

# ROMER ABSOLUTE ARM

KYB, Ororbia, Spain



Pioneers in scanning and reverse engineering for shock absorber manufacturing.

by [Jordi Planell Hernández](#)

Hexagon Metrology's long list of customers and partners includes KYB the largest manufacturer of shock absorbers worldwide. This Japanese giant, with its global presence, uses the ROMER Absolute Arm with integrated scanner for its pioneering reverse engineering work at its Technical Centre in Ororbia, Spain. The measuring arm provides precise, effective and rapid action to a key process, allowing subsequent series production and ensuring excellent levels of quality.

KYB was set up in Japan in 1919 and has production plants in four continents. It employs over 12,000 people who produce shock absorbers, springs and power steering systems, more than 50 percent of which are used in vehicle manufacturing (mainly cars, but also motorcycles). 30% of its products are used in industry including the rail, maritime, construction and agriculture sectors.

The KYB Group has an annual turnover of 2.6 billion USD, 60% of which comes from sales of shock absorbers to the vehicle industry. It has an annual production capacity of over 75 million units.

KYB's European Headquarters, also known as KEH, are located in Krefeld in Germany. It has three factories in Spain and another in the Czech Republic. 75% of the shock absorber production is for original equipment manufacturers (OEM) of the world's key automotive brands: Renault-Nissan, PSA, Toyota, Suzuki, BMW, Mercedes and so on. The remaining 25% is for spare parts and after-sales service (OES).

One of these factories is located in Ororbia (Navarra) in Spain, along with the Technical Centre that serves the company throughout Europe. The ROMER Absolute Arm with integrated scanner was installed here five months ago, where it has been since been fully incorporated into its measurement systems and is now at the cutting edge of reverse engineering techniques.

#### **Ease of use, precision and repeatability**

We discussed this subject with Oscar Beortegui, CAD Manager at KYB Europe. Oscar told us the reasons that led his company to choose Hexagon Metrology and the ROMER Absolute Arm: "The ease of operation and precision afforded by the ROMER measuring arm were decisive aspects when we chose this, but what was really critical was the ability to inspect 100% of any part within a reasonable timeframe, and to perform reverse engineering within our own company. Price is always important, but in our case it was not the decisive aspect."

The ROMER Absolute Arm plays an increasing role in the processes at the Technical Centre: "We are using the ROMER Absolute Arm more and more, because of the many advantages it offers us compared to other measurement systems. The system can be used by many users and the level of precision is perfectly suited to the needs of this sector".

#### **Agility and speed for scanning all kinds of parts**

The ROMER measuring arm is used mainly for scanning stamped metal parts, as well as plastic and cast parts. To perform this work, Oscar Beortegui believes: "We can state very clearly that we have achieved a significant reduction in working time, thanks to the ease-of-use and the full mobility of the ROMER Absolute Arm. The arm does not need to warm up - it can be used immediately, making it quick and easy to operate."

He goes on to explain "There are two profiles of users of the ROMER Absolute Arm at KYB. On the one hand, we have users who are in contact with the manufacture of prototypes and series production, including metrology personnel. On the other hand we have CAD and engineering staff, who need to measure and verify geometric properties such as lengths, thicknesses, angles, and so on."



With the repeatability values of 0.016 mm, the ROMER Absolute Arm is the most precise portable measuring arm manufactured to date. It is available in seven different lengths, ranging from 1.5 m to 4.5 m.



The ROMER Absolute Arm SI is a highly profitable laser scanner solution. The ability to scan without having to calibrate the equipment or set the laser according to part reflectivity or colour gives enormous versatility.



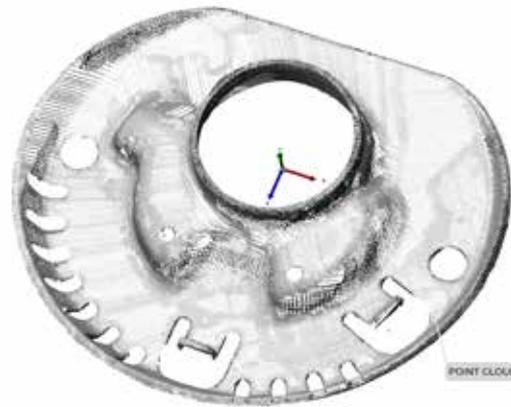
3D digitizing, 3D modelling, reverse engineering, rapid prototyping or copy milling: ROMER Absolute Arm is an all-purpose metrology tool for a multitude of applications.

The size of the parts measured at KYB ranges from shock absorber internal components (which are smaller than 10 mm) up to complete shock absorbers and external components of the suspension, which can measure up to 700 mm. Because of the many components that make up a shock absorber, the tolerances are variable. They can range from micron tolerances in smaller components linked to hydraulics, up to tolerances of 1.5 mm.

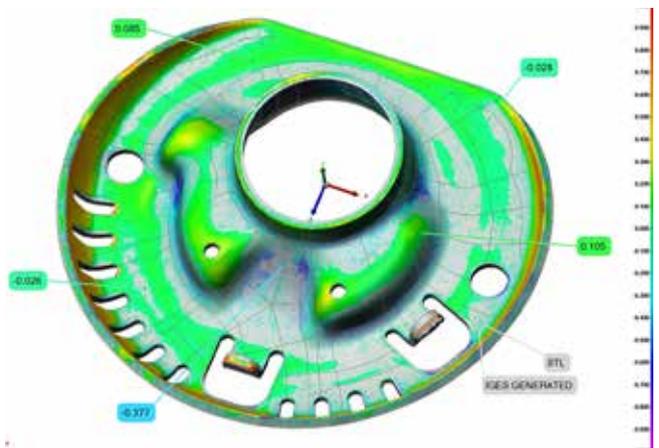
### Comprehensive solution for quality inspection and reverse engineering

KYB's motto reads "Our precision, your advantage" and the meaning of this phrase fits in perfectly with the philosophy and values of Hexagon Metrology. The CAD Manager at KYB Europe Headquarters appreciates the very important relationship with the company and the training process followed by its technical staff: "At KYB, we are very satisfied with the services provided by Hexagon Metrology in Spain, as well as the attention received by their technical and training staff. We can honestly say that they have met the expectations that were generated at the start of the project and in all truth, the investment has been profitable. Other departments at the company have already shown an interest in the possible applications of ROMER Absolute Arm for their own work. To all of this we must add the speed and effectiveness of the training, performed in just two weeks: one week for quality inspection application training, and one week for reverse engineering."

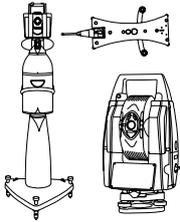
Pamplona and its surroundings are overwhelmed each year on 7th July, during the Festival of San Fermin, where thousands of young men run with the bulls through the streets of the old town. However, just a few miles from the hustle and bustle, in Ororbia, another small yet ongoing revolution has already taken place, with the incorporation of the ROMER Absolute Arm with its integrated laser scanner into digitisation processes for KYB's quality inspection and reverse engineering.



Scanning the entire part with no prior preparation. High-resolution point cloud.



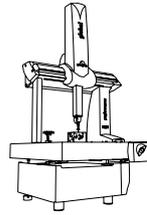
CAD comparison that quickly shows deviations from the theoretical part produced against the theoretical or original one.



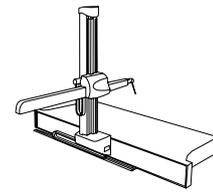
LASER TRACKERS & STATIONS



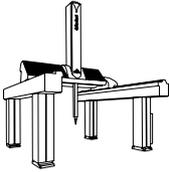
PORTABLE MEASURING ARMS



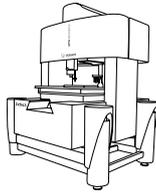
BRIDGE CMMs



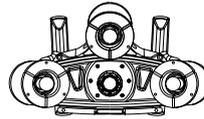
HORIZONTAL ARM CMMs



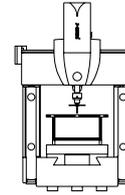
GANTRY CMMs



MULTISENSOR & OPTICAL SYSTEMS



WHITE LIGHT SCANNERS



ULTRA HIGH ACCURACY CMMs



SENSORS



PRECISION MEASURING INSTRUMENTS



SOFTWARE SOLUTIONS



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