



Accreditation Creates Confidence

by Sabine Reischmann

Leica Geosystems is one of few surveying instrument manufacturers in the world that is allowed to issue calibration certificates as a nationally accredited body. This expertise means increased transparency and better comparability. Accreditation and certification creates confidence in the mind of the customer. And to take this a step further: Leica Geosystems customers also gains from the confidence that their clients place in them.

René Scherrer and Wolfgang Hardegen, the current and future managers of the accredited calibration laboratories for Leica Geosystems in Heerbrugg, compare calibration certificates with the fuel pump gauge at filling stations: “The customer must be able to trust that the gauge shows the actual quantity of fuel being pumped. The customer can be sure that what we promise is delivered.” A calibration certificate can be traced back to national standards and the measurement uncertainties of the measured values are fully documented. For the customer, this means that he can be certain the actual parameters and specifications of his Leica Geosystems product correspond with those quoted in the product literature.

Several factors are critical to attaining the status of an accredited body. Hardegen identifies the first as quality management: “Our quality management system, which is certified in accordance with ISO 9001, forms the basis for accreditation.” The expertise of our staff is crucial: “All employees who work in the calibration laboratory at Leica Geosystems are trained accordingly.” Further prerequisites include an appropriate technical and organizational infrastructure. Technical infrastructure includes the premises; facilities and procedures; and consists of the measurement baseline as well as laboratories for distance, angle, frequency, and level measurements. A further accreditation is being sought to augment these five laboratories with a test laboratory for laser classification.

Baseline

The *baseline* is not a typical laboratory, as it is situated on the west bank of the Rhine river at Kriessern, a village near Heerbrugg. “The bank of the Rhine here is straight for a length of three kilometers with no obstructions to the line of sight – something seldom encountered in the densely populated Rhine valley among high Alpine peaks,” explains Hardegen. Leica Geosystems can check the standard deviation of distance measurements over lengths of 500m,

1,000m, 2,000m, or 3,000m. The accurate determination of atmospheric parameters, such as temperature, pressure, and humidity is essential to obtain precise results.

Calibration Laboratory for Distance

The *calibration laboratory for distance*, dubbed the "railway line" by staff because of its length and design, is used to determine deviations from linearity over distances of 60m and 120m. The results from this test determine the deviation of the highly accurate interferometer distance compared to the measured distance.

Calibration Laboratory for Angles

The *calibration laboratory for angles* is used to determine the standard deviation of horizontal and vertical angle measurements. Leica Geosystems developed a very complex, highly accurate theodolite testing machine (TPM), the only one in the world, to carry out this task. This machine checks the horizontal circle and zenith angles of the instrument completely automatically.

Calibration Laboratory for Frequency

In the *calibration laboratory for frequency* the accuracy of electronic distance meters (EDM) is checked in a climatized cabinet that can be set at any temperature between -20°C and +50°C. Analysis of the frequencies determines the scale error of the EDM.

Calibration Laboratory for Levels

In the *calibration laboratory for levels* compensator setting accuracies or horizontal optical line of sight of levels are determined.

The demand for certificates is continuously rising for various reasons. Wolfgang Hardegen cites the increased competitive capability of customers in tendering for public works contracts as a strong driver. Large private companies also often ask for certificates or customers themselves like to be accredited according to ISO 9001. But the main value added for the customer is still increased transparency, confirmation of confidence in the instrument by Leica Geosystems, and the improved comparability with respect to other products. ■

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Accreditation of Calibration Laboratory

In 1997, the Swiss Accreditation Service (SAS), which forms part of the State Secretariat for Economic Affairs (SECO), confirmed Leica Geosystems in Heerbrugg as an accredited body with a calibration laboratory for distances and angles. Through multi-lateral agreements with international organizations such as EA (European cooperation for Accreditation) and ILAC (International Laboratory Accreditation Cooperation), these certificates are internationally recognized in well over 100 countries. "Calibration certificates are legal documents. Their falsification is considered forgery and perpetrators would be appropriately punished," stresses Wolfgang Hardegen, as he highlights the credibility of the certificates.

Calibration laboratories have to be accredited by the Swiss Accreditation Service (SAS) every five years. Annual audits are carried out in accordance with ISO/IEC17025 by the supervisory authorities between accreditations. Official information about Leica Geosystems' accredited laboratories (SCS 079) can be found on the SECO website (see below; search for 079 under Search "Accredited bodies"). The document lists the tests the laboratory can carry out, as well as measurement accuracies and uncertainties.

<http://www.seco.admin.ch/sas/>