

FACTS



CEMECON EXPANDS: NEW DIAMOND COATING CENTER IN THE USA

Pages 4-5

LONGER TOOL LIFE INCLUDED

HYPERLOX® Plus: EXTREMELY SMOOTH
COATING FOR DRILLS

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SUCCESS WITH THE CC800®/9 ML

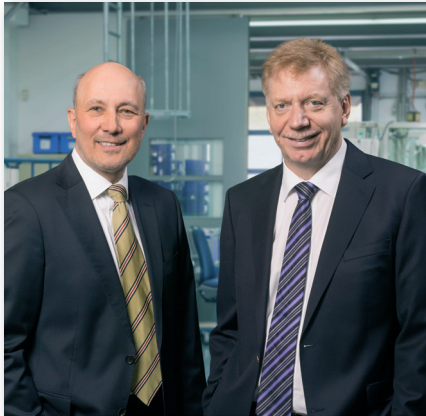
ADDLIFE COATING SYSTEM –
COATINGS „MADE IN INDIA“

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PREMIUM QUALITY WORLDWIDE



Dr. Oliver Lemmer (left) and
Dr. Toni Leyendecker,
executive board of CemeCon AG

Customized coating solutions for premium tools are our passion. We offer high-quality coatings for cutting inserts that improve performance and increase operating life with synchronized layer thickness. Our coatings – manufactured with HiPIMS technology, a topic featured in this FACTS – are the perfect choice for demanding processing tasks (see pages 6-7).

Our patented diamond coatings are the pride of our product range. To facilitate access for our international customers to these premium diamond coatings and to shorten delivery times, we have expanded the CemeCon Center in Horseheads, NY by adding a diamond coating center. Read more about this on pages 4-5.

PREPARE TO BE INSPIRED!

Yours sincerely,


Dr. Toni Leyendecker


Dr. Oliver Lemmer

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LONGER TOOL LIFE INCLUDED

Transporting chips away from the drilling area is fundamental for efficient and clean drilling. Refined geometries paired with first-class premium coatings are the high-performance solution. HYPERLOX® Plus provides an extremely smooth and optimized coating thickness that ensures excellent results and a much longer service life.

The success of a coating for high-performance drills is based on high wear resistance combined with unparalleled smoothness. The premium coating HYPERLOX® Plus from CemeCon outperforms other

coatings, especially drilling of materials such as steel and cast iron. The increased aluminum content ensures better temperature stability. Combined with increased coating thickness, amazing results

in terms of service life can be achieved.

When drilling in 42CrMo4 (tensile strength 950 N/mm²), HYPERLOX® Plus demonstrated its potential in a favorable comparison to a 3 micron-thick AlTiN coating: The drill with internal cooling (diameter of 5.8 mm, drilling depth of 7xD) lasted considerably longer when processing tempered steel ($v_c = 12$ m/min, $f=0.20$ mm/revolution). The tool life was 65% higher in comparison!

„HYPERLOX® Plus gives the drill an ultra-smooth coating, which removes chips quickly and significantly extends tool life – especially, in demanding drilling operations,“ said Manfred Weigand, Product Manager Round Tools at CemeCon.



The service life of a drill with internal cooling was significantly prolonged with HYPERLOX® Plus in processing tempered steel.



CEMECON EVENTS 2015

29. SEPTEMBER - 1. OCTOBER 2015
TOOLEX
Sosnowiec (Poland)

5. - 10. OCTOBER 2015
EMO Milano
Milan (Italy)

CCDia®-DIAMOND COATINGS NOW PRODUCED IN THE USA

Recognizing the growing international demand for high-quality diamond coatings, CemeCon AG has expanded its Horseheads, NY Application Development Center (ADC) with a diamond coating facility. Our on site engineers there have been refining cutting tools and bringing our patented diamond coating technology closer to our overseas customers since September 2014.



Especially, in the aerospace and automotive industries, the use of sophisticated materials such as graphite, fiber-reinforced plastics, and abrasive non-ferrous metals is on the rise. The outstanding properties of our patented diamond coatings ensure precise and economical machining of these materials. „This makes them indispensable for tool manufacturers in North America,” said Gary Lake, CEO of the US subsidiary CemeCon, Inc. „The next logical step was to build a diamond coating facility to expand the capacity of our coating center in Horseheads, established in 1998. Now we can offer our

customers all the innovative CCDia® coatings locally.”

PATENTED DIAMOND COATING

CemeCon diamond coating combine the advantages of crystalline layers with nanocrystalline layers: excellent adhesion and a very smooth surface. Combined with the extreme hardness, similar to a natural diamond, they ensure a long service life and the best machining results – especially when cutting preforms, high-tech composites, or high silicon aluminum and metal matrix composites. Their crack-pre-



Motivated employees ensure Premium diamond coatings.

Upper left: Lorrie Anderson prepares tools.

Center left: Mark Coleman (left) and Toby Cary coordinate on a project.

Lower left: Toby Cary performing quality control.

Lower right: Kai Shofield (left) explains the unit.



With the new CC800®/9 DIA unit, the US team can now offer the patented CCDia® diamond coatings (from left): Andy Brayer, Marjorie Steed, Kai Shofield, Mark Coleman, Toby Cary and Lorrie Anderson.

vention properties optimally protect tools from damage.

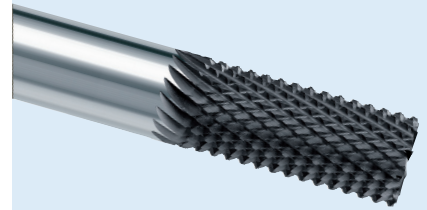
„Throughout the US, there is an immense need for highly specialized industrial suppliers of high-quality diamond coatings. Having a production center in close proximity to this attractive market opens up substantial growth opportunities for us,” said Dr. Toni Leyendecker,

CEO of CemeCon AG. „Having a stronger presence there further strengthens our position as an innovator and market leader in the diamond coating sector.” In addition to our headquarters in Würselen, Germany with one of the world’s largest coating centers, and the subsidiary CemeCon, Inc., CemeCon also operates a coating center in China (Suzhou).

Tools coated with
DIAMOND achieve
outstanding machining
results with
EXCELLENT ADHESION and
VERY SMOOTH SURFACES, in
addition to
EXTREME HARDNESS.

AVAILABLE IN THE USA:

CCDia® products



PROPERTIES

Coating material:

Diamond, sp3

Microhardness:

10,000 HV_{0,05}

Max. operating temperature:

650°C

Color:

Gray

APPLICATIONS

CCDia®AeroSpeed® for

CFRP

CFRP/Al stacks

CFRP/Ti stacks

CCDia®CarbonSpeed for

Graphite

Ceramic

Alloyed green products

CCDia®FiberSpeed for

CFRP

CFRP/Al stacks

Ceramics

CCDia®MultiSpeed for

High silicon aluminum

CFRP/Al stacks

CFRP/Ti stacks

PARTNER FOR PREMIUM QUALITY

Flexibility, the highest precision and short delivery times – with customized tool solutions Kanne Premiumwerkzeuge offers a full spectrum of tool expertise from a single source – for everything from regrinding to coating. The focus is on quality at the highest level and excellent service. With the high-performance coatings and first-class technology from CemeCon, the company has the lead in their market.

The precision tools from Kanne Premiumwerkzeuge stand out for their high performance capability. Service does not end with delivery. The Northeim company supports the tools over their entire service life. „We offer our customers the complete production chain from a single source – including high-precision regrinding and coating. Our goal is to set the standards in quality, flexibility and service. This is only possible with outstanding technology. This is why we have worked closely with CemeCon for years,” said Volkmar Kanne, CEO of Kanne Premiumwerkzeuge. In 2007, CemeCon installed a turnkey coating line at Kanne. With the CC800®/9 system,



With the CC800®/9 from CemeCon, Kanne Premiumwerkzeuge can respond flexibly to customer requests. (Photo: Kanne Premiumwerkzeuge)

the tool specialist can offer custom solutions and even faster and more efficient answers to the concerns of its customers. This is where the service from CemeCon starts. Marco Lange, Production Supervisor at

Kanne Premiumwerkzeuge: „We are very pleased with the technology and service from CemeCon. They support us with process adaptations. Maintenance is performed with no problems and preventive measures ensure maximum availability. If a component needs to be replaced at Kanne, it all goes smoothly.”

HARDLOX FOR HARD APPLICATIONS

„Another highlight of our many years of partnership: We always have access to new developments from CemeCon, such as the high-performance HiPIMS coating HARDLOX,” said Volkmar Kanne.



The regrinding and coating service of Kanne Premiumwerkzeuge focuses on the highest precision. (Photo: Kanne Premiumwerkzeuge)

Kanne Premiumwerkzeuge can equip a complete production line from a single source. (Photo: Kanne Premiumwerkzeuge)



HARDLOX combines extreme hardness, very smooth surfaces, mechanical strength, excellent adhesion and highest toughness. It is perfectly suited for processing extremely hard materials.

„Drills and milling cutters are exposed to extreme wear, especial-

ly in hard machining. Without a first-class coating, they won't achieve much – certainly not in the long term in any case. Our HARDLOX-coated premium high-performance tools have no problem to perform cutting tasks, for example in steel with 60 HRC and higher, with the highest precision and the

best surface qualities,” said Marco Lange. Another example: A solid carbide drill with conventional TiAlN and AlTiN coating, experienced an extreme loss of service life after re-grinding when machining 42CrMo in comparison with new tools. With HARDLOX, the resharpended drills can last for just as long again.

KANNE PREMIUMWERKZEUGE IN DETAIL

Kanne Premiumwerkzeuge has specialized in machining tools and tool service since 1978. The company currently employs approximately 50 people and produces, sells, sharpens, and coats premium tools for the most demanding specifications. Tools are produced with extreme precision and minimum tolerances at two



locations, Northeim and Aschersleben. The strength is in the delivery of specialized custom solutions. To meet the requirements, Kanne Premiumwerkzeuge relies on continuous development and qualification of its employees, as well as investments in innovative technology. A select range of tools from well-known manufacturers perfectly rounds out the product range.

www.kanne-werkzeuge.de



Volkmar Kanne, Managing Director of Kanne Premiumwerkzeuge

„With CemeCon, we have found a **RELIABLE PARTNER** that places as much value as we do on the highest **QUALITY** and **PRECISION**.“

SUCCESS WITH THE CC800®/9 ML

Bangalore, India is one of the world's major centers for cutting tool manufacturing, the aerospace industry, and general engineering and design companies and, consequently, an ideal location for the coating service business.

Although Mr. Shoeb Rangwala, Managing Director, AddLife Coating System PLC, was very successful in his former business, he always wanted to provide the services related to the cutting tool industry. His goal was to have "A one stop shop for coating of all types of cutting tools."

With the aim of starting a coating center, Mr. Shoeb Rangwala visited CemeCon AG. After looking at the CemeCon coating facility in Germany (one of the world's largest coating centers) and the support offered by CemeCon to its customers, Mr. Rangwala felt that he understood the technical requirements and the importance of a worldwide network of customers. He had finally found the right partner for his new coating center business.

In 2013, Mr. Mufaddal Rangwala joined AddLife Coatings and the company's first CC800®/9 ML, a PVD



CemeCon employees are trained in quality assurance for the entire process.

coating unit, was installed. Since then the company has grown to a whole new level. "CemeCon helped us not only to install and operate the coating unit, but also trained us on the work flow processes, which are crucial for achieving a good coating on the cutting tools. CemeCon's more than 25 years of experience in coat-

ing center operations was extremely helpful to us. Right from the start we were able to deliver high quality coatings to our customers." AddLife Coatings uses high end supernitride coatings from CemeCon namely TINALOX® SN², HYPERLOX®, ALOX® SN², and HSN² which gives the company a wide range of coverage options.

"The CC800®/9 ML coating unit is extremely flexible and is capable of performing more than just the coatings mentioned above simply by changing the target. The change-over time from one batch to another is very short and it helps in delivering good quality and smooth coatings even faster," said Mr. Manish Adwani, National Sales Manager at CemeCon.

Mr. Rangwala achieved his dream of operating a high quality coating center. AddLife Coating customers appreciate the smooth quality achieved

ADDLIFE COATING SYSTEM PVT. LTD. IN DETAIL



Shoeb Rangwala,
Managing Director of AddLife Coating System Pvt. Ltd.

AddLife Coating System Pvt. Ltd. has been operating a successful coating service for all types of cutting tools since 2013. To optimally cover the wide range of applications, the Indian company, headquartered in Bangalore, relies on the first-class plant technology from CemeCon to supply its customers from various industries with extremely smooth PVD coatings.

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Mobile: +91 98 401 67 333

by a sputtering process for high value cutting tools and the company saw its market share increase.

In 2015, Mr. Rangwala decided to buy one more coating unit from CemeCon and further expand the coating business. Shoeb Rangwala explained, "When I bought the first coating unit from CemeCon, I was wondering what the quality of coatings and support from CemeCon would be, but now two years down the line, I can confidently say that I have received outstanding support from CemeCon and my customers are very happy with the quality of the coatings we provide. Adding a second coating unit was a no brainer for me."

In about two years, AddLife Coatings has established themselves as a high quality coating supplier for cutting

tools. The CemeCon coating technology, the customer oriented approach, and high quality services ensure the growth of AddLife Coatings. "We are in a position to offer coating solu-

tions for all machining materials and all applications. With good coating technology and support from CemeCon, we are confident of our future success," said Mr. Rangwala



With the CC800®/9 ML, AddLife Coating System Pvt. Ltd. offers first-class PVD coatings for a wide range of applications.

COOPERATION FOR INNOVATIVE DEVELOPMENTS: IOT AND CEMECON

PROVIDING PULSES

It is crucial for the future of a company to secure a sustainable leadership position with innovative products and services. In the development of its premium coatings and technology, CemeCon cooperates with various universities and research institutes. Its cooperation with the Institute for Surface Engineering (Institut für Oberflächentechnik-IOT) at RWTH University in Aachen is a long-standing tradition.

RWTH University at Aachen is one of the leading technical universities in Europe. An example of the intensive interdisciplinary research at the university is the Cluster of Excellence „Integrative Production Technology for High-Wage

Countries," which the IOT also belongs to. The large number of highly qualified junior employees can be traced to the active application-oriented research with application-related industrial projects.

Dr. Toni Leyendecker, CEO and founder of CemeCon AG, started his professional studies at the Institute for Surface Engineering. He received his doctorate and worked at the pre-

CONTINUED ON PAGE 10

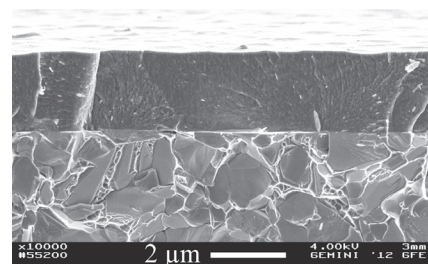


decessor institute under Prof. Otto Knotek and Prof. Erich Lugscheider, PhD. He has kept up the relationship ever since. „The cooperation extends to many levels: For example, we have long been a partner with IOT in the annual conference on PVD/CVD thin film technology. The

close exchange between CemeCon and the IOT supports the continuous development of our premium coating technology, including the HiPIMS process,” said Dr. Christoph Schiffrers, Sales Technology with CemeCon.

Additionally, the IOT uses an HiPIMS system from CemeCon in its research work. „With the coating system CC800®/9 HiPIMS, we have opened new frontiers in research. For a long time, this innovative technology was only available to laboratories. CemeCon is setting new standards in this area with the first implementation at an industrial-size plant,” said Prof. Kirsten Bobzin, Head of the IOT.

HiPIMS (High Power Impulse Magnetron Sputtering) is an advanced development of sputtering with ionization up to 100 times higher through very strong pulses. The



HiPIMS technology produces extremely hard, dense and smooth layers.

high metal ionization ensures extremely smooth surfaces and very hard coatings.

Studies conducted by the IOT with various pulse durations have determined, for example, short pulses lead to an even denser and nanocrystalline structure and better mechanical properties. The hardness of the coating is also increased with short pulses. Dr. Christoph Schiffrers: „Thanks to the intensive cooperation, we have been able to continuously improve our HiPIMS technology.”

INSTITUTE FOR SURFACE ENGINEERING IN DETAIL

The Institute for Surface Engineering (IOT) is part of the RWTH University at Aachen (Department of Mechanical Engineering). Active research and development work is done there on a daily basis in the areas of PVD/CVD coating technology, thermal spraying, brazing and soldering jobs, and in the modeling and simulation of these processes. In addition to materials development, process optimization, process and quality assurance, the institute works on the development and application of coating and soldering systems in close cooperation with industrial companies. Prof. Kirsten Bobzin has managed the IOT since 2005. She is a renowned expert in the field of coating technology; she has written more than 400 scientific publications; and is active in numerous national and international scientific committees.

www.iot.rwth-aachen.de



Prof. Dr.-Ing. Kirsten Bobzin



MATCH WITH THE „LADIES IN BLACK“

Last fall in the Dreifachsporthalle in Herzogenrath, the audience cheered the volleyball players with shouts of „Let's go!“ and „Shoot!“ as the amateur mixed team from Herzogenrath TV 1880 e.V. played the Aachen „Ladies in Black“ from the top national league (Bundesliga). The big winners were the children at the Hermann-Josef children's home in Herzogenrath-Merkstein. CemeCon employee Axel Schauer also gave his all.

„That's something special in and of itself when an amateur team plays against a women's team from the Bundesliga, – it's just the game of your life,“ says Axel Schauer, an employee at CemeCon and player with the HTV. The whole thing started when an audition tape showing what the Herzogenrath team could do was sent to the initiators of the tournament, NetAachen, and the Aachen newspaper publisher. Both the editorial staff and the readers liked what they saw: This led to the HTV team playing against the Aachen „Ladies in Black“ and, together with 500 spectators, they experi-

enced an extraordinary afternoon – and it was all for a good cause.

In the fall of 2014, the HTV played against the friendly pros in the Dreifachsporthalle in Herzogenrath. „It was really great to play against the Ladies. An unforgettable memory!“



says Axel Schauer. „With tickets and food sales and autographs provided by the Ladies, we were able to donate more than 3000 euros to the children's home in Merkstein – much more than we expected.“

A small side bet between the two teams brought in additional money for the children's home. For every point over 21 scored by the HTV, the pros added a bit more money. „That was a fantastic incentive to make us really get into it,“ says Axel Schauer. The results speak for themselves: With 26 points in three sets, the HTV earned an even higher donation.



The volleyball tournament against the „Ladies in Black,“ gave the HTV players (surrounding Axel Schauer) not only an unforgettable memory – it allowed them to lend their support to the Hermann-Josef children's home.

A COMPETENT TEAM WITH A VISION

Prof. Erich Lugscheider stepped down from his position as chairman of the supervisory board of CemeCon after 14 years on March 25, 2015 citing reasons of age. With Prof. Kirsten Bobzin, Frank Löffler and Günter Pache, the newly composed CemeCon supervisory board has three experts who bring together the major key competencies necessary for the development of innovation leadership in the future: Technology expertise, marketing knowledge, and experience in the financial sector.

Lugscheider's global engagement includes joint research activities, industrial ventures, and collaboration with international expert organizations from diverse specialty fields. During his career, the former head of the training and research at the Institute of Material Sciences at RWTH (Rhine-Westphalia Institute of Technology) Aachen has received countless scientific prizes and awards from renowned national and international associations. Dr. Toni Leyendecker, chairman of the executive board, thanked him for his successful contributions: „Erich Lugscheider gave us his profession-

al support for many years, actively giving of his energy and empathy. With his experience and creative abilities, he was a decisive factor in shaping our path. We are delighted that he will stay with our company in an advisory role as Chairman Emeritus of the supervisory board.“

STRATEGICALLY WELL POSITIONED

Prof. Kirsten Bobzin was recently elected to the supervisory board. She has directed the Institute for Surface Engineering at the RWTH of Aachen, as the successor of Erich Lugscheider, since 2005. The

renowned expert in coating technology has written more than 400 scientific publications and is active in numerous national and international scientific committees. Since 2010, she has also been a member of the University Council of the Leibniz University at Hannover.

Re-elected to the supervisory board is Günter Pache. As chief executive of the Düsseldorf company Höganäs GmbH for many years, he has extensive experience in corporate management and metal processing as well as operational and market knowledge.

Now that Hannover Finanz has returned its investment in CemeCon AG, Frank Löffler, Investment Manager at the Hannover Finanz Group, has assumed the position of Chairman of the executive board. In this way, he can continue to contribute his extensive expertise in financial management.

„With this team of experts, we are strategically well positioned to continue to be the innovation leader in our industry and to inspire our customers in our target markets,“ said Toni Leyendecker optimistic about the future.



From left to right: Prof. Erich Lugscheider (Chairman Emeritus of the supervisory board of CemeCon AG), the new supervisory board consisting of Prof. Kirsten Bobzin, Frank Löffler (new Chairman of the supervisory board) and Günter Pache, as well as the executive board of CemeCon AG, Dr. Toni Leyendecker and Dr. Oliver Lemmer.