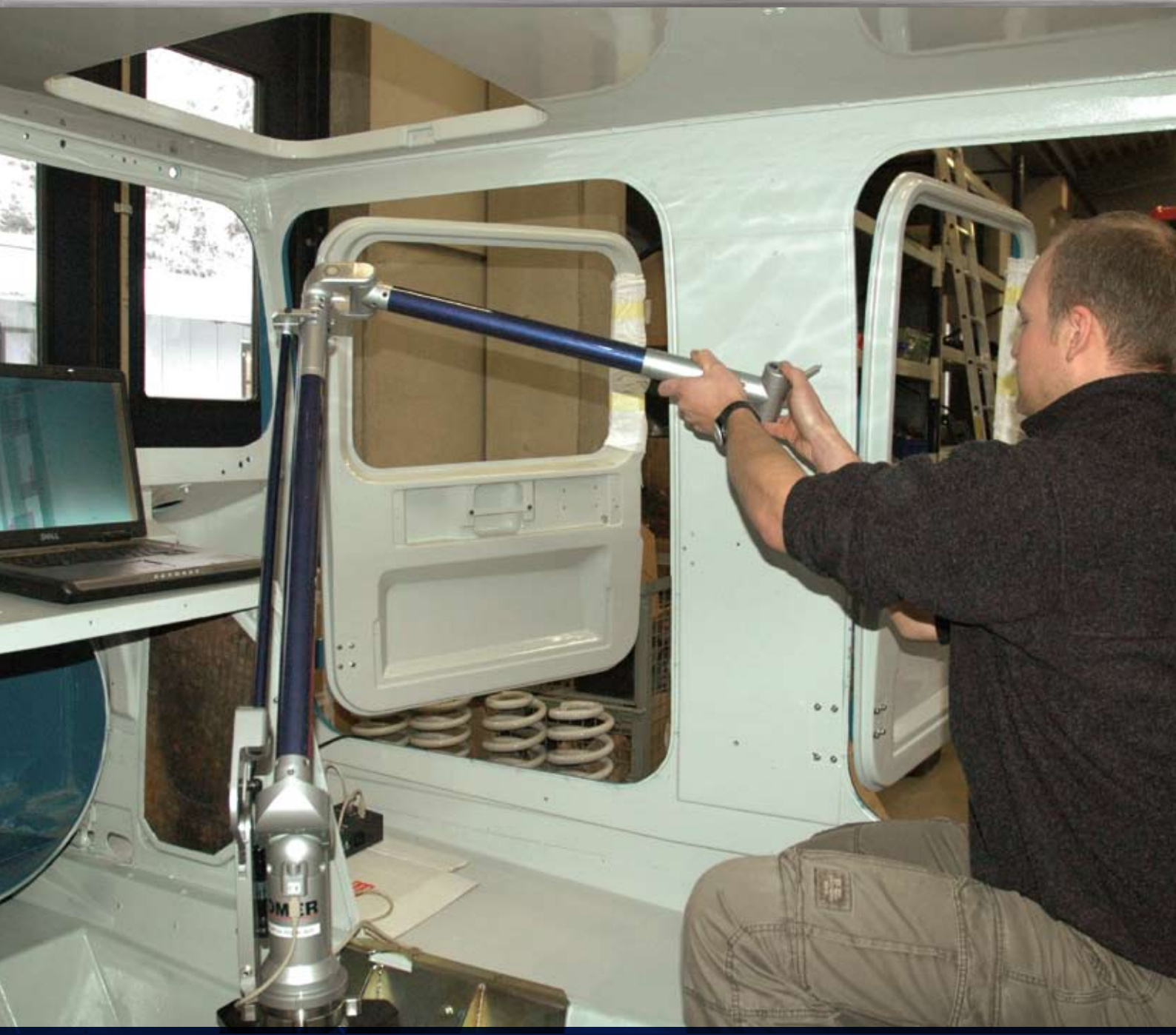
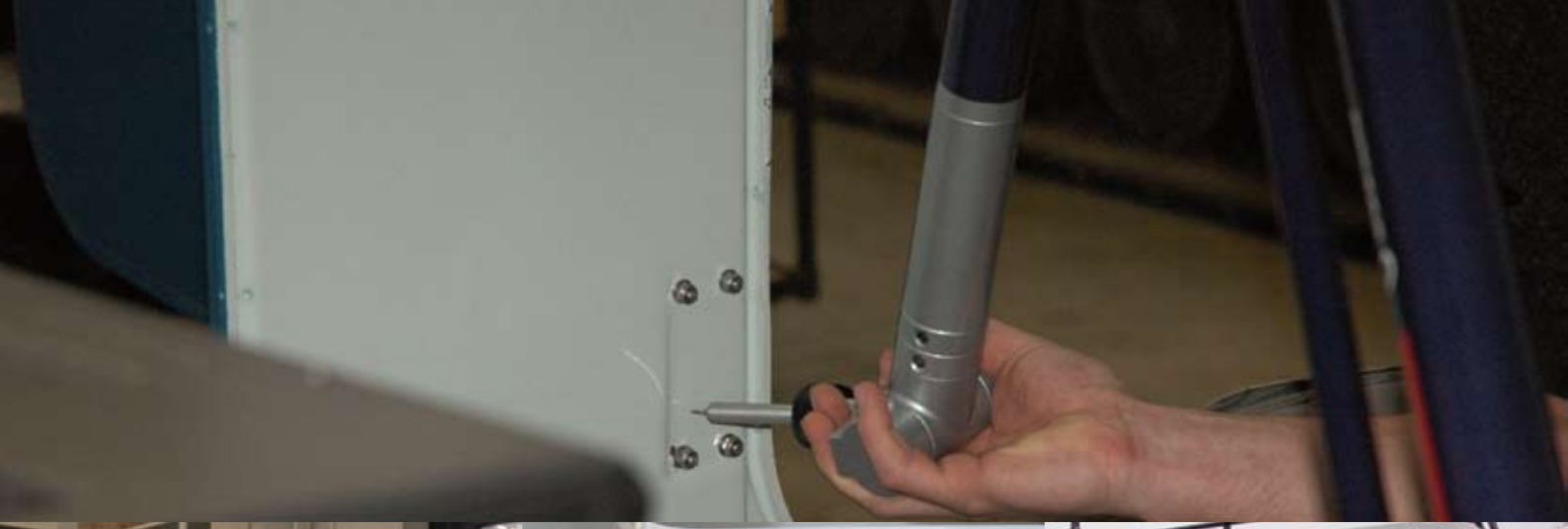
ROMER

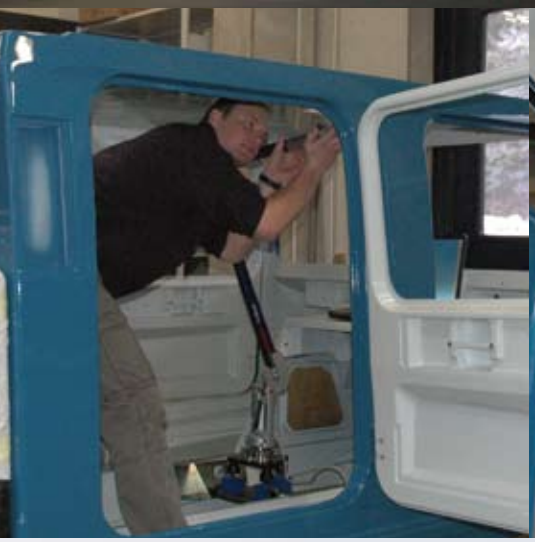
Case Study Hellgeth Wurzbach-Rodacherbrunn

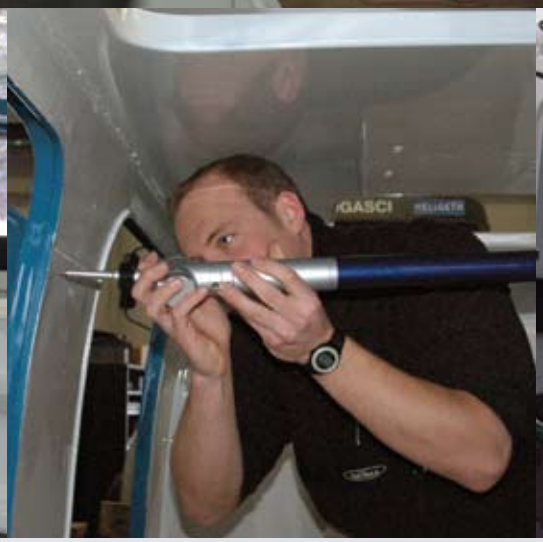
Customised special vehicle manufacturer simplifies prototype construction with the ROMER measuring arm

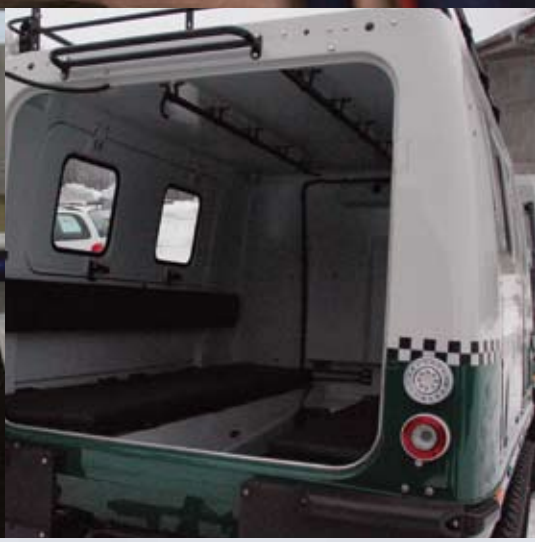


HEXAGON METROLOGY









From empty cabin to finished converted transport vehicle. The typical ROMER flexibility allows you to measure the installation space inside the chassis.

„And Rodacherbrunn is at the end of the long straight," explains Jürgen Hellgeth on the phone. From his description of the route it is already clear: Petrol in the blood is what drives Hellgeth special vehicles.

» A convincing performance from Hexagon Metrology.

Brothers Jürgen and Andreas Hellgeth are entrepreneurs with passion. Their interests centre on motorsport and off-road vehicles. A self-converted racing Unimog with a twin-turbo, mid-mounted engine even secured them the overall winner's spot in the Dresden-Breslau Rally in 2008. From their personal commitment to motorsport and private off-road activities, they developed the business idea: First the Hellgeths designed special vehicles for their own use. However, a demand for individualised details and customised vehicle bodies quickly developed in the off-road and globetrotter scene. At their Wurzbach-Rodacherbrunn facility in southern Thüringen, Andreas and Jürgen Hellgeth built up a business which soon gained a good name among its customers. The snowy forests and mountains of this region in eastern Germany proved the perfect place for building all-terrain vehicles – dozens of test tracks right on the doorstep. Today, the business activities of the family are mainly focused along two lines: Customised special solutions for wheeled vehicles and the modernisation, conversion and sale of tracked vehicles. The strength of Hellgeth is the single-minded pursuit of the fulfilment of the customer's wishes in every area of vehicle-making. Andreas Hellgeth declares: „Only a few vehicle body manufacturers also concern themselves with automotive engineering. We design and optimise all components to meet the exact wishes of the customer, whether it is a gearbox, the right wheel and tyre combination, brakes, chassis, suspension, shock absorbers, winches or tanks." Depending on capacity and order book, each year Hellgeth sells 30-50 tracked vehicles, which come originally from Swedish manufacturer Hägglund and are converted in Rodacherbrunn. These vehicles are suitable for transport and operating over difficult terrain. Equipped with a modern diesel engine and capable of carrying up to 16 people, Hägglunds are in service all over the world – including in arctic and high alpine regions.

The big challenge: Easy data import into CAD and elimination of sources of error

The construction and conversion of all the vehicles are carried out by hand. The individuality of each model demands a great deal of flexibility – not only from the designers and mechanics, but also from the technical equipment. Extraordinary customer wishes can only be realised if the equipment is innovative and efficient. In the end, many of the components for the conversions have to be made first as prototypes. Hellgeth demands a lot from its metrology equipment. Martin van der Koelen, the Hellgeth CAD specialist, describes the difficulties: „The vehicle cabs have hardly a 90° angle anywhere. You reach your wits' end very quickly using a measuring rule and tri square." For the Hellgeth designers, the focus is on two issues: Measurement results that are simply transferable into CAD and the need to eliminate

one potential source of error: The measurement of patterns. „The establishment of fixed measuring points directly on the component is quicker and much more reliable," says van der Koelen. The interest in flexible coordinate metrology quickly developed into a search for the right system. Different measuring arm manufacturers presented their approaches to solving the problem, but only the Hexagon Metrology applications engineers came up with the solution that stood out from the rest. The ROMER measuring arm was demonstrated to the vehicle builders and perfectly fulfilled the need for absolute flexibility and the high quality requirements at Hellgeth.

Systematic approach, quick measurement

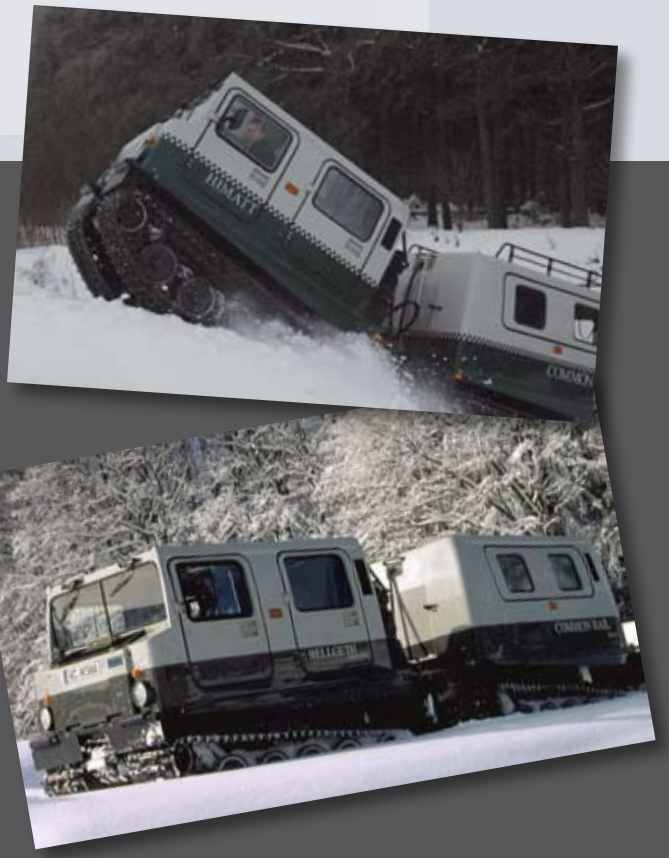
Following a short induction training session on the hardware and software, Martin van der Koelen developed his first measuring processes and got his colleagues involved in the new technology. The measuring arm is used at Hellgeth in the development phase of individualized components to greatly speed up and simplify working with different prototypes. Van der Koelen explains: „Naturally we have a definite idea of how the new component should look from the beginning. The ROMER arm helps us determine the dimensional limits we have to work to within the installation space." The Thüringen vehicle builders always adopt a strictly systematic approach to their tasks. A number of steps precede the actual measuring of the installation space: What precisely is the purpose of the measurement and which geometries are to be captured? What is the exact sequence of the individual measured points? And would initial sketches be helpful? „A short time ago we modified the engine air intake duct on a tracked vehicle and then had to replace the seat console," relates Martin van der Koelen. „We needed to determine the correct bolting points, the dimensions of the floor and side walls and the space required for the air filter. We then wished to import the data, without too much manipulation, into our CAD system. Based on the measurements obtained, we were then able to produce the initial designs. The measuring itself was done fairly quickly because we had planned how we were going to do it well in advance."

The ROMER measuring arm: Light, flexible and portable

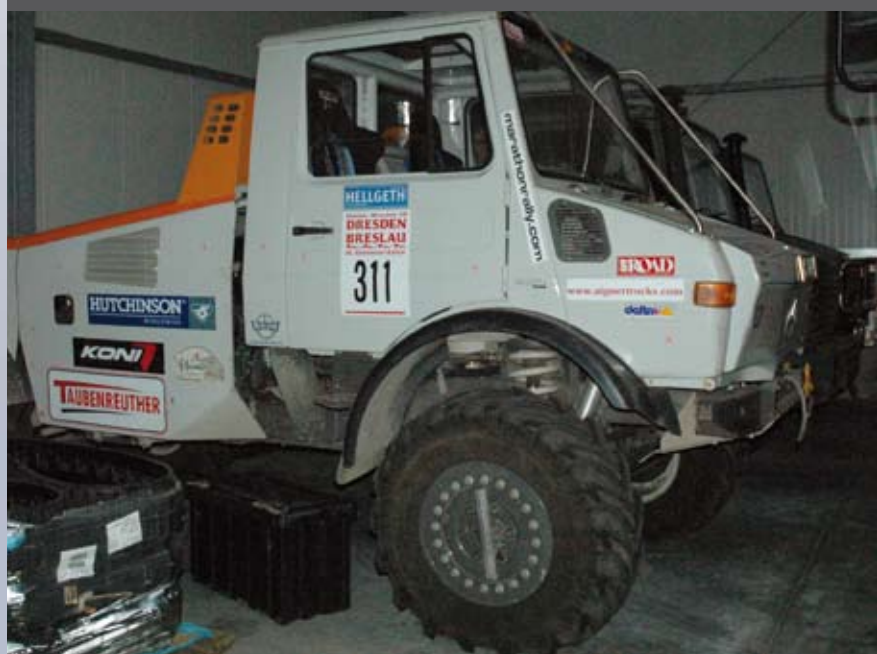
Another application of the ROMER arm is the measurement of existing components. Martin van der Koelen: „For one job we had to copy an existing part. Measuring with the arm made it easy to import the data into CAD." The ROMER measuring arm has completely met the designer's expectations. The arm is now an integral part of many of the company's key projects. The ROMER measuring machine also made its contribution to the success in motorsport and supplied the base data for the parts specially designed for the racing Unimog. From the start, the advice, training and service received from Hexagon Metrology has been exemplary. „The Hexagon Metrology engineer assigned to us certainly put in a convincing performance," recalls Andreas Hellgeth. „We felt we were very well advised. On top of that, the ROMER arm simply had certain characteristics that could not be matched by the alternatives – its very low weight, for example. We even use the arm inside the driver's cab." Jürgen Hellgeth adds: „We can even measure on the milling machine. The flexibility of the ROMER measuring arm is exactly what we need. I think every manufacturer of prototypes would have use for it."

Andreas Petrosino

www.hellgeth.de



Work and leisure vehicles: A Hägglund in its element (top) and the successful Unimog – using the ROMER measuring arm made fully customised components a reality.



ROMER

ROMER is the originator of the portable measuring arm (first created in 1986 in Montoire France). The technological advance, the know-how, the demand for constant quality in the manufacture of the arms, the international presence are the main strengths of ROMER. Other products from ROMER include scanning probes for reverse engineering, non contact probes for tube inspection and milling of raw materials.

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