need to look beyond the in-house know-how. The key to success is finding an outside source with expert knowledge. One such source is MetallChemie AB, a locally based company with years of metal industry experience and a distributor for Henkel metalworking solutions. The company has many customers throughout Sweden.

Tomas Holmér, owner of MetallChemie, was invited to explore possible solutions. He introduced the bactericide-free Bonderite L-MR, a range of innovative cutting fluids. These new generation bactericide-free fluids have a long bath-life, also because of its high hardwater stability – proven in many industrial applications around the world.

The Husqvarna team ran a six-month comparative test, evaluating various products and options including the proposed solution Bonderite L-MR cutting fluid. The Henkel technology performed well and has now been in continuous use for over 30 months.

Jens Gustafsson describes the clear benefits: “Firstly there is a noticeable absence of smell – a major step forward. A key health benefit is that we do not have bactericides in our production process. However, the benefits extend well beyond the health aspects. There are more reasons why our move to Bonderite L-MR has been so successful. We save time and costs. Although we do check the cutting fluid during every shift change, we certainly do not have to change or refill the bath as frequently as before.

Where we used to change every bath twice a year – we have not needed to do so for more than two and a half years – saving us two full days every year. In addition to this significant gain in uptime, we also have less waste to dispose of, which helps us to meet our environmental objectives.”

“Moreover, tools last longer because the concentration and emulsion quality of the Bonderite L-MR cutting fluid is over years more stable.”

The partnership between Husqvarna and MetallChemie goes beyond the traditional customer/supplier relationship: Husqvarna places great importance on having a supplier they can trust, that understands the industry and appreciates the company’s way of working, as well as having the ability to provide an effective solution.

Tomas Holmér of MetallChemie, manages to do all these things. With years of industrial experience in the metal industry, and an impressive range of customers in the region, Tomas is well able to understand and meet the needs of Husqvarna. By spending regular time on the production floor he is not only well aware of the Husqvarna way of working, he fully endorses the company’s core values and is proud of his contribution towards them. He conducts a formal tour of the department every five weeks to provide on-the-spot support whenever it is needed and to carry out a range of tests to monitor a number of critical parameters, such as a concentration and pH-check.

MetallChemie has been working with a significant number of companies in the metal industry throughout Sweden. According to Tomas Holmér, Henkel's wide product range allows his company to offer solutions for every possible metal working application – mostly covered by the standard range – and, where this does not suit, Henkel has extensive facilities to quickly and effectively formulate any special requirements.

Tomas Holmér comments: "Our customers all appreciate the quality of the product range both for aluminum and magnesium parts. Because we make regular site-calls and tests, we are able to take timely measures if anything were to go wrong. But in truth, the product is so good that it requires little or no trouble-shooting. Henkel's new generation of bactericide-free cutting fluids have a long bath-life – proven in many industrial applications around the world."

Meanwhile, the team at Husqvarna is happy with the product's performance and endorses Bonderite L-MR cutting fluids as a major sustainability tool for the metal industry, saving time and costs and with significant health benefits.

Bonderite is a registered trademark of the Henkel Group with proprietary protection in Germany and other countries.

Henkel operates worldwide with leading brands and technologies in three business units: Laundry & Home Care, Beauty Care and Adhesive Technologies. Founded in 1876, Henkel holds globally leading market positions, both in the consumer and in the industrial businesses, with well-known brands such as Persil, Schwarzkopf and Loctite. Henkel employs about 50,000 people and reported sales of 18.1 billion euros and adjusted operating profit of 2.9 billion euros in fiscal 2015. Henkel's preferred shares are listed in the German stock index DAX.

The Husqvarna Group is one of the world's leading producers of quality products and solutions that help to make garden, park and forest care, as well as construction, easier for professionals and consumers around the world. Through its brands, which include Husqvarna, Gardena, Flymo and McCulloch, the company has 14,000 employees – as well as a global network of distributors. From its roots as a rifle producer in 1689, the Group has reinvented itself and its products many times over its 325-year history. Today, the Group manufactures a wide range of high performance products. These include outdoor power products such as Automower[®], the world's first and best selling robotic lawn mower, garden tractors, chainsaws and trimmers. These products, sold in more than 100 countries, are known for their quality and durability. Husqvarna continues to invest in exploring and developing new technologies. Its innovation pipeline is supported by R&D centers around the world and sustainability initiatives are part of the strategy throughout the company. For example, the development and introduction of a range of clean and quiet battery operated power tools that deliver a powerful performance, comparable to fossil-fuel driven ones – even for professional use.

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

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The following material is available:



Jens Gustafsson, Process Engineer Husqvarna talking to Tomas Holmér, owner of MetallChemie. Tomas make a formal tour at Husqvarna every five weeks – to provide on-the-floor support whenever it is needed and to carry out a range of tests to monitor a number of critical parameters. (Photo: Henkel, PR014)



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Chainsaw cylinders – ready for machining. (Photo: Henkel, PR014)



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Body assembly: Husqvarna manufactures a range of products, including power tools such as chainsaws. The processing machines to manufacture these power tools work at very high speeds and temperatures. Therefore it is important that a cutting fluid is used to provide cooling and lubrication during the machining processes. (Photo: Henkel, PR014)



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The assembled chain saw Husqvarna 550 XP[®] in action. (Photo: Henkel, PR014)