Finally a Solution to the PVD Coating Dilemma for High Performance Cutting Tools

PerformCoat – a New Approach to PVD and PeCVD Coatings

Three years ago, industry veterans, Dr. Pierre Collignon and Dr. Christian Kunz, founded PerformCoat in order to provide the cutting tool industry with innovative thin film technologies. Quickly thereafter, experienced engineers and process experts joined the group.

PerformCoat offers a wide range of technologies from PVD by Cathodic Arc and Sputtering to PeCVD by DC and RF, as well as innovative solutions for Plasma Nitriding. Thanks to their vast expertise and experience, the group offers innovative, application-specific solutions for cleaning, de-coating, and edge preparation.

After thirty years of use and refinement, PVD is a mature technology. Today it is possible to produce flexible, robust, easy to operate, and affordable equipment.

The PerformCoat Advantage

- Innovative and application-specific PVD coatings
  - PVD: Arc and sputter technology for hard coatings
  - PeCVD: DC and HF technology for DLC coatings
  - PeCVD/PVD for hybrid coatings

- Flexible and easy to use PVD equipment at competitive up-front investment and low running cost

- Turnkey PVD solutions including cleaning, de-coating, edge preparation, and quality control

- Local support for spare parts, maintenance, and process development
Trends in the Cutting Tool Industry

During the past ten years, requirements for cutting tools have changed dramatically due to the development of tougher materials and improved capabilities of modern machining centers. The performance of modern cutting tools depends mainly on geometry, carbide grades, edge preparation and coating. Tool makers control geometry and material. Coating-wise, they depend on standard broad-band coatings which do not provide them with the opportunity to differentiate themselves from their competitors. This is where PerformCoat can make a difference. Improved application-specific solutions can be achieved by the optimized combination of coating composition (structure, morphology and thickness) and surface finish together with proper edge preparation.

Today many innovative tool makers realize the opportunity to differentiate themselves from their competitors by integrating coatings and edge preparation into their production process.

At the same time, more and more standard tooling gets replaced by expensive special tooling. Short lead times for regrinding and re-coating become essential. Tool makers and larger regrinding houses find it to be advantageous to bring the coating process in house. To justify such a step, the equipment must be easy to operate and maintain, cost effective, and have technology support readily available.

At PerformCoat Everything Starts with the Application

At PerformCoat everything starts with an in-depth understanding of the application. Once the requirements for an application are completely understood, PerformCoat starts finding the best solution for the specific application.

The core competences of PerformCoat are application know-how, engineering, and process development. For other disciplines such as electrical wiring, software, machining, and vacuum chambers, PerformCoat has developed strong partnerships with expert suppliers for these specific disciplines.

The machines are assembled in Southern Germany using only proven components which are available worldwide. They are based on standard platforms which can be equipped with different technologies. This concept keeps the complexity low while allowing high flexibility in chamber size, design, and technology.

Another advantage of the modular system is that it enables PerformCoat to manage spare parts locally with high availability at reasonable costs. Service and spare parts centers are operational in the USA, Germany, and Taiwan. A new center in Japan will be opened shortly.

Short but Impressive Track Record

During the last three years PerformCoat has installed more than 25 PVD and PeCVD machines and five turnkey PVD operations. PerformCoat machines work around the clock in the USA, Germany, Japan, China, Mexico, Taiwan, Philippines, and France.

Contact us or see for yourself in our showroom:

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Process Development in the USA

In its coating center in Battle Creek, Michigan, PerformCoat develops new coatings, trains new equipment customers, manages spare parts for the Americas, and provides local coating services.

One example of the success of PerformCoat’s innovative approach is shown below. HPfC Titan is a new tool coating for the machining of tough materials.

Performance of PerformCoat’s recently developed HPfC Titan coating for materials difficult to machine

Drilling in Stainless Steel
Carbide drill D 6 mm; hole 4.5 x D; Stop criteria 0.1 mm corner wear

Increase your productivity by 75% with more aggressive cutting conditions
Vc 90 m/min
fz 0.14 mm
Only HPfC Titan is able to work at this condition

Milling of TiAl6V4
Carbide endmill D 10 mm

Competitor A & B
AlCrN
HPfC Titan

Corner wear in µm

Vc 60 m/min; fz 0.04mm/rev; ae 5 mm; ap 10 mm

What PerformCoat’s customers are saying...

Salvador Rivera  
General Manager  
Primus Coating, Toluca/Mexico  
(www.primuscoating.com)

“We bought a complete turnkey solution from PerformCoat early 2013. Overall it was an amazingly smooth process. Our guys received excellent training, not only in running the equipment but also in the use of PerformCoat’s efficient operating system. Instead of developing our own operating system, we decided to completely duplicate what we saw and learned at PerformCoat’s coating center in Battle Creek, Michigan. This included everything from the product portfolio, quality system, work instructions, and maintenance to the logistics system and fixturing. It was the right decision. Within one month we were able to provide competitive products and outstanding service to the automotive and aerospace industries in Mexico. Whenever we have questions or problems of any sort, Christian and his team provide immediate support.”

Markus Knecht,  
Owner  
PLASMA plus coating  
Dettingen/Germany  
(www.plasma-plus-pvd.de)

“After thorough analysis of well-known and established PVD equipment suppliers, I decided to go with PerformCoat for the following reasons:

- Best control of coating thickness (+/- 0.2 µm)
- High flexibility
- Easy to operate and maintain
- Robust design
- Very low running costs
- Short cycle times of less than four hours

In the meantime, we operate three coaters from PerformCoat six days per week, 24 hours per day.

Our customers are excited about our products and the short turnaround time. The development of new coatings with Dr. Pierre Collignon is unbelievable. It is efficient, professional, and it produces outstanding innovative products.”

PD2i North America is the sales organization for PerformCoat PVD coating, Pradus drag finish equipment, and other innovative technology.

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