ZEST ENERGY

Around the world in less than a year

Worldwide circuit breaker testing with CIBANO 500

CIBANO 500 was launched in 2013, and one year later customers all over the world are already using the 3-in-1 test system for all types of circuit breakers. Zest Energy in South Africa also relies on CIBANO 500: Sollie Herbst, Electrical Designer at Zest Energy, talks about their testing procedure with the unique circuit breaker test system.

«Our testing procedure on circuit breakers has never been as efficient as it is now.»

Sollie Herbst
Electrical Designer at Zest Energy (Pty) Ltd.

Zest Energy provides commissioning and routine maintenance services for generators and all associated equipment, including circuit breakers, instrument transformers, and the related protective relays and measurement equipment. In order to support these functions, Zest Energy purchased a CPC 100 and a CMC 356 test set in 2012. One year later Zest acquired a CIBANO 500. It combines a digital low-resistance ohmmeter, a timing and travel analyzer, and a coil and motor supply in a single device. "CIBANO 500 filled a gap in our portfolio. It allows us to carry out all the important circuit breaker tests even when a station battery is not available on site," Sollie Herbst describes.

CIBANO 500

> One system for all tests: digital low-resistance ohmmeter, powerful AC / DC supply, and timing analyzer
> Versatile usage since one system serves for medium- and high-voltage circuit breakers
> Fast and safe operation due to low wiring effort
> Comprehensive overview of test results with one combined report for all tests
> Easy transportation to test site due to light-weight test system (20 kg / 44 lbs)

www.omicron.at/CIBANO500

One system for all tests

Before CIBANO 500 was launched, different circuit breaker tests required several test systems. "We need to perform several tests on each breaker," explains Sollie Herbst. "Firstly, we test the timing of the closing sequence, since the breaker can only be un-racked from the chamber in the open state. During the test we record the closing coil current and the main contact state. Then the contact resistance of each pole in the closed state and the timing of the opening sequence are checked. With a close-open sequence, we determine the minimum time a breaker requires to trip. Afterwards, we perform a minimum pick-up test for the close and open sequence. This is done to assess at which voltage level the close and open coils start to operate the breaker. This level should be below 50% of the nominal voltage. Then we check the behavior of the breaker in case of under-voltage with a test voltage of 80% of the nominal voltage. Finally, we record the motor current of the spring recharge. The peak current should not exceed 10 A and the overall recharge sequence should not take longer than 10 seconds. For this test sequence, we previously required a timing test set, a contact resistance test set, and a variable DC supply," Sollie Herbst describes the test procedure. One can imagine how much effort it was ▸

to transport all the equipment from one test location to another. "CIBANO 500 combines all these functions and it's also really easy to handle," emphasizes Sollie Herbst.

Unique connection concept

On top of all that, the small CB MC2 and CB TN3 modules increase operator safety while saving time during the test set-up. With these modules, all tests can be carried out without rewiring. "It's amazing how low the wiring effort with CIBANO 500 is. Our testing procedure has never been as efficient as it is now. Additionally, the modules are attached directly to the interrupters and data is transmitted digitally. This minimizes interferences," explains Sollie Herbst. Additionally, the CB MC2 modules allow the dynamic contact resistance to be measured.

When CIBANO 500 is extended with the CB TN3 transducer node, a motion / travel analysis can be performed. It allows the entire operating mechanism and the mechanical linkage to be checked by using a linear or rotary motion transducer. The test results can be compared with manufacturer specifications or previous measurements. This reveals indicators for potential mechanical wear of the breaker. Due to CIBANO 500's open design most analog and digital motion transducers can be connected to the CB TN3 module. For measuring linear movements, CIBANO 500 uses a unique method with a magnetic tape. This ensures easy mounting and a fast measurement set-up. The heavy-duty and robust design of the mounting kit decreases vibrations of the transducer and results in more accurate measurements.

Excellent documentation with PTM

CIBANO 500 is operated via OMICRON's Primary Test Manager™ (PTM) software. The PTM guides one through the entire test procedure and quickly provides one comprehensive test report for all the tests that have been carried out. Measurement results are presented clearly and can be displayed as either a table or a diagram. "In addition to saving time during the test set-up, the test documentation has never been so easy," concludes a glad Sollie Herbst.

Measurements on a high-voltage live-tank circuit breaker in Austria.

Testing a SF_6 circuit breaker in Maine (USA) with CIBANO 500.

Zest Energy Pty Ltd.

Zest Energy is located in Johannesburg (South Africa) and boasts extensive expertise in power and energy generation technologies, as well as the electrical integration and supporting infrastructure requirements associated with these technologies. Whether a single or a combination of power generation solutions, the company services include the supply, manufacture, erection, and maintenance of power generation equipment. These range from integrated power plants and co-generation systems to custom engineered power generation solutions for new or existing mining and industrial companies as well as utilities.

zestenergy.zest.co.za