



KNOWLEDGE IS EXPERIENCE

EVERYTHING ELSE IS JUST INFORMATION

Albert Einstein

25 Years of Switchgear Testing "Made by KoCoS"

KoCoS Messtechnik AG, based in Korbach, Germany, has been developing, manufacturing and selling systems for testing switchgear for 25 years.

Intensive and close cooperation with network operators and all leading switchgear manufacturers has played an important role in ensuring that the company is still an innovative and undisputed pioneer in switchgear testing today.

"Knowledge is experience - everything else is just information." With this quote from Albert Einstein, KoCoS highlights the profound knowledge and competence in switchgear testing which the company has acquired over more than 25 years of experience in the development and manufacture of switchgear test systems. Switchgear testing is one of the company's core competencies and KoCoS is proud that product development and manufacturing are still 100% in-house. "That is quite unusual these days. We have everything in our own hands and thanks to short lines of communication we can react quickly when our customers come to us with new requirements", says Christian Studen, ACTAS product manager.

Intelligent solutions for challenging test tasks

At the beginning of the 90's, switchgear tests still involved manual evaluation of oscillograms on paper. However, test personnel often did not have the expert knowledge which was required in order to assess the

recorded measurement data and results sufficiently accurately. Consequently the need arose to provide intelligent tools for performing and evaluating tests automatically. As early as 1992, KoCoS set the new standard with its fully automatic switchgear test system BA2000. This was the first test system of its kind to be operated using Windows-based software with a graphical user interface. Simple and intuitive operation made performing and evaluating sophisticated tests accessible to a broad range of users.

Not only did the consistent implementation of digital measurement technology provide the basis for the fully automatic evaluation of tests, it also led to a significant increase in the accuracy and repeatability of measurement results. Switchgear tests could now be archived digitally and then repeated and compared at a later date under exactly the same conditions.

Integration of fully automatic test stands in the production process

In 1996, KoCoS reached another important milestone with fully automated tests on complete GIS bays. Up until then switchgear had been tested separately or one after the other and test results had been compiled manually afterwards. The new KoCoS systems made it possible to test bays with all drives and switchgear, including disconnectors and earthing switches, in one go. The test plans and test results of all components were organised and saved by bay.

SWITCHGEAR TESTING

In the same year, KoCoS provided a means of connecting its test equipment to customer ERP systems. Rising output made it necessary for switchgear manufacturers to streamline production processes. Increasingly, test systems had to be integrated in automated manufacturing processes. KoCoS developed a solution within the ACTAS testing software. By scanning a barcode located on the switchgear, the appropriate order could be retrieved automatically from the customer's system, along with all the technical data and parameters, and this was used to generate the test plan. In view of the current challenges posed by industry 4.0, KoCoS developers were way ahead of their time.

In 1999, the first automatic test stand for complete final factory testing of MV vacuum circuit-breakers within the production line was put into operation. It covered a full range of tests, including high-current tests, trip tests and insulation tests. ACTAS was well on its way to becoming an integrated complete solution.

Dynamic time measurement and earthing on both sides

Simple comparator measurement methods cannot measure operating times reliably when certain contact materials are used, e.g. with graphite arcing contacts. Here too, KoCoS developed a trail-blazing solution: dynamic time measurement (Dynamic Timing). This method is based on measurement of the dynamic contact resistance (DRM). As well as measuring operating times, this method also allows internal contact elements to be assessed without the time-consuming business of opening switching chambers and enables measurements to be made on switchgear devices which are earthed on both sides.

Pioneering technology for comprehensive tests on all types of switchgear

With the test systems of the ACTAS product line, KoCoS provides flexible standard solutions tailored to fulfil all customer requirements. The modular systems which are freely software-configurable cover all types of tests throughout the entire life cycle of a switchgear. From research, development and production through to commissioning and regular maintenance in the field, KoCoS systems support every type of switchgear at every voltage level.

ACTAS P260 and P360, the latest additions to the ACTAS product line now in its fourth generation, are portable switchgear test systems for on-site use. Notable features of these devices are their rugged design and intuitive operation. On the basis of an integrated database, all tests can be performed, assessed and documented in stand-alone mode without an additional PC.

For stationary final factory testing, KoCoS offers a wide range of modular standard systems with all the necessary power sources. Add-ons which increase the level of automation and facilitate integration in factory systems, such as distribution boards and multiplexers, round off the product range.



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