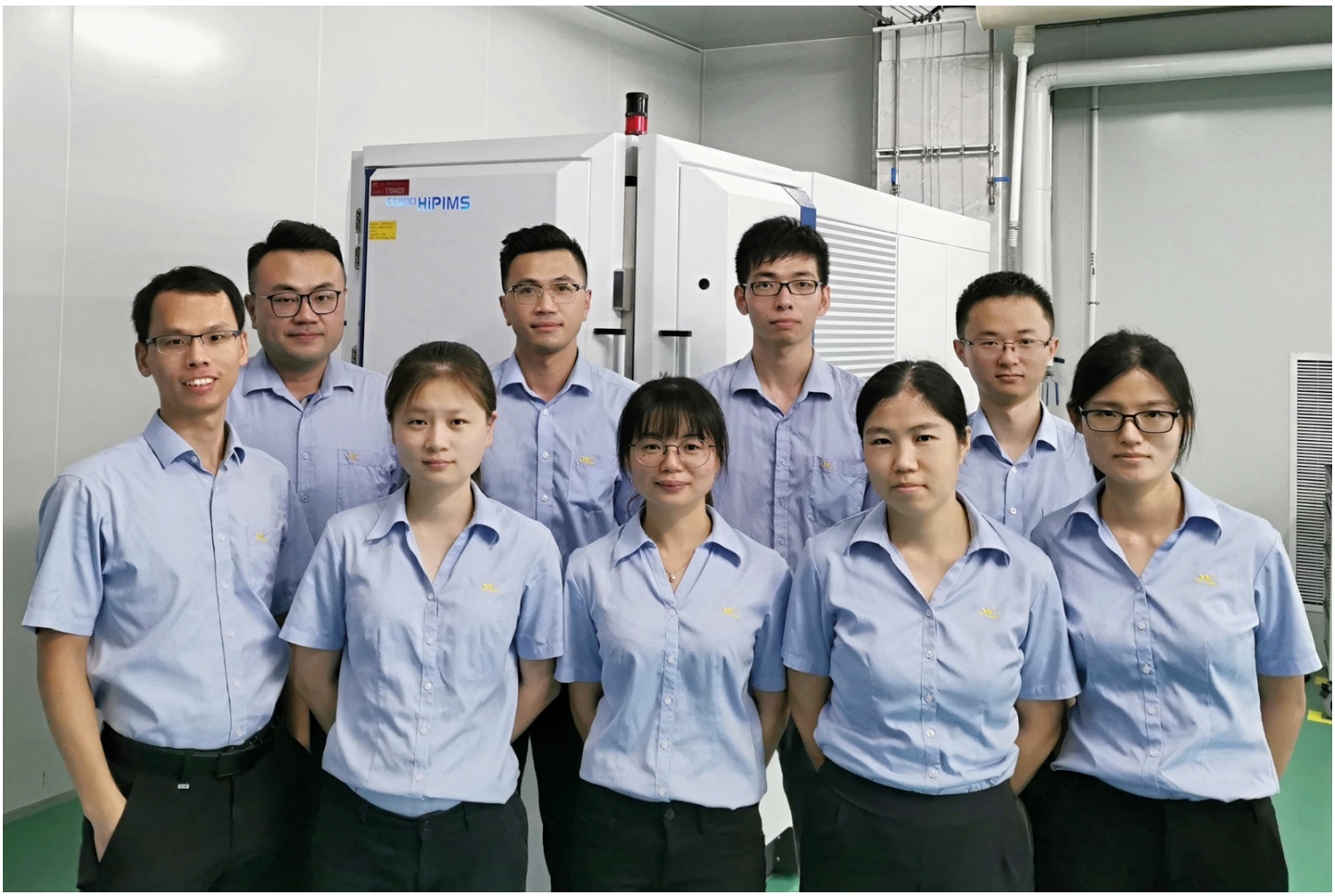
Performance leap thanks to thick coatings



The CC800® HiPIMS is exactly the technology the GESAC development team was looking for.

CC800® HiPIMS gives gesac a head start with cutting inserts for heavy machining

Heavy-duty machining is demanding – maximum cutting volumes, without sacrificing good surface quality, requires high feed rates and extreme wear. The company that can offer longer tool life and the best performance will quickly outpace the competition. GESAC, one of China's largest tool manufacturers, secures this advantage with the CC800® HiPIMS and thick coatings.

One of the leading addresses for high-quality cutting tools in China is GESAC. The comprehensive know-how of the experts ensures the excellent quality of shank tools and cutting inserts. For many years, GESAC has also been operating a coating production with its own processes also on diamond systems from CemeCon. “How can we increase our excellence in insert tools for heavy-duty machining of cast iron and steel? Our traditional PVD and CVD machines do not offer sufficient potential for growth in the cutting insert market,” asked the GESAC development team. They found the answer in the CC800® HiPIMS: With it, the experts are now able to achieve coating thicknesses that are unthinkable with other PVD technologies.

More performance and tool life for GESAC milling inserts – thanks to HiPIMS.

For thick layers: HiPIMS

“Whether it's machining machine frames, milling the heads of railway rails or preparing welding seams in the production of large pipeline pipes – maximum metal removal is the mantra and high wear is on the agenda. The inserts have to withstand quite a bit if work is to be economical. Every µm of coating thickness helps here. Especially in heavy machining, the relationship between coating thickness and tool life is quite linear. Added to this is the fact that the required chip thicknesses and feed rates in high-performance cutting are only possible with the highest toughness of the coating,” describe Yuan Werner-Guo, Sales Manager at CemeCon, the challenges in heavy-duty cutting.

The solution to these challenges is the HiPIMS technology from CemeCon. This is the only way to produce smooth, hard and at the same time tough coatings with high adhesion and exceptionally high coating thicknesses. Other processes reach their limits here. Arc technology is very limited in the mass production of inserts in terms of coating thickness. Thanks to the synchronization of the HiPIMS cathode pulses with the substrate table – a unique CemeCon feature – the GESAC developers can actively manage the residual stresses of the layer. With CVD coatings, high residual tensile stresses always arise – fatal for the interrupted cut in milling applications. The HiPIMS innovation: Thick layers with 12 µm and low residual compressive stresses open up new worlds in terms of milling inserts for heavy machining.

The GESAC development team is enthusiastic about the possibilities of the CC800® HiPIMS.

Cutting results are completely convincing

This was exactly what the GESAC development team was looking for: In order to achieve the best results, the micro geometry of the inserts for heavy machining and edge rounding was precisely matched with the optimal coating thickness. The cutting results (see graph) exceeded all expectations: The new inserts achieved a tool life increase of 75 percent when milling alloyed steel! GESAC was completely convinced, and they invested in their own CC800® HiPIMS.

Perfect for new impulses

Developers are always bubbling over with ideas – how good it is that HiPIMS allows (almost) any layer composition. We are curious!

GESAC

The high-tech company **Xiamen Golden Egret Special Alloy Co., Ltd.** (GESAC), is a Chinese-international joint venture and closely associated with XTC. GESAC is one of the leading manufacturers of high-quality tungsten powders, carbides and precision tools in China. High development dynamics, first-class equipment and technology, creative employees and an application-oriented management concept are the basis for world-class innovations and products. Also because of the national R&D center established in 2008, GESAC is responsible for many research projects and has received numerous awards. With premium products and excellent service, GESAC's “Golden Egret” has become one of the leading brands, known in more than 40 countries and regions of the world.

http://en.gesac.com.cn/

Cutting inserts

Long tool life

Thick layers

Residual stress management

Casting

Steel

heavy-duty cutting

High cutting volume

high tensile residual stress

low residual compressive stress

GESAC