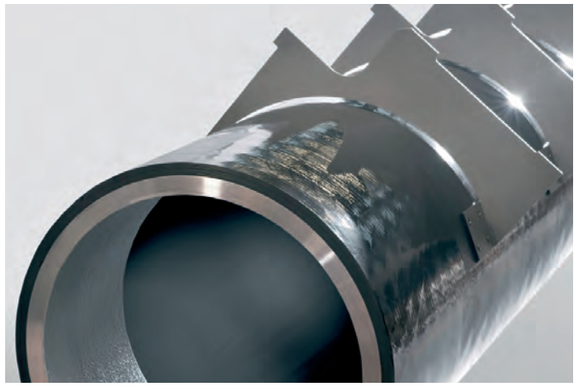
DYNEXA

TOOLING MACHINES

HIGH-PERFORMANCE CFRP COMPONENTS



Support beam for a high-precision, dynamic coating application

IDEAL FOR MECHANICAL ENGINEERING

Far flung service areas and manifold application options make the tooling machine industry to a challenging assignment. Although the service conditions vary greatly, they do have several important points in common. The pursuit of precision, increased efficiency and higher production speeds serves as the orientation for the development of exciting innovations.

We have recognized the limitless possibilities and have placed our development and business focus on this market segment. Our experience and expertise with the material properties of fiber composites combine with long-term knowledge and understanding of your requirements

We are good at what we do

Innovations are created out of the desire to go further and out of the need to become better. We appreciate your courage, and your openness toward our material CFRP. We make our contribution daily to meet your requirements on material and design. The service conditions in tooling machines are as extensive and demanding as the possibilities the fiber composites like CFRP have to offer

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Keeping our Eye on the Target

As with every material, there are also limits with fiber composite materials. A material change is not always an appropriate solution, however it offers effective efficiency improvements in many cases. When the properties of steel and aluminum are no longer sufficient, composites open the door to new horizons.

Getting off on the Right Foot

The situation at the beginning is not always clear. The goal is to make the best use of the composite material properties required by the project. That is why it is so important to have a competent partner at your side from the start. We are familiar with the possibilities and stumbling blocks our material offers, we can assess the framework of the project and can determine the necessary steps to take. Only in this way is a competent and solution-based recommendation possible.

A MATERIAL WITH STRONG CHARACTER

ADJUSTABLE MATERIAL AT YOUR SERVICE

Due to its adjustable properties, fiber composites can be tuned to meet your applications requirements. CFRP stands for innovative solutions as well as its variable character. Thus the material is ideal when it comes to your special applications.

We Optimize the Properties

Unlike traditional materials, carbon composite properties can be varied to best suit the individual component's requirements. Thus CFRP is one step ahead of static materials like steel. The flexibility of the material to be customized is an enormous advantage in the tooling machine industry with its multi-facetted application spectrum.

Precision

Machining accuracy and precision play a deciding role in the tooling machine industry, and these are only possible with precision parts. Several CFRP characteristics prove to be very useful in this situation, because the fiber orientation design allows custom-made components with specific functions. The definition of the coefficient of thermal expansion, the vibration and damping properties and the high stiffness enable us to meet your precision requirements and ensure a smooth-running machine.

The Perfect Coat

One important service area of our CFRP support beams is in high-precision, dynamic coating lines. The heat generated in the process led to a deformation of the steel beams which then necessitated the use of dynamic measurement systems coupled with hydraulic correction of the beam. The use of CFRP beams with a thermal expansion coefficient near zero removed the complications and the running costs as well. At the bottom line, the precision was increased while the Total Cost of Ownership (TCO) was reduced.

Flexibility Through Composites

Flexibility is becoming more and more important in the tooling machine world. There are many service situations, because specialization is taking place in many industries. Flexibility is being required of many machine components to guarantee performance under the wide array of running conditions. The adjustability of the composite properties proves to be extremely advantageous in such cases. Your machines and the requirements of your customers demand diversity, our components supply the fitting solution.

Getting the Right Spin

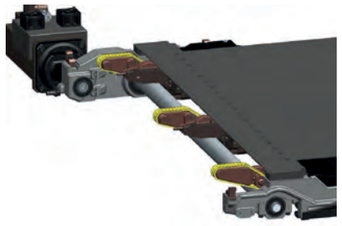
Higher rotational speeds for increasingly smaller milling tools are the home for our CFRP spindles. Due to carbon composites' high specific stiffness a CFRP spindle has a significantly higher natural frequency than a steel spindle. This creates a much larger range of RPMs, which allows for the use of smaller tools for fine finishing. In this application the tremendous damping properties of the carbon spindle also come into play. The metamorphosis of vibrational energy into warmth diminishes amplitude and accelerates the reduction of vibrations.

Large quantities, efficiently produced in series.

MAKING THE IMPOSSIBLE POSSIBLE

High-performance machines are true industrial wonders. Perfectly coordinated machine components enable smooth and successful processes which lead to maximal productivity. However, a machine can only be as strong as its weakest component. Cases where a single piece can slow an entire production process are not seldom. And these are to be avoideded at all cost. Application-optimized composite components can offer an effective solution.

MAKING USE OF POTENTIAL



Dynamic Brakeshaft
Source: Heidelberger Druckmaschinen AG

Economically planned

As with nearly all mechanical engineering sectors, the tooling machine segment see efficiency as a central theme. The use of composite materials offer concrete contributions to production efficiency. The specific functions of carbon components make their contribution toward reducing energy costs, increasing acceleration and raising machine productivity

Exhilarating Acceleration

Braking from 3,000 RPM to 500 RPM und accelerating back – 5.2 times per second. For this demanding application we developed a CFRP dynamic braking shaft. Limited machine space led to a degree of slenderness which eliminated the possibility of a vibration-free steel shaft. The carbon shaft scores not only by reaching this tact, but also through a 60% energy reduction thereby improving the productivity of the entire machine line.

COMPETENCE IN CFRP

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