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ACTAS P260|P360

Portable Switchgear Test Systems

KOCOS MESSTECHNIK AG

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[ENG]

ACTAS

Portable Switchgear Test Systems

Switchgear devices are situated at the key points of electrical energy transmission and distribution systems. Their reliability has a decisive influence on the availability, safety and economic efficiency of electricity supply systems.

Only regular, on-site tests can ensure that switchgear devices function perfectly throughout their operational life.

ACTAS test systems provide precise information as to the condition of the chamber and drive unit without requiring them to be opened. The sheer number of parameters to be determined, the wide variety of different types of switchgear equipment in use and the harsh environmental conditions encountered during on-site tests place extreme demands on test equipment.

Comprehensive on-site switchgear testing

Using the integrated control panel of ACTAS P260 | P360, it is possible to carry out complete tests on medium-, high- and extra-high-voltage switchgear. Analysis can be performed quickly, easily, automatically and with a high degree of flexibility within a single test procedure using the following measurements:

- PIR and main contact measurement on up to 12 main contact chambers
- Status of up to 12 auxiliary contacts
- Motor current measurement
- Coil current measurement on up to three closing and opening coils
- 9 analog/digital sensors for pressure, travel and temperature measurement
- 3 voltage measurement inputs
- Static/dynamic resistance determination on up to 12 main contact chambers with PROMET SE
- Determination of operating times with earthing on both sides on up to 12 main contact chambers with PROMET SE
- Undervoltage release and minimum operating voltage testing with EPOS

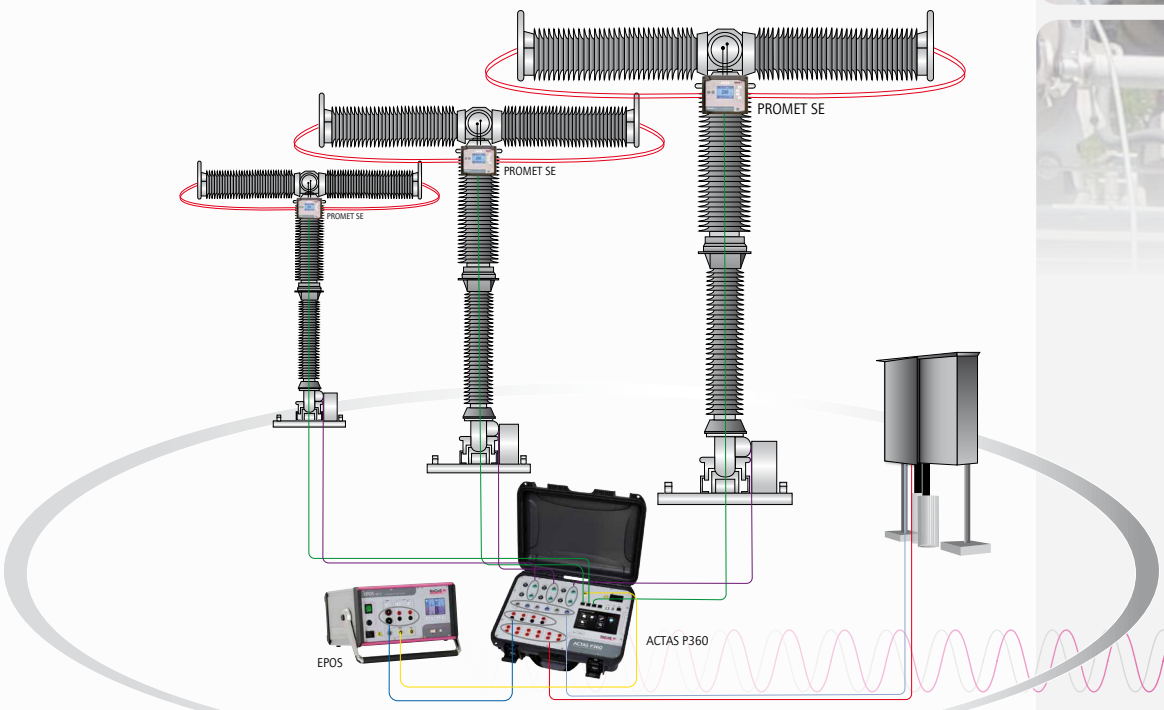
The test fulfils all the requirements stipulated in IEC 62271-100 for assessing the mechanical behaviour of high-voltage circuit breakers.

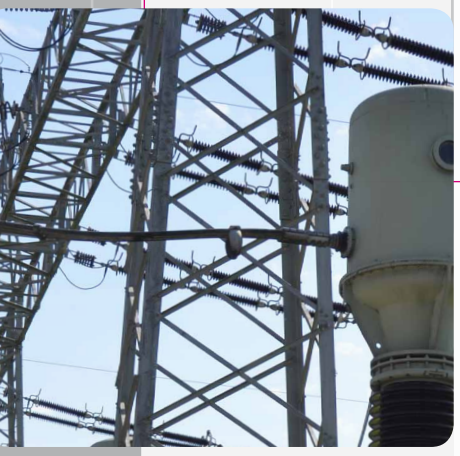
Contact travel visualization

Unlike evaluation based on a simple binary signal, as is used in high-frequency measuring methods, ACTAS P260 | P360 test systems used in combination with the compact PROMET SE ohm meter enable a sound diagnosis of interrupter units throughout the whole switching operation. Measurement results are displayed in curve form. This allows an accurate assessment of the start of travel and the final position of the contacts and even reveals time differences between the movements of the main and resistive contacts.

Assessing the interrupter unit by analysing contact resistance

Regular measurements of the static and dynamic contact resistance allow an accurate assessment of the condition of the entire contact system. This ensures that maintenance requirements can be identified at an early stage and down times kept to a minimum. Using three PROMET SE ohm meters and the CSW3 connection unit, contact resistance measurements can be carried out on up to 12 main contact chambers and can be incorporated within the test procedure. The test current can be set to a maximum of 200 A. Even very low resistance values in the single-digit micro-ohm range can be measured extremely accurately. The measured values are used for the evaluation of tests and are included in the test report.



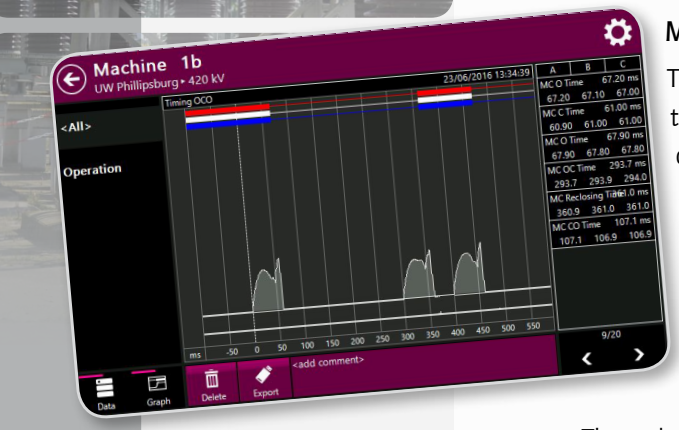


Static and dynamic measurement

A high contact resistance within a switchgear device leads to high power loss coupled with thermal stress which can potentially cause serious damage to the switchgear device. Problems, such as high transfer resistance resulting from poor connections, can be identified by measuring static contact resistance. Dynamic contact resistance measurements can be used to determine the resistance characteristic during a freely definable switching operation. Measurements of this type give an indication of the length and state of the arcing contacts of high-voltage breakers, for example.

Testing with earthing on both sides

Switchgear equipment is often tested with earthing on both sides in order to prevent danger caused by capacitively coupled voltages from neighbouring components. However, when switchgear equipment is tested using conventional measuring methods, earthing must be removed on at least one side. When tests are carried out in combination with PROMET SE, measurements can be carried out with earthing on both sides. Not only does this make tests much safer, it also makes them simpler and quicker because all the steps which need to be taken in order to remove the earth lead are no longer required.



Motor and coil tests

The ability to connect a powerful AC/DC source makes it possible to test the correct functioning of motors and coils of switchgear devices directly and independently of the station voltage. Analyses of motor and coil operation, through the determination of the minimum operating voltage and through testing undervoltage releases for coils, for example, are reproducible and can always be carried out under identical conditions.

Integrated operating and evaluation unit

The resistive 7" touch screen, a new operating concept and extra powerful hardware make for easy operation and optimum display of all information.

The clear, well-structured user interface is self-explanatory and guides the user quickly and intuitively to complete the task in hand. All test parameters are displayed clearly and can be set directly. The measurement results are shown on the display together with the associated signatures enabling conclusions to be drawn directly as to the state of the switchgear device. A test report can be produced in PDF format to document the test.

Remote control over Wi-Fi

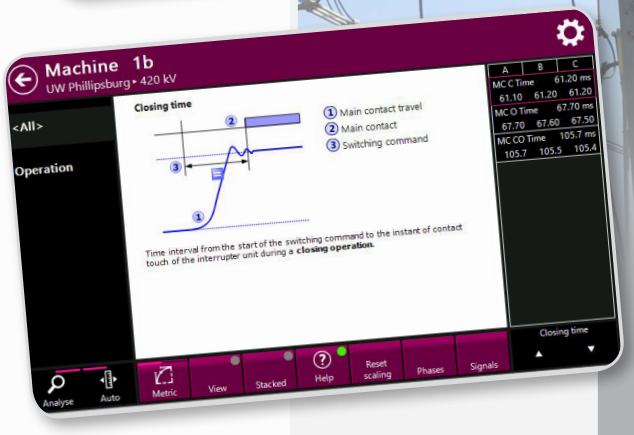
Because ACTAS P2601P360 can be controlled with a smart phone, or tablet etc., the test instrument can also be operated from some distance away. This allows the stipulated minimum distance to be observed when carrying out first trip measurements, for example.

ACTAS testing software

Configuration and analysis of tests are carried out with the ACTAS testing software and the control panel located on the test system itself. The expertise which has gone into the development of the testing software results from more than 20 years of experience in developing and manufacturing switchgear test systems and from close cooperation with network operators and switchgear manufacturers.

It is easy for tests to be called up, edited or used as templates. A graph of all measured signal characteristics, featuring zoom functions and measurement cursors, offers a wide variety options for detailed analysis.

Test analysis and test management can also be carried out with a PC. Test data can be imported or exported with a USB flash drive or a network connection.



Result help

The ACTAS testing software features a comprehensive help function to support users in the selection and evaluation of the measurement results. Descriptions and graphs facilitate the correct interpretation of the results obtained.

Automatic generation of test reports

The software includes an option for automatically creating test reports to document test results. As well as the results themselves, reports also include curve characteristics of recorded signals, switchgear data and test parameters.

Compact, robust and reliable

ACTAS P260 | P360 are compact, robust test systems which are specially designed for portable use and come in a practical hard-top case. During the development process, special attention was paid to their ability to withstand harsh transport and operational conditions.

The use of tried and tested hardware components and the very high electromagnetic compatibility of the test systems ensure that they function reliably, even in extra-high-voltage environments.

Accessories

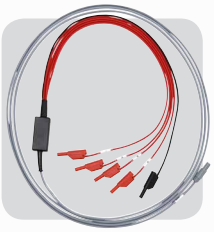
Measuring lead

Screw clamp

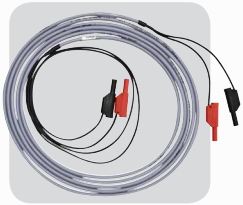
Test clamp for main contacts

Terminal adapter

Main contact cable



Auxiliary contact cable



Voltage measurement cable

Coil cable

Current measurement cable

PROMET SE ohm meter

PROMET SE is a compact, battery-operated ohm meter with an adjustable test current of up to 200 A. Two current outputs and two voltage measurement inputs allow the resistance to be determined at two measurement points simultaneously. Because the device weighs just 1.5 kg and features a compact housing fitted with a carrying strap, it can even be used in situations where it cannot be put down, for example when working on ladders or hoisting platforms.

Technical data

	P360	P260
Operating voltage	110...265 VAC/DC	
Control outputs for closing coils	3	1
Control outputs for opening coils	3	1
Main and PIR contacts	6 x 2	3 x 2
Coil current	3 x 2 (I/O)	1 x 2 (I/O)
Coil / motor / station voltage	3	1
Motor current via shunt	1	1
Sensor (+ / – 10 V / digital)	6	3
Sensor (+ / – 10 V / 0...20 mA)	3	1
Auxiliary contacts	3 x 4	2 x 4
Reference voltage for sensors 10 VDC / 200 mA	3	1
PC connection	1 x Ethernet	
Interfaces	1 x USB A / 1 x USB B	
Interfaces for external devices	3 x RJ45 for PROMET SE 1 x RJ45 for CSW3	
User interface	7" graphical display with touch screen and 2 function keys	
Housing	Robust hard-top case	
Protection class	IP65 (closed)	
Dimensions (mm)	475 x 375 x 180	424 x 340 x 173
Weight (kg)	6.9	5.3

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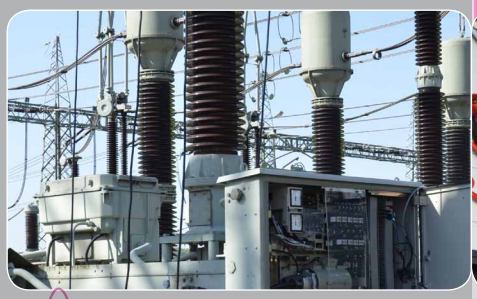

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