

Solving BaP emissions in cold heading

Since 2015, concerns about PAHs and BaPs have been quite current in the metalworking industry. Indeed, some petroleum-based products, such as process lubricants, can release PAHs and BaP under severe operating conditions.

For greater vigilance, the French health insurance authority issued a recommendation, reference R.451, concerning the 'Prevention of chemical risks caused by cutting fluids'. It uses the data provided by the INRS* on the risks and thresholds related to BaP contained in new and in-service neat cutting oils.

While this issue is regularly raised when using machining neat oils, there are no recommendation for cold heading operations. Guided by its HSE and CSR convictions, CONDAT decided to go a step further by taking into account this question and by anticipating the regulation.

Capitalised know-how

With in-depth knowledge on how to reduce PAHs/BaPs in in-service machining oils, which led to the development of NEAT GREEN oils – a new generation machining oils that do not show any increase in BaP content after 1,500 hours of machining, CONDAT took the lead and requested its R&D laboratory in early 2018 to work on new formulas for cold heading oils with neutral impact in terms of BaP.

Beyond its CSR commitment, the company also wanted to address the concerns of automotive suppliers and provide its customers with the safest possible products. The objective was to co-develop with major automotive groups a high performance product for very difficult forming operations.

After six months of research, the EXTRUGLISS HT 268 VP was created. In partnership with a first grade automotive supplier, the product has been tested for nearly 12 months on cold heading operations for the manufacture of seat pinions as well as hubs, and showed very good results.

EXTRUGLISS HT 268 VP

Available for sale since June 2019, and following the success encountered with the automotive partner, EXTRUGLISS HT 268 VP is positioned as a premium product specially formulated for extreme operations that generate excessive heat (stainless steel, alloy steel with high elastic limit, etc). Developed to solve BaP emissions problems, this neat cold heading oil is formulated from high-quality, highly refined base oils and it contains fewer residual compounds that may degrade to PAH.

CONDAT points out that the EXTRUGLISS HT 268 VP is much more stable and pure, is resistant to oxidation, increases the life of the baths, and facilitates degreasing by preventing the formation of sticky residues on the parts. Less volatile, it also limits oil evaporation and mist generation, thus improving the atmosphere in the workshops.

With a highly additive formula, it offers high-level performance for all difficult operations on hard metals such as stainless steel and alloyed steel. This dual-purpose cold heading oil, which provides both superior lubrication characteristics to the mechanical components of cold heading machinery, as well as outstanding lubrication for the deformation operations, has a viscosity of 68cst and thus meets the standards of the largest cold heading machine manufacturers. +

* Institut National de Recherche et de Sécurité



Replacing tungsten carbide coating on stainless steel

Expanite AS, a Danish pioneer specialising in surface hardening of stainless steel and titanium, is widely replacing coatings in a variety of demanding applications.

For more than 70 years, coatings, in their various forms, have been 'the standard' to improve resistance towards wear, impact, and corrosion for stainless steel components in a great variety of industries, including food and beverage processing, oil and gas, aviation, transportation, industrial, and consumer products. However, in recent years several performance limitations associated with coatings have driven the engineering community to seek better coating materials, as well as more cost-effective methods to apply them. Among the most promising alternatives is the patented Expanite hardening technology, which is an environmentally friendly surface hardening solution that offers short and flexible lead times.

Recently, one of the world's leading manufacturers of precision nozzles and nozzle systems has converted from tungsten carbide coatings to Expanite® surface hardening after experiencing quality issues with the coating cracking off. In cooperation with Expanite, the company found a hardening solution that made the surface of the nozzles resistant against chipping, cracking, delamination, etc.

The specific customer performed field tests over a period of several months where the results from Expanite hardened nozzles showed significant increased lifetime without any premature failure. Based on the test results, the conversion to Expanite hardening was implemented.

"It is far less expensive to apply Expanite hardening compared to many of the exotic coatings, hence the conversion resulted in better performance while reducing cost," explained the customer. "By converting from a coating to a diffusion hardening process, issues with adhesion were eliminated, again whilst ensuring superior wear and corrosion resistance." +