

Press Release, 05.11.2018

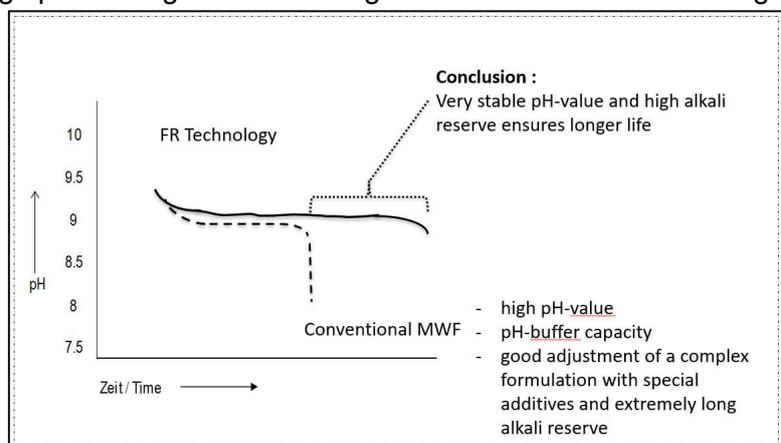
## Challenges to Metalworking Fluids due to new regulations

*REACH, CLP and the biocide regulation nowadays have a major influence on the development of cooling lubricants. In many cases this leads to a restriction of the quantity and reduces the choice of ingredients.* Dr. Heiko Maier

The demands placed on Metalworking Fluids are becoming stricter, as not only the technical performance is in the foreground. The regulations of REACH, CLP and the Biocidal Regulation make high demands and influence Metalworking Fluids. All of these conditions complicate the development of a human-compatible, hazard-free and stable product. The R & D team at Strub Swiss Tribology takes this into account during product development from the first approach to completion. The result is the Future Resistant Technology (FRT) coolant. With this product, Strub Swiss Tribology has launched an excellent and future-oriented water-miscible coolant range.

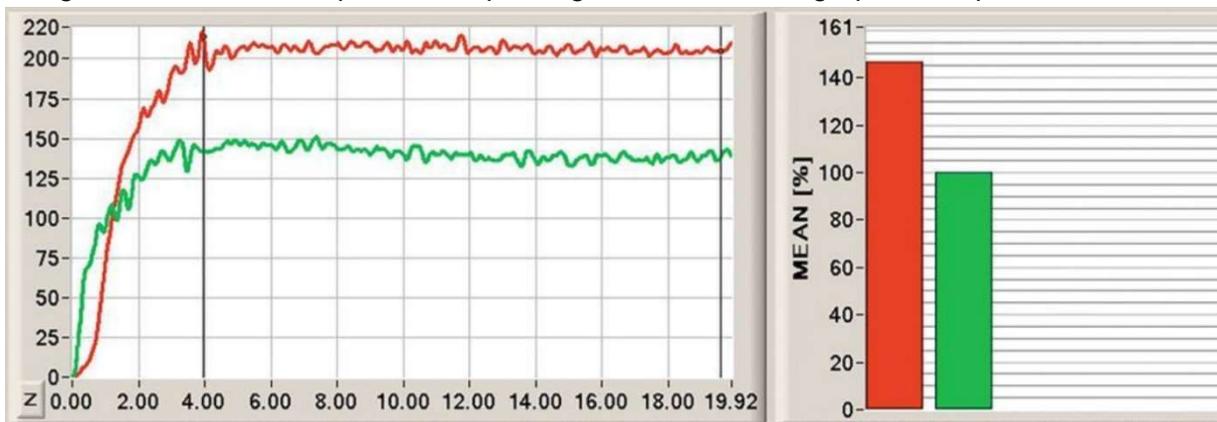
It is particularly important to know the customer's overall process in order to approach the ideal lubricant system step by step through test runs during development and to maximize efficiency as much as possible. Thanks to many years of experience in research and development, Strub introduced the Stabillo Cut FRT line. This is characterized by exceptional long-term stability, longer tool lives and a lower risk classification through carefully selected raw materials. The worldwide monitoring, visualization and documentation of the analysis parameters is guaranteed at any time and any place via the Strub KSS APP. The optimal combination of costs and benefits completes the portfolio with an attractive price. Higher cutting speeds lead to lower production times, excellent surface quality and less reworking. The long service life of the FRT coolants is based on a high pH starting value and a high alkali reserve. The advantage

of an increased service life compared to a conventional coolant is shown graphically in Figure 1. The complete range leaves nothing to be desired in terms of machining of materials and machining processes. All FRT products do not contain free boric acid, are free of formaldehyde and corresponding releasers.



## Health requirements

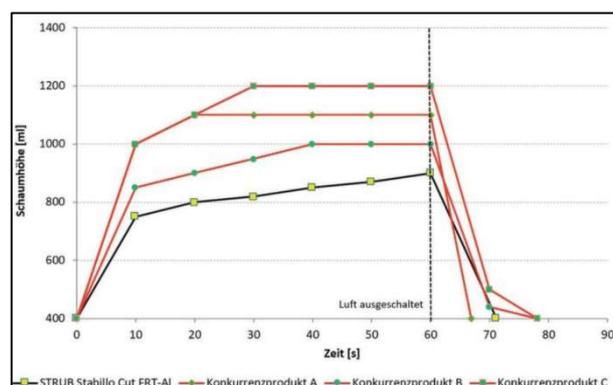
There is nothing to stop the new technology, as it gives a smooth processing and the health requirements in relation to humans. One FRT product is completely free of biocides. In addition to the latest additives, older technologies and, above all, the combination of both proved themselves. Various combinations of additives were tested to find out which ingredients have synergistic properties and antagonistic effects. Stabillo Cut FRT AI and a competitor product specifically designed for aluminium machining were tested for 3.2315 (Al 6082). The concentration of the emulsions was adjusted to 7.5%. The tapping torque test was performed using an uncoated M4 tap at 1500 rpm. Figure 2 shows the graphic comparison between a



competitor's product in red and Stabillo Cut FRT AI in green: The left graph in Figure 2 clearly shows the torque difference of 66 Ncm. Stabillo Cut FRT AI needed 47% less torque to form the thread compared to its competitor. The outstanding cooling and lubricating properties are also reflected in the course of temperature development. The Stabillo Cut FRT AI produces 41% less temperature during the forming process.

## Foam behaviour

In addition to the performance, the foam behaviour is an enormously important parameter that must also be considered in the development process. The foam is determined based on ASTM-D 892: 400 ml of a 5% emulsion of tap water at 19 ° dH are filled into a 1500 ml measuring cylinder. The air is dispersed at a pressure of 60 kPa through a diffuser at the bottom of the measuring cylinder. After 60 seconds, the supply of air is stopped, as illustrated by the vertical dashed line in Figure 3. The resulting foam was measured every 10 seconds. In Figure 3, the foam height in millilitres is plotted against time in seconds. The resulting foam is the lowest in Stabillo Cut FRT AI after 60 seconds at 900 ml.



The height of the foam in the competing products B, A and C is after 60 seconds 1000 ml, 1100 ml and 1200 ml. After the aeration has been completed, it can be observed in which emulsion the foam decomposes the fastest. The foam of competing product A disintegrated after seven seconds. For Stabillo Cut FRT AI the foam decays after eleven and for the two competing products B and C after eighteen seconds. For demanding operations, the product performs excellently and withstands continuous, robot-controlled processing without interruption. In illustration 4 during the milling operation "the chips fly" and the cooling lubricant works hard. Stabillo Cut FRT AI is in full operation when working with the material 3.2315 (Al 6082). The optimum rinsing and washing action complement the positive properties. Outstanding hard water stability and demulsifying behaviour round off the requirements for a future-oriented cooling lubricant. On the one hand, it is crucial in the development phase to obtain insights into a wide variety of process parameters and chemical and physical properties. On the other hand, it is important to always incorporate current knowledge of regulations in the context of development at an early stage. This is the only correct way leading to a future-oriented development of a cooling lubricant. The R & D team of Strub Swiss Tribology combines this approach with the human-friendly, low-hazard labelling and stable Future-Resistant-Technology.

## **For more information please contact:**

Heiko Maier, Head of Chemistry and Technics

phone +41 62 785 22 36

[h.maier@strub-lube.ch](mailto:h.maier@strub-lube.ch)

Diana Strub, Head Marketing and Communication

phone +41 62 785 22 29

[diana.strub@strub-lube.ch](mailto:diana.strub@strub-lube.ch)

### **STRUB Swiss Tribology**

The traditional family business Strub + Co. AG in the heart of Switzerland, is an independent lubricant and technical detergent manufacturer. Around 150 employees work for Strub + Co. AG worldwide. Through international subsidiaries and agencies in over 60 countries, we guarantee customer proximity and can respond quickly to customer needs.

[www.strub-lube.ch](http://www.strub-lube.ch)