BRABUS

Case Study:

BRABUS GmbH Goes the Distance

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FARO 3D Scanning and Probing Accelerates Aftermarket Automotive Parts Development and Classic Vehicle Restoration

When the world turns to high-end automotive tuning and restoration, Germany's BRABUS GmbH, headquartered in the city of Bottrop with its prestigious flagship store on Düsseldorf's Königsallee, is one of the leaders that races to the top.

Known for its expertise with high-performance automobiles and 6-star classic car restoration for Mercedes-Benz and Smart automobiles (a division of Daimler AG) the aftermarket leader, has for 45 years, delivered unparalleled automotive excellence, with notable recognition from the German Federal Motor Transport Authority.

The BRABUS range extends from performance-enhanced engines to elegantly styled aerodynamic components, high-quality forged light alloy wheels, sporty and comfortable suspensions and exclusive interiors with the highest level of craftsmanship.

Worldwide, the BRABUS network includes authorized sales and service partners in over 100 countries with global locations that include: London, Beijing, Shanghai, Dubai, Moscow and Miami, among others.

Future Focused

With attention to detail, modern, high-quality materials are developed into new products using innovative technology from the start. It is here that FARO Technologies, Inc., the 3D laser scanning leader for manufacturers, helped Brabus make the switch to the latest generation of 3D laser scanning equipment.

"With the Quantum^{S} mobile ScanArm, we are investing in the future," said Mr. Kai Brekoff, Design Engineer at BRABUS GmbH. "With higher measurement accuracies and improved mobility of the device, we can accelerate our new business acquisition, speeding

FARO

time to deliverables. Especially in the first steps of development, we can't afford any inaccuracies that would carry through to the series product."

At BRABUS, the ScanArm is used most intensively in the steps related to a new product. A classic example is the development of an aerodynamic component for a new vehicle. Before bumpers, sills and spoilers can be designed, the base vehicle must be precisely scanned in all the necessary details.

"We can't refer to the vehicle manufacturer's CAD data, so we have to first scan and reconstruct any basic geometry we want to pick up," Kai Brekoff added. "The more precise the 3D scan, the more accurate the fit of the final product."

In addition to the high accuracy of the FARO ScanArm, it also proves itself in terms of mobility, allowing multiple scans to be taken at numerous locations at any one of the five BRABUS plants in Bottrop. A 3D scanner with a fixed location, or CMM, would therefore be out of the question.

"Not every vehicle and not every workpiece is mobile in the respective development status," Kai Brekoff explained. "A classic example is a removed engine. Therefore, the ScanArm must always be able to get to the measurement object. This is not a problem with FARO's ScanArm technology."

"The significantly lower weight and the improved possibilities of wireless connectivity make fiwork much easier. With the battery pack and Wi-Fi data transmission to the computer, we can comfortably work for a whole working day. This is not only user-friendly, but also accident-preventing, as cables lying around pose a potential risk."

Digital Documentation and Quality Control

Additionally, BRABUS also uses the FARO Quantum^S for quality control and product documentation. Existing components are examined as to their manufacturing quality and compared with previously created CAD data. The 3D scanned actual geometry of a haptic component is compared with the CAD target geometry. In the prototype status, up to the early series product, inaccuracies in the manufacturing process are analyzed in this way and corrected if necessary.

"This enables us to present our products in our usual high-quality standards, starting from the ideal CAD model, through the manufacturing tolerances that occur, to the final component. Checks in the prototype or early production phase help us considerably in this respect," Kai Brekoff said.

Especially for product documentation BRABUS combines the possibilities of data acquisition with the FARO Quantum^S. 3D scans and tactile measurements are used in combination.

"This combination allows us to examine extracted features even more precisely," Kai Brekoff said.

> *"In particular, components that belong to the motor and drive assembly require increased measuring accuracy, which we can use here. The result is a perfect documentation display by means of the 3D scans and maximum precision through tactile measured features."*
>
> Mr. Kai Brekoff
> Design Engineer at BRABUS GmbH

Pedal to the Metal

In the future, BRABUS will continue to rely on FARO products. And as the technology leader's products continue to advance, with increasing accuracy and precision, and with enhanced ability to share data, remotely, faster, driving new business insights, those purchases are likely to diversify.

Because both BRABUS and FARO share a similar passion for precision, perfection, and an unwavering dedication to the customers they serve.

"It is the passion for the automobile, the will to perform, the drive for perfection, the striving for excellence — and aesthetics — that sets BRABUS automobiles apart," said Kai Brekoff.

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