

## For Trendsetters and Visionaries



Paul Horn GmbH has frequently proved that it has a good sense for the changing requirements of the market. The pioneering company, a trendsetter and visionary in precision tools, is quick and flexible, able to deliver customized solutions in tight tolerances. Increasingly smaller batch sizes are precisely adapted to the machining case. This is not really possible with "off the shelf" coatings. Therefore, its own coating center, featuring the latest technology such as the CC800® HiPIMS from CemeCon, is the core building block for the success of the tool manufacturer. With its open technology the system represents a very good tool for product developers and, with their outstanding coating rates and ease of use, they provide the best performance in production.

From the production of carbides to tool holders and mounts, through to geometrical developments and coating technology, the high level of production depth combined with motivated and competent employees is a core factor in Paul Horn GmbH's success. The premium manufacturer of cutting tools for slot milling, grooving and internal turning therefore keeps all the relevant quality factors under its own control, and can quickly develop high-quality solutions with the necessary flexibility for today's requirements and those of the future. Early on, Horn recognized the tremendous potential of HiPIMS technology that enables it to stand out from the competition, and is among the first to implement a CC800® HiPIMS in its in-house coating line.

With the CC800® HiPIMS, CemeCon revolutionized PVD sputtering technology by once again significantly increasing the quality and performance of coating materials. The CC800® HiPIMS coating system produces smooth, droplet-free, low- stress coatings. High metal ionization ensures superlative adhesion of up to 130

Newton under a scratch test, with coatings that are both hard and tough. An even coating thickness distribution ensures optimal wear protection of cutting tools.

„Thanks to the good cooperation with CemeCon, we have already achieved very good results with our own first coating developments after installing the CC800® HiPIMS.“

Bastian Gaedike, R&D scientist at Paul Horn GmbH

High flexibility is required for coating precision tools. Therefore, in addition to the need for developing increasingly efficient coating materials, preparations must be in place for customizing coatings to machining cases quickly. Coatings also require the highest adhesion, smoothness and accuracy. The CC800® HiPIMS is the perfect solution. It enables the development and production of coating materials at a much quicker pace and more precisely – due to an easy to operate user interface and the integrated planning tool. Through its intuitive, graphic-based programming the software supports the flexibility offered by the HiPIMS process. This enables almost all the elements in the periodic table to be used as coating materials. They are added either as a multilayer or a nanolayer or as an alloy to the coating structure. The result is unlimited material variety with innumerable combination possibilities. Bastian Gaedike, R&D scientist at Paul Horn GmbH says, "Horn is able to react flexibly and quickly to the requirements of the market and meet the needs of its own specialized product range even better."



In order for customers such as Horn to access technology in the best way possible, they go through intensive training in the use of systems and peripherals. They are then able to align their coating processes precisely to the most diverse types of tools and machining applications, or completely realign them. As part of the HiPIMS technology transfer to Horn, CemeCon trained Bastian Gaedike on how to use the system technology, process programming and general coating technology. At the CemeCon training center, he precisely won the confidence to handle the coating process safely and accurately, and to react quickly to the changing requirements of the machining sector. "Through the training, I was quickly able to adapt,

change or even develop new processes myself," says Bastian Gaedike. We achieved very good results shortly after installing the HiPIMS system with our first application-specific EG3 and EG5 coating developments. This success was the basis for the installation of two additional CC800® HiPIMS systems."

Three CC800® HiPIMS systems are now in use at Horn's own coating center, with a total of eleven coating systems in continuous operation. Maurizio Colecchia, head of the coating department at Horn, works with the systems on a daily basis: "The CC800® HiPIMS is not only the ideal platform for new developments – it is also a real workhorse. It coats medium batch sizes all the way up to the highest coating rates of up to 2 µm per hour, at tight tolerances. Conversion to any other coating material or adjustments for changed tool quantities can be done very quickly. In addition, the system operates fully automatically with minimum maintenance. A guarantee for high efficiency."

"We have developed extensive expertise in all facets of tool production and we can offer our customers tool designs they can use to achieve quality and profit. Innovative technologies from strategic partners, such as the CC800® HiPIMS from CemeCon, are the key to our competitive advantages and, ultimately, successful and satisfied Horn customers," says Lothar Horn, CEO of Paul Horn GmbH.

## Paul Horn GmbH

Since 1969, [Paul Horn GmbH](http://www.phorn.de) has been developing and producing grooving and longitudinal turning tools as well as slot milling tools in Tübingen that impress with their performance and reliability. The high-performance tools are used in a wide range of industries, such as the automotive sector and its suppliers, aerospace, hydraulics/pneumatics, the jewelry industry, medical technology and mechanical engineering. In Germany, the company, which employs 930 people, has been the market and technology leader for many years – not least because of its continuous development and optimization of processes and products. Through its collaboration with international locations and multiple partners around the globe, Horn is able to provide reliable support to its customers all over the world.

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