

User Story

Oskar Frech GmbH + Co. KG

FARO



The combination of FaroArm and Laser Tracker enables extremely flexible measurement.

FARO Laser Tracker optimises machine symmetry

MECHANICAL ENGINEERING / MACHINE CALIBRATION *The large Frech die casting machines are twelve-metre-long giants but even so, extreme accuracy is required in their manufacture. Conventional measuring tools such as spirit levels and alignment telescopes were occasionally no longer enough. Finally the Swabians opted for a Laser Tracker from FARO. From then on there were no more problems, only solutions.*

Oskar Frech GmbH + Co. KG is currently the global leader in hot chamber die casting machines. Materials such as zinc and magnesium are cast using their machines. The components manufactured include metal fittings, laptop and mobile phone housings and toys such as the world-famous Märklin model railways. The Swabians also hold second place in the equally hotly-contested market for cold chamber die casting machines. These machines are used to manufacture whole engine blocks from aluminium, such as the Daimler V8, and structural body parts for Audi. Other typical products include gearbox housings, dashboards and steps for escalators.

Frech machines are true giants. The cold chamber version can be up to 17 metres long and

weigh up to 250 tons and create a closing force of 4,100 tons. The machines take around 11 months to build and the individual parts are delivered to the customers by heavy load transporters. The route to the final destination is therefore a kind of one-way street. Returning faulty machines to the factory in Schorndorf is not an option, due to the enormous costs. It would also not be certain whether there would be sufficient space in the production hall. The individual parts have to be stored in the production shop when they reach the customer, in order to acclimatise before assembly. Only then you can ensure that all the parts will fit together and there is no unnecessary wear. This procedure demonstrates that a high level of accuracy is required for the

manufacture of these enormous machines.

A FARO Platinum measuring arm has been in use at Frech since 2006. This year, those responsible have ordered another measuring device from FARO, the Laser Tracker Vantage. The determining factor was a customer from the automotive sector, who repeatedly reported problems with his machine. After re-equipping with a new casting mould the machine symmetry was no longer correct, the guide rods could no longer be guided accurately into the socket and were colliding early. Frech technicians examined the machine repeatedly but, due to the complex installation conditions, they could not find a cause for the fault with the usual measuring equipment. When inserting the rods after the >>

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The Laser Tracker has become virtually indispensable in the assembly of large machines.

>> change of mould they repeatedly seized. At the end a technician was called in from FARO to discuss the dimensions to be measured and the practical interaction between the mould and geometric tolerances. He was able to detect the fault within a short time using the FARO Laser Tracker. This made a lasting impression on Frech and the FARO Laser Tracker was instantly on the shopping list.

FARO measuring systems are meanwhile used not only at Frech and its suppliers but also during the installation of the machines on the customer's premises. The space around the machine is usually very limited here and there is very little space for measuring or for measuring equipment. Because of this, the combination of measuring arm and Laser Tracker into a new system, known as the TrackArm, is currently under consideration. This would give Frech the best of two worlds, so to speak, as the TrackArm combines the great range and high level of accuracy of the Laser Tracker with the flexibility and reliability of the FaroArm. The great advantage of this is that the measuring arm can be quickly repositioned at will within the measuring range of the laser tracker. In doing so the arm always remains in the same coordinate system, and points can also be reached that do not lie in the visual range of the tracker. The technicians can virtually measure around corners and in this way can inspect even very large components with no difficulty. Wolfgang Schöben, responsible for quality management at Frech, could no longer do without the Laser Tracker: "We have to find and rectify faults and inaccuracies on site, because we take the machine to the customer by heavy goods transporter. There's no going back." For this reason, in Spring 2013 Frech also launched a quality initiative together with its suppliers and defined comprehensive, standard measurement methods in order to remedy recurring quality problems. FARO measuring equipment is the constant

element in this, because Frech demands that outsourced parts are also measured using FARO equipment. If that is not possible, the Schorndorf-based company offers measurement as a service.

Now every area of production at Frech is measured quickly and accurately. This actually happens during production. This means corrections can be made before it is too late and costly reworking would be necessary. "This is crucial because any deviations in a component can affect the whole machine," stresses Schöben. "Subsequent components may then have to be adapted to the deviations." This jigsaw puzzle is costly and can seriously affect the interaction between components.

In the past, Frech measured and adjusted the components using conventional measuring equipment such as spirit levels, micrometers, external micrometers or alignment telescopes. "With FARO measuring equipment we save many man hours," states Schöben. "In addition, customers in the automotive industry demand detailed inspection reports. With FARO systems we can produce these in an instant."

OSKAR FRECH GMBH + CO. KG

Passion has played a crucial role from the outset at Oskar Frech GmbH + Co. KG. This is the only reason why the Swabian tool-making company based in Schorndorf-Weiler near Stuttgart has become a leading global supplier of die casting technologies, with 700 employees. The Frech range leaves no customer requirement unfulfilled. For suppliers of zinc, magnesium or aluminium die casting, Frech have customised solutions for the production of the smallest die cast parts, right up to engine blocks and body parts.

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– 4 GOOD REASONS –

Wolfgang Schöben,
Head of Quality Management at
Oskar Frech GmbH + Co. KG

- 1 Flexibility:** With FARO systems we can measure wherever necessary. This can be at the supplier, in the production shop or on the customer's premises during assembly.
- 2 Accuracy:** In comparison to our old measuring equipment, we really value the precision and accuracy of the FARO models. The patented temperature compensation also ensures reliable measurements.
- 3 Dependability:** We can rely on FARO measuring equipment. If the measurements are right, then the quality requirements of the components are also met. Costly reworking is no longer necessary.
- 4 Acceptance:** Despite its high level of functionality, the measuring equipment is easy to operate. The training required is well within reason. External influences such as temperature, humidity and vibrations have no influence on the measurements. All of this has contributed to the fact that the FARO models have been well received by the employees.

SUMMARY

Frech die casting machines place high demands on accuracy and their measurement must be flexible – not only at Frech itself and its suppliers, but also during assembly on the customer's premises. Frech benefits from the mobility of FARO measurement technology because the transportation of large components and of the whole machine is very time-consuming and expensive.