



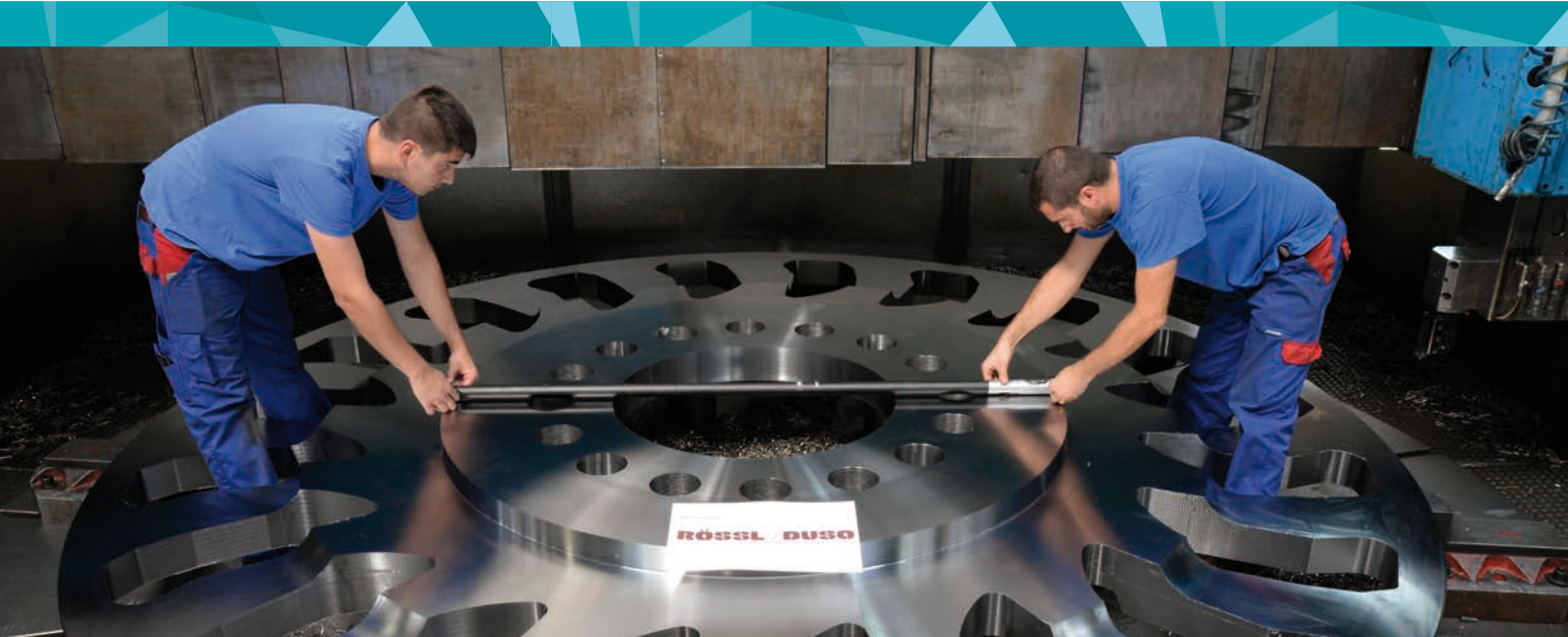
HEXAGON
MANUFACTURING INTELLIGENCE



TESA
TECHNOLOGY

CASE STUDY

TESA UNIMASTER



TESA UNIMASTER: Measuring large dimensions where traditional instruments can't

"I have known the TESA brand for 50 years and it has always been famous for its quality. Using TESA instruments was a dream I had when I was a young boy, which has now come true," says Mr. Dino Duso, one of the founders and current president of the company Rössl & Duso, and a man who exudes passion and enthusiasm for his work. At the age of only 14, he started his professional career as a workman in his uncle's workshop ("a nephew of art", as he likes to call himself). He then became specialist turner and founded the company Rössl & Duso in 1969, together with Mr. Rössl.

"In the beginning, we didn't have the financial means to buy TESA instruments, but by making good investments in terms of quality and safety, our company grew." And the small company, initially founded in a garage in 1969, has turned into a 32 000 m² site at its headquarters in Vedelago in the province of Treviso as well as a factory of 4 000 m² in Pola, Croatia. The company today has 120 employees, 56 CNC machine tools with state-of-the-art technology, and diverse equipment including different electronic, Vernier and depth callipers from TESA, external TESA micrometers with a range of up to 800 mm and also one TESA UNITEST and one TESA UNIMASTER.

The TESA UNIMASTER is a key instrument for Rössl & Duso as it enables the company to measure large dimensions, which wouldn't be possible with traditional instruments.



Control of very large workpieces with a precision of just a few microns

Rössl & Duso manufactures mechanical components such as pinion shafts used for off-shore oil platforms, rudders and rudder shafts for cruise and cargo ships, turbine shafts used in hydroelectric, combined cycle or nuclear power plants, alternator shafts, turbine discs, rotor bodies, Aeolian shafts, cylinders for paper factories with a diameter of up to 8 m and valves.

“We have been using the TESA UNIMASTER every day for about ten years now in order to control all our pieces with a diameter of 250 mm to 4000 mm by coupling a number of extensions,” explains Mr. Alessandro Munari, Quality Manager. “Due to the size of our pieces, we cannot carry out our measurements in a special measuring room. We often work directly on the machine, most of the time under very difficult conditions, as dust and liquids such as oil and water are present. Despite this very intensive use of our TESA UNIMASTER for many years, it is still working perfectly!

“In winter and summer, we put the instrument near the machine 48 hours before the measurements, so that it reaches the same temperature as the workpiece. We also work a lot with a thermometer, which is placed on the workpieces and on the instrument for comparison to obtain more correct measurements.”

While the small instruments are used by all operators, the UNIMASTER is entrusted to three experienced quality managers and two foremen, ensuring three shifts on three machine tools, 24 hours a day. Although an adequate initial training is important, for Mr. Grilletto of the Quality Control, the experience gained through daily use of the instrument is key. “After all, it’s a micrometer, but a very delicate one that has to be used carefully and with special attention. Like all our instruments, the UNIMASTER is recalibrated every year, which is essential for our internal ISO 9001 quality procedures.”



Not only precise but also versatile

Among the strengths of this universal measuring instrument clearly are its versatility and reliability. “Thanks to the UNIMASTER we were able to solve many quality issues”, explains Mr. Grilletto. “It allows us to carry out those measurements that we couldn’t make with conventional instruments such as callipers and micrometers. It is also very versatile: with its standard accessories, we can measure diameters in both shallow and deep bores, the support rollers allow us to measure very large dimensions while avoiding errors due to flexion, and we can change from shaft to bore measurements simply by reversing the measuring force of the measuring element.

Before, we had to make comparative measurements but the control processes took much more time and the results were considerably less precise. In today’s market, this is not possible anymore. The tolerances for our workpieces are very tight, with a maximum circular deviation of up to 6 μm for our rotors. Our machined parts are very complex, as we have to start with whole pieces with a weight of up to 160 tonnes. We practically have no error margin! Therefore it is vital for us to have a high precision instrument that is versatile, fast and reliable for a long time!”

“We are well known throughout the world for machining large dimension precision workpieces for third parties”, explains

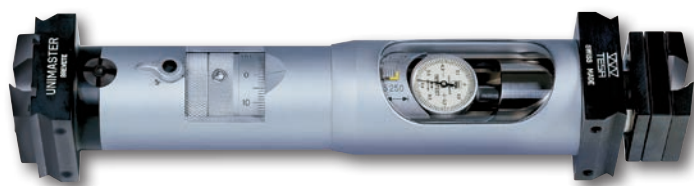
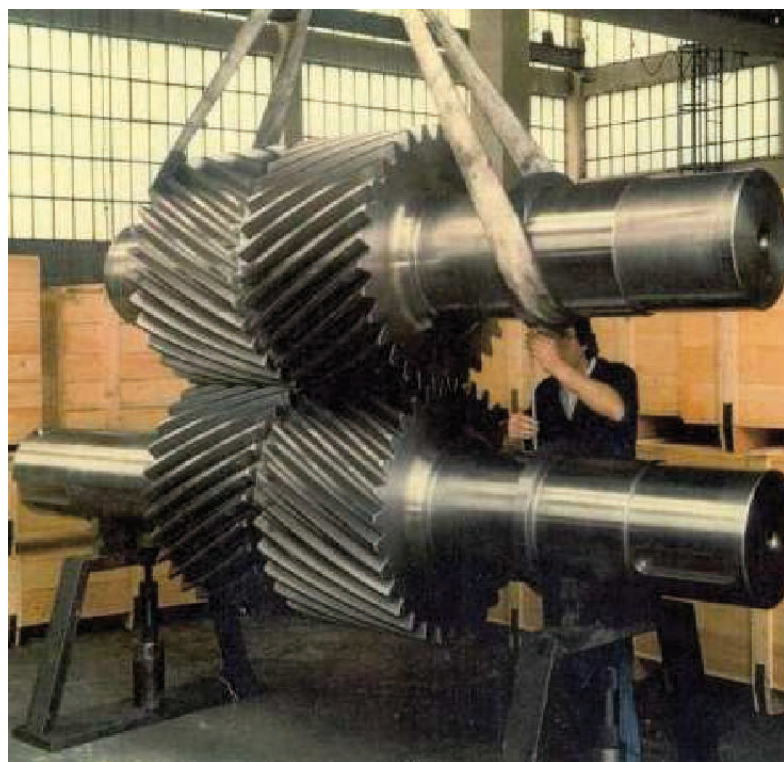


Mr. Duso. "There are only a few companies on the market manufacturing these types of workpieces, but we always have to move forward in order to survive. Today, our work is becoming more and more difficult and our clients' expectations in terms of precision are higher, but the willingness or the possibilities to invest have been decreasing." Mr. Duso's motto, however, is to "Invest! Because we believe in investments, they are part of our DNA, and because this is the only way to be able to machine certain types of pieces. From 1969 until today and with just a few exceptions, we have always invested in something and our success is based on that principle. Today we are still far away from our results from 2008 but we can choose what to do, and most importantly, we are able to manufacture workpieces where others are not competitive anymore. In order to distinguish ourselves, we have to do what others don't want to do and in the future, we will focus on high-precision workpieces of 250 tonnes. This requires skills, preparation and professionalism. We want to count on young people who are willing to do this work and who are passionate about it, just like I am, to produce new pieces every day."

And this is why quality instruments are indispensable. "Today, more than ever before, it is crucial to establish a policy focused on quality at every level of our business, which also includes the choice of our strategic suppliers. The control and verification with high-quality precision instruments is an essential step in our production process."

We thank Rössl & Duso for their friendly support and for the authorization to publish this case study.

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