Testo
Case Study

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testo 160 monitoring system
for monitoring objects at the Institute for Archaeology and Conservation of Cultural Assets.

Suitable environmental conditions are one of the most important factors when it comes to storing and conserving archaeological finds and objects properly.

In contrast to other influencing factors, temperature and humidity cannot be eliminated. They have different effects on the objects, depending on the material or combination of materials. A variety of ambient ranges are therefore required for storage during restoration or in depots.

There are no precise limit values for the various groups of materials, but instead there are recommended guideline values. Optimum monitoring of temperature and humidity conditions can be ensured in depots and laboratories using special measuring instruments.

Measuring point for humidity and temperature in a depot.

When the care of finds is their responsibility, cantonal archaeological establishments currently work with a variety of systems, ranging for example from analog thermo-hygrographs or conventional data loggers to central measurement systems for monitoring temperature and humidity.

These involve measurements being made at very different locations. There are internal measuring locations, such as laboratories, depots and refrigerators or freezers. However, important measuring points are also often located externally at excavation sites or exhibitions of archaeological items on loan to municipalities or museums.

Conventional systems have crucial disadvantages in this respect. Individual loggers have to be read out manually on site. Because the data can only be evaluated retrospectively, a fast response in the event of a problem is not possible. Data can also be lost if an impending battery replacement is identified too late. Various manufacturer-specific software packages are also needed when using data loggers made by different manufacturers. This not only increases complexity for the user, but also the effort required for testing and installation in the IT department.

Initial position:

In a well-known archaeological institute in Switzerland, data loggers made by a variety of manufacturers have been used for years, with all their advantages and disadvantages. The institute was now looking for an alternative – a flexible, upgradable and future-oriented measurement solution. It needed to be capable of recording both internal and external ambient data and to provide active alerts for violations of limit values or impending battery replacements. Following their experiences with using different individual solutions, the institute attached great importance to a higher-level, integrated system, enabling access to all measuring locations via a common platform – and not least able to reduce the price per measuring point. In addition, the system needed to work independently from the in-house IT infrastructure, perhaps a Cloud solution only requiring an Internet access.

Solution:

The institute decided on the testo 160 monitoring system which was specially developed to meet requirements in museums, archives and archaeological applications. The system includes data loggers which can reliably measure humidity, temperature, illuminance, UV radiation and CO_2 concentration. These data loggers utilize standard WiFi-technology for transmitting the measurements to a Cloud.

The Testo Cloud is a central application for monitoring, documenting and managing all measuring points, as well as providing alerts via SMS or e-mail when measuring values are critical. The Testo Cloud can be accessed via every web browser by PC, tablet or smartphone and therefore offers the utmost flexibility, because measurement data can be checked irrespectively of the location. There is no longer any need for security checks by the IT department or any software installation or maintenance. Because data are also obtained at external locations, it was decided not to use the in-house WiFi network. A separate WiFi network was set up in parallel using standard WiFi/4G routers with a data SIM card. All the testo 160 data loggers' measuring values are now sent to the Cloud securely and cost-effectively via the 4G network.

The Cloud-based testo 160 WiFi monitoring system.

The Testo Cloud can be accessed via every web browser.

The testo 160 monitoring system at a glance:

- Data loggers for humidity, temperature, illuminance, UV radiation and CO_2 concentration
- Measuring values can be called up on all end devices via the Testo Cloud
- Reliable alerts by SMS or e-mail
- Discreet design, compact construction
- Coloured deco-cover for optimum individual adaptation of the loggers to the respective surroundings

With the deco-cover loggers can be adapted to the surroundings.

Conclusion:

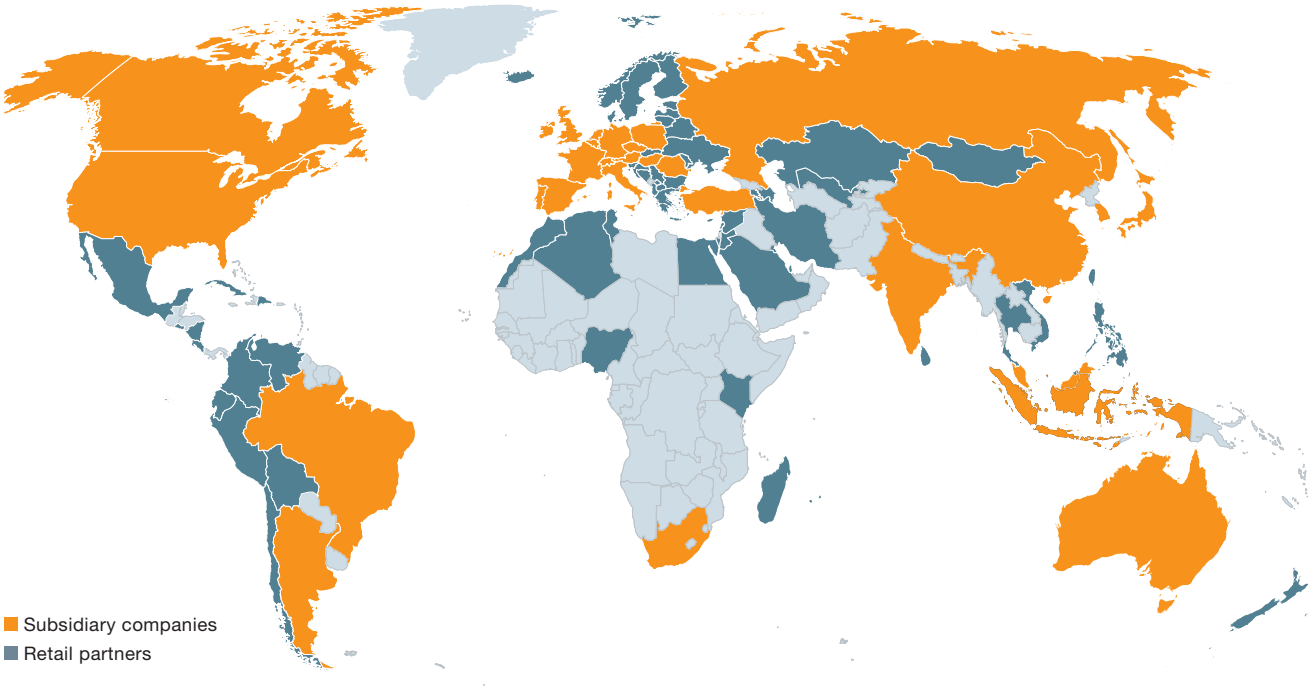
The archaeological institute has now equipped more than 40 internal and external measuring points with testo 160 data loggers. The application range depends on the institute's own guideline values. A temperature of +18°C and a humidity of 45% RH are standard for storage. Exceptions to this are metals, which are stored in a dry environment at +18°C and a maximum of 22% RH. Organic materials are sometimes stored in refrigerators at +5°C and block excavations in freezer chambers at -24°C.

Clear, user-friendly monitoring of all climate parameters is now possible in one system and in real time. In line with requirements, the system has already been extended to include additional measuring points, something the institute was able to do itself thanks to the system's high level of flexibility.

More information:

Detailed information on the testo 160 monitoring system can be found at www.testo.com.

About the company.



Testo SE & Co. KG, with its headquarters in Lenzkirch in the Black Forest, is a world market leader in the field of portable and stationary measurement solutions. More than 3,000 employees work in research, development, production and marketing for the high-tech company in over 33 subsidiaries all around the world. More than 650,000 customers all over the world are impressed by the measuring technology expert's high-precision measuring instruments and innovative solutions for the measurement data management of the future. Products from Testo SE & Co. KG help to save time and resources, protect the environment and human health, and improve the quality of goods and services.

An average annual growth of over 10% since the company's foundation in 1957 and a current turnover of just short of a quarter of a billion euros impressively demonstrate that the Black Forest and high-tech systems go perfectly together. The above-average investments in the future of the company are also a part of Testo's recipe for success. Testo invests about a tenth of annual global turnover in research and development.

More information at www.testo.com