

## INTERVIEW with the WZL of the RWTH Aachen

[www.gerber-maschinen.ch](http://www.gerber-maschinen.ch)

### Extending the service life of punches and dies

**Marc Schori, CEO of René Gerber AG, in an interview with Dr. Andreas Feuerhack, WZL - Laboratory for Machine Tools of RWTH Aachen University. Dr. Feuerhack has been working at WZL since 2014 and supervised the areas of fineblanking and stamping from the start. He now oversees the industrial research in the field of forming and the research group for fineblanking.**

**A brushing and polishing machine, the BP Smart model, is used at the WZL. For which areas and tasks do you use the machine?**

**Dr. Feuerhack:** Since 2008, we have been using the machine for cutting edge preparation. The focus is clearly on the area of fineblanking and stamping where we prepare the active elements. Colleagues working on machining technology also frequently use the brushing and polishing machine for their area of research, which looks at the preparation of cutting tools for machining.

always been satisfied, because they like the fact that it makes the preparation so easy and that the fast and active effect of an increased service life is quickly apparent. The parts can be clamped very conveniently with just a few parameters. The production run is very quick and reproducible, and it can be nicely integrated into the process chain with the comparatively simple but excellent technology. The fact that they can make significant steps forward this way, enthuses people and compels them to consider investing in this technology and using it proactively in their company.

#### WZL LABORATORY FOR MACHINE TOOLS OF RWTH AACHEN UNIVERSITY

Dr. Andreas Feuerhack talks about his activities at the WZL relating to stamping and fineblanking

We have a very long history of fineblanking in Aachen. The first steps were taken in 1978 when the technology was driven forward in collaboration with Feintool AG who carried out tests on toolmaking at the RWTH Aachen University. Brushing and polishing was also introduced to the WZL through tests for extending the service life in collaboration with the industry.

**WZL Laboratory for Machine Tools of RWTH Aachen University**  
52056 Aachen  
Germany  
[www.wzl.rwth-aachen.de](http://www.wzl.rwth-aachen.de)

**In which specific area of use does the machine provide results that you find useful?**

**Dr. Feuerhack:** We brush off punches as well as cutting dies, and the preparation of the punch is of paramount importance, not least because when stamping, we can set the geometry and K-factor we want, and how big the radiusing needs to be.

**Could you tell us a success story in which the machine was used and was the reason why a promising target was reached?**

**Herr Dr. Feuerhack:** After purchasing the brushing and polishing machine, it quickly became clear that it is a great piece of technology in terms of service life. Since then, we have been offering customers test runs at the WZL to brush and polish their punches, in order to demonstrate the benchmark with all the advantages it brings. So far, the customers have

**How satisfied are you with the machine? How user-friendly would you rate the plant?**

**Dr. Feuerhack:** Very satisfied. The machine is very sturdy when it runs, it is robust and the settings are easy to adjust. The machine is designed to suit the application. And in my opinion, another equally worthy point to mention is that the machine is easy to clean.

We always work with research assistants who we instruct using these kinds of machines. An introduction to the Gerber plant is extremely quick and poses no problems. Very rarely will you see an operator running a machine without prior training, and having to rely on just a manual. This is how it is with a Gerber plant. It is possible to run variants very quickly and attain successful results.

**The BP Smart brushes away sharp edges and burrs; it brushes precisely defined radii and contours onto edges and polishes the surface at the same time.**

**What advantages does the product offer in everyday laboratory life?**

**Dr. Feuerhack:** It is clearly the controller. We have a lot of scientists who work with this plant as well as students who study this subject. Since the controller with its various programs is an unquestionable advantage. The cumulative knowledge we have pooled over time is objectified in a program. So it can be said that we have the specific program for the most varied of materials for the radiusing, radius, waterfall or K-factor. It means that generations to come can continue to reliably prepare edges.

**What is so special about how it brushes off the sharp edges on hard materials or burrs in terms of accuracy and uniformity, and why?**

**Dr. Feuerhack:** As soon as I have a set of parameters, it is the complete reliability that wins through. That is to say, there are no irritating surprises as all the burrs have been fully removed. In the end, we always have perfect results. For us it is also important to have a reproducible surface quality when we coat the punches, so that we always produce the same quality. A surface that has been very well prepared can even be treated relatively quickly in the case of any finishing treatments such as wet blasting. This proves to be an advantageous factor in terms of time because it speeds up the steps of the process. Regarding the edges themselves, the colleagues are also keenly interested in the machining: the radii of the edges of cutting elements are very evenly distributed, which is advantageous with more complex geometries. The changes

above the cut line itself are uniform and are not significant. The upshot is that you always get a good cutting edge and that's impressive.

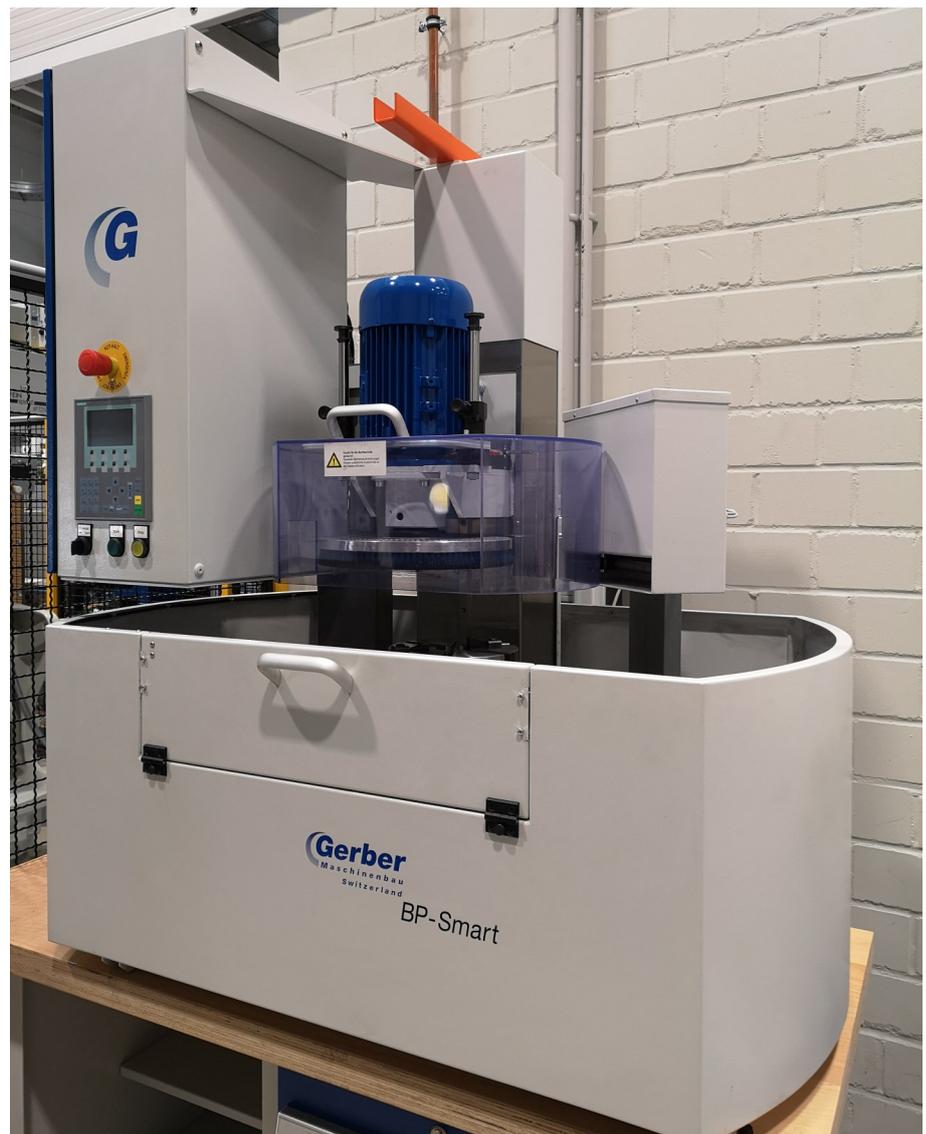
**Which product advantage gives you considerable benefits in terms of coating?**

**Dr. Feuerhack:** In general, when stamping and fineblanking, there's no downtime without coating. And a very good coating is of no use at all if the active elements are not appropriately prepared or manufactured in advance.

This means that brushing the surface is a fundamental prerequisite in

the machining process for cutting edges. Because it produces a very precise and clean cutting edge, and the transition between the lateral surface and front surface is so smooth, I am able to make the work of the coater as simple as possible. This is the only way to ensure the coating adheres evenly over the cutting element and that no points are damaged, which ultimately means the active element will have a good service life.

**What are your views on the improved adhesion of the layer? In your opinion, does the lack of re-**



© WZL Feuerhack

**Residual stress essentially depend on the radius? - is that the main point or is it also the polished surface in particular that creates the corresponding adhesion of the layer?**

**Dr. Feuerhack:** It is both. Less internal stress definitely helps in any case. But the evenness of the surface also plays a part, following the principle of the surface roughness being intrinsically evenly distributed. It must not be too smooth, instead it must be slightly rough to enhance the adhesion of the coating. In addition, it must work positively with the

active components in the substrate. We tend more toward the surface quality; its evenness in particular. That is extremely important and creates an unequivocal advantage.

**In your opinion or that of the institute, what are the greatest benefits for the industry (for stamping and fineblanking)?**

**Dr. Feuerhack:** That is undoubtedly the increase in productivity thanks to the extended service life of the active elements. It also provides the benefit of removing rust and burrs,

but this is not our main concern. We effectively focus on the active elements. The service life can be extended enormously, in turn yielding a high level of productivity, which the user can then factor into the budget based on the low wear of the active elements. Active elements last much longer overall, which gives the user good reason to invest in a brushing machine.

**How would you rate the benefit versus the consistent service life you can achieve over the lifetime of an active element?**

**Dr. Feuerhack:** As a businessman I am able to plan much better when I know how long my elements will last. The lifetime is always more or less in the same time frame, which on the one hand gives me certainty when planning and, on the other hand, my workflows are more productive. After all, these are precisely the factors that make production workflows in a toolmaking and production process much more efficient. This maintains the OEE of my plants at a consistently high level, gives me more parts and makes me a reliable supplier for my customers.

**Closing words: How would you describe the product / service in one sentence?**

**Dr. Feuerhack:** GERBER – Swiss precision in brushing and polishing.

**Dr. Feuerhack, thank you for having taken the time out of your busy schedule for this interview.**



© WZL Feuerhack