



ROMER

Leica
Geosystems

Case Study Alstom Transport Reichshoffen
Quality control in the production of mechanically
welded sub-units



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Photo 1



Photo 2

Alstom Transport develops and offers the most comprehensive range of systems, equipment and services on the rail transport market world-wide. With 18% of the market and a turnover of 5.3 billion euros, the company is the market leader for high-speed and very-high-speed trains while enjoying second place world-wide on the urban transport, regional train, signalling and infrastructure markets as well as for all associated services.

The Reichshoffen site is also proud to have produced carriages for the Swedish and Finnish rail transport markets some years ago as well as the second phase of the tramway in Strasbourg.



Measurements taken throughout the factory, and 'not having to pay attention to trailing wires which could become tangled', as Mr Klaiber explains with respect to WiFi.

The metrology department of the ALSTOM subsidiary in Reichshoffen, which is part of the manufacturing quality division under the responsibility of Emmanuel Glad, owns two old KERN theodolites and has recently acquired a ROMER measuring arm as well as a Leica TDA5005 new generation theodolite. 'As part of our quality policy and whilst increasing the project rate, we have reviewed our dimensional control equipment. The ROMER measuring arm - portable, flexible and easy to use - allows us to save more than thirty minutes per component measured and also to take measurements for other departments'.

Being able to perform quicker and more precise controls means that ALSTOM can offer a state-of-the-art service in the field of in-house measurement. In addition to "standard" measurements of chassis sub-unit bodies (photos 1 and 2) in the context of the daily production of railway carriages, the measuring arm is occasionally used for other purposes, depending on the projects in progress. According to Joel Klaiber who uses the machine, the 'measuring arm is portable and quick and can be used for any type of application. We also measure and control the parts received from our subcontractors'.

Joel Klaiber adds, "I use the ROMER measuring arm every day and I must admit that I take great pleasure in working with this machine. My colleagues often say that it's like a game to me. The G-Pad software is very user friendly and it is also very easy to operate the measuring arm. Not only that, but the results are very reliable'.

Major time-saving

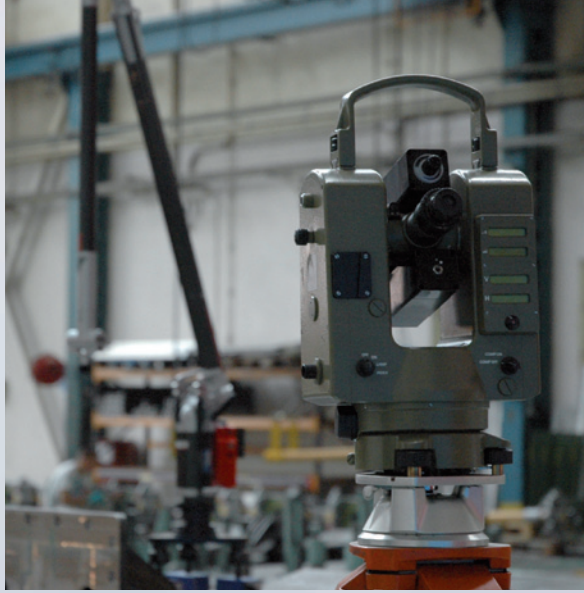
Before the acquisition of the ROMER measuring arm, a tachymeter or a theodolite were used for dimensional controls. Isabelle Mar-

tin, responsible for monitoring "outsourced metrology" explains that, 'Given the size of certain components, using the arm to take measurements represents a considerable time-saving. We save more than thirty minutes for standard measurements of chassis sub-units. This time-saving means that we can control other components and expand our scope of application'.

The managers and users in the ALSTOM metrology department particularly appreciate the service provided by ROMER. 'We were given a quick, easy and effective training on our ROMER measuring arm. Being able to take an initial measurement on a standard part then a direct measurement on our in-house parts meant that we quickly gained self confidence. The result had an immediate positive effect because the very next day, we were already capable of using the arm without any problems,' explains Ms Martin. 'We place great emphasis on taking measurements directly on the components during the training. As a result, the users very quickly feel at ease with the measuring arm and understand the simple operations from the very outset. 'The philosophy of the Hexagon Metrology training courses is to teach what the users really need to know', explains Regis Dinet, Hexagon Metrology Sales Manager for ROMER measuring arms in north-eastern France.

G-Pad and WiFi - genuine trump cards

ALSTOM Transport was immediately convinced by the intuitive G-Pad software. Using WiFi, the arm provides flexibility and simplicity in a highly industrial environment. 'It is a real advantage not needing to pay attention to trailing wires which could become tangled,' admits Mr Klaiber who continues, 'It really is very easy to use the ROMER measuring arm'.



Alstom Transport also owns two old KERN theodolites which are still in perfect working order.



Semi-trailer chassis measuring more than 15 metres in length are measured using the Leica TDA5005.

The fact that the sensor can be changed without needing to be recalibrated, thanks to the automatic recognition function, also represents a genuine advantage and a means of saving time. For the transfer of data, ALSTOM Transport uses a program developed in-house based on an old Excel® program which has been adapted and, according to Ms Martin, 'operates very well'. She explains that, 'The engineering departments more often than not ask for data in Excel, in particular for measurements of unique parts. The transfer is very simple'.

Multifunctionality of the arm

'We use the ROMER measuring arm for almost all three-dimensional measurements and controls, even for parts which have been purchased. I can't even list all the parts we have controlled,' says Joel Klaiber who explains that, 'Depending on the orders or jobs in progress, the Purchasing Department asks us for a more in-depth control than that performed by the supplier. The portability of the arm makes it easy to perform controls across the entire site.'

In addition to the "standard" controls, the Quality Manager at the ALSTOM Reichshoffen site gives us an insight into the new applications for which the ROMER measuring arm can be used. 'Our site has recently become a centre of excellence for railway crash tests. Any customer can take advantage of this unique service. The steel cabins or cabin structures are "crashed" with a view to observing and testing the reaction of the absorbers. The metrology department was called on in-house to take on-site measurements using the measuring arm both before and after the crash and to measure the distortion suffered by all the components. This is a super-application using the measuring arm

which makes the acquisition of the machine genuinely profitable for use in all types of geometric control. With these measurements in mind, we are looking into the possibility of acquiring a ROMER G-Scan 3D camera.'

Leica TDA5005 for large-scale measurements

Semi-trailer chassis measuring more than 15 metres in length are measured using the recently acquired Leica TDA5005. 'This measuring instrument is definitely the tool which is best suited to this type of control. It is the perfect complement to the ROMER measuring arm,' explains Isabelle Martin. And even if the use varies between a measuring arm and a laser station, the philosophy of Hexagon Metrology remains the same: to offer the solution best suited to the customer's measuring needs. Isabelle Martin adds that 'The data processing program was implemented in close cooperation with the users to ensure that they immediately felt at ease with the product. For example, we retained the same names for the target programs as those used with the Kern theodolites so that we would be operational as quickly as possible.'

A promising and exciting future

Future manufacturing contracts will increase the dimensional measurement workload for ALSTOM Transport. 'The control plan will be developed according to the machines available, i.e. the measuring arm and the theodolite. Our investment in the field of metrology means that we are in a position where we can take full responsibility for future projects,' explains Emmanuel Glad.

Another exciting market will complete the workload of the Alsatian plant: renovation. Mr Glad explains that 'the site is also a centre of excellence for the renovation of all types of

equipment and we have national and international contracts. The unique concept provides for the renovation of existing elements with a view to adapting them to the new operational constraints and providing new functions in carriages which are already thirty years old. The recent contract signed with the RATP (Parisian transport network) to renovate the entire RER line B fleet in Paris will involve the use of renovation kits (design & study by Reichshoffen). The ROMER measuring arm will be used occasionally, for example when validating specific parts or checking flatness'.

Anne Willmann

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Did you know?

Before specialising in the design and manufacture of rolling stock components, the factory was home to a foundry belonging to the rich Alsatian De Dietrich family of entrepreneurs. The Reichshoffen site, founded in 1767, was bought by ALSTOM in July 1998.



Leica Geosystems Metrology is best known for its broad array of control and industrial measurement products including laser trackers, Local Positioning Technology (LPT) based systems, hand-held scanners, 3D software and high-precision total stations. Those who use Leica Metrology products every day trust them for their dependability, the value they deliver, and the world-class service & support that's second to none.

www.leica-geosystems.com/metrology

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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