

Modern Motion Control Solutions in Practice



The Challenge

If this were an actual piece of paper, the picture on the top might perhaps be separable by a micro-perforation.

Read more, if you want to learn about control units which are able to cut highly precise micro-perforations while the paper moves at 220 m/min.

The Solution

Hunkeler AG is one of the world's leading suppliers of compact, stackable system modules for print finishing. Complete paper processing is done between the unwinder module, with its huge paper rolls, and the final device that outputs single pages, magazines and books. The paper moves at speeds of up to 220 m/min out of high-speed printers and is perforated, punched, cut, and folded "on-the-fly" inside Hunkeler's system modules.

Perforations and cuts are processed by rotating cylinders with up to four mounted blades. The paper is not stopped. Perforation or cutting takes place while the paper moves at up to 220 m/min (= 3.6 mm per millisecond!) under the dynamically moved rotating cylinders. Automatically calculated CAM motion profiles control the position and speed of the cylinders so that the blade hits the paper with a precision of 1/10 mm at the required perforation or cutting position. The circumferential speed of the cylinder's surface is exactly matched to the paper speed at the cut position. This results in perfect, almost invisible, micro-perforation lines and cuts without any fraying. Full flexibility to support a continuous stream of customized per-page layout characteristics allows different perforations and cuts to be done without stopping the machine or reducing paper speed. All required CAM profile calculations of the rotating cylinders are done autonomously by the MACS5 motion control modules from zub machine control AG.

On-the-fly CAM profiling is just one of the many competitive motion control features handled by zub's products and software.

The Conclusion

Even complex process tasks seem to be simple in the end if the right product is combined with a highly efficient engineering service that understands the application's demands.

Application videos and further product information:

- Video links showing system modules of Hunkeler AG in action:
[DP6 Perforation module](#) / [CS6 Cutting module](#) / [Magazine production](#)
- Links offering further information on zub's motion control products:
[Animation](#) / [MACS5 press release](#) / [MACS5 data sheet](#)

Your Partner

zub machine control AG provides highly sophisticated motion control modules and software for drive positioning and synchronization.

The MACS motion control modules are the intelligent link in between the PLC or PC and the drive unit. Standardized hardware and software interfaces combined with free programmability offer maximum compatibility without any limitation for the integration of application-specific features and add-ons.

zub AG offers supplementary consulting and engineering services to assist their customers in a very focused and most efficient way.

Take the opportunity to reduce your time to market, your development costs, and your risks. Count on a partner like zub AG, who provides products and engineering services focused on highly-sophisticated but still cost-optimized motion control solutions.

We are happy to accept your challenge. Please [contact](#) us for an initial discussion.

zub 
www.zub.ch