BK Stanz- und Umformtechnik relies on modified alcohol for cleaning chlorinated oils

CLEANING CHLORINATED OILS IN MODIFIED ALCOHOL: POSSIBLE THANKS TO NEW STABILIZER SYSTEM

Chlorinated oils are indispensible for industrial parts processing. Above all, when it comes to manufacturing highly complex stainless steel stamped and drawn parts. Cleaning the lubricants after production is just as important, since less than optimal cleaning can have a disruptive effect on subsequent processes, such as welding. Previously, BK Stanz- und Umformtechnik, based in Theley in Saarland, used to rely on an aqueous system, which did not always guarantee the cleaning requirements to 100 percent. New demands from customers for higher cleaning quality could not be met. With DOWCLENE™* 1601 from SAFECHEM and the new MAXISTAB™ S-Series Stabilizer System, it is now possible to clean parts that have been processed with chlorinated oils efficiently and with a reliable process in modified alcohol.

The Kunrath Group consists of BK Stanz- und Umformtechnik as stamping company and BK Kunrath GmbH, renowned for its tool engineering for complex stamped, drawn and bent parts. The family company, set up in 1980, employs over 70 employees in these two companies at its location in Theley in Saarland (Germany). Kunrath Werkzeugbau develops and builds complex tools up to 4.2 m long, using prefabricated and cast construction in transfer and progessive die technology. Using the latest mechanical and hydraulic presses, BK Stanz- und Umformtechnik GmbH produces drawn, stamped and bent parts up to 3 mm thick, made of chrome and stainless steel.

"What our clients above all appreciate about us is that they can get everything from one source - from the development of a tool, the assembly and testing of finished parts to requesting assumption of mass production," emphasised Guenter Goergen, one of the company's three managing directors.

High demands on parts cleaning

BK Stanz- und Umformtechnik used to clean the parts with an aqueous-based system. Together with an investment of 4.5 million euros for the construction of a new hall and a new state-of-the-art 800-ton servo-transfer press with a coil and straightening installation, the company also bought a modern cleaning system.

This is because especially in the automotive industry, which is where about 90 percent of BK's customers operate, cleanliness requirements have skyrocketed: "Our customers expect parts with a surface tension greater than 34 mN/m so that they can subject these to further processing without any problems.

In order not only to meet our customers' expectations, but to exceed them, we decided on a VAIOCS 3 cleaning system from EMO Oberflaechentechnik GmbH, one of the leading manufacturers of closed cleaning systems. It was also the system manufacturer who recommended that we use modified alcohol as solvent. And the results of the cleaning experiments convinced us," explained Goergen.

BK Stanz- und Umformtechnik uses drawing oil with a high chlorine proportion, which is sprayed onto the stainless steel to be processed. The introduction of highly-concentrated oil into the cleaning system can over time lead to the production of hydrochloric acid and other chlorinated acids during the distillation process, which could result in corrosion of the system and reduced service life of the solvent. Particularly in such cases, choosing the right cleaning agent for the quality, stability and economic efficiency of the cleaning is decisive.

The stabilizer systems MAXISTAB™ SD-7 and MAXISTAB™ SV-9 act efficiently in cleaning cholorinated oils.

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Possible alternatives

Cleaning with an aqueous solution was no longer an option for the management of BK Stanz- und Umformtechnik as a result of the extension with the servo press with a much higher output. The degree of cleanliness required could also have been achieved in a hydrocarbon solvent system, but the management of BK Stanz- und Umformtechnik was finally convinced by the modified alcohol DOWCLENE™* 1601. The distillable solvent DOWCLENE™* 1601 has lipophilic and hydrophilic properties, as a result of which in particular applications it can have advantages vis-a-vis chlorinated hydrocarbons, hydrocarbons and aqueous cleaners.

"Compared to cleaning in water, the solvent has three important advantages for us: the parts no longer need to be turned and are as a result largely scratch-free. We save ourselves time-consuming and labour-intensive reloading, because many parts can also be stacked neatly in modified alcohol. And whereas the process was not always 100 percent consistent in aqueous cleaning, it has been extremely stable up to now with DOWCLENE™*," reports Günter Goergen.

Filling the stabilizer into the distillation occurs efficiently via a separate device.

Process reliability with MAXISTAB™ SD-7 and MAXISTAB™ SV-9

Moreover, BK Stanz- und Umformtechnik made use of an experimental stage of the stabilizer system MAXISTAB™ SD-7 and MAXISTAB™ SV-9 for the deployment of DOWCLENE™* in the cleaning of chlorinated oils. This involved an innovative two-component stabilizer system of SAFECHEM with a sump and volatile component. The sump stabilizer MAXISTAB™ SD-7 works directly where the acids arise - in the distillation. MAXISTAB™ SV-9 by contrast is volatile and can be introduced everywhere.

The dosed use of stabilizers permits stable, mild alkalinity and in this way a long service life for system and solvents and a safe, efficient process.

Other service elements for outstanding cleaning results

To guarantee a safe process, it is essential to check the acid content of the solvent periodically. SAFECHEM provides a MAXICHECK™ test case with all the accessories needed, specially adapted to the solvent, for regular measurement of the alkalinity. The tests permit rapid, easy detection of the alkalinity, expressed as ppm sodium hydroxide per litre solvent. The results of the analyses are recorded in an operating diary and forwarded to SAFECHEM.

The view from outside of the processes at the customer and on the use and consumption of solvents provides the latter with important information that contributes significantly to the great process reliability and economic efficiency.

"We opted for SAFECHEM on the recommendation of the system manufacturer, because we had confidence in the quality of the solvent and the stabilizer system. The talks with SAFECHEM and the support from the company convinced us that SAFECHEM was focused on process reliability and outstanding cleaning results, together with safety for the environment and our employees," according to managing director Goergen.

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