

Primary Test Manager (PTM)

Testing and management software for primary assets



Asset diagnostics now easier than ever

How well do you know your assets?

High-voltage assets are subjected to aging and wear that may impair their service life.

It's only when you know the exact "state of health" of your assets that you can take specific measures to;

- > carry out proper maintenance measures
- > prevent failures
- > maximize availability
- > extend the asset's life expectancy.

Testing at exactly the right time

Minor damage can soon develop into costly consequential damage and failures. You should carry out tests at regular intervals to prevent interruptions of this kind. By doing so you can also optimize planning of subsequent maintenance work and replacement of assets.

In safe hands: With the Primary Test Manager

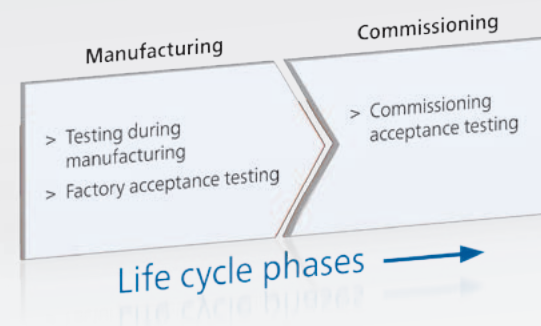
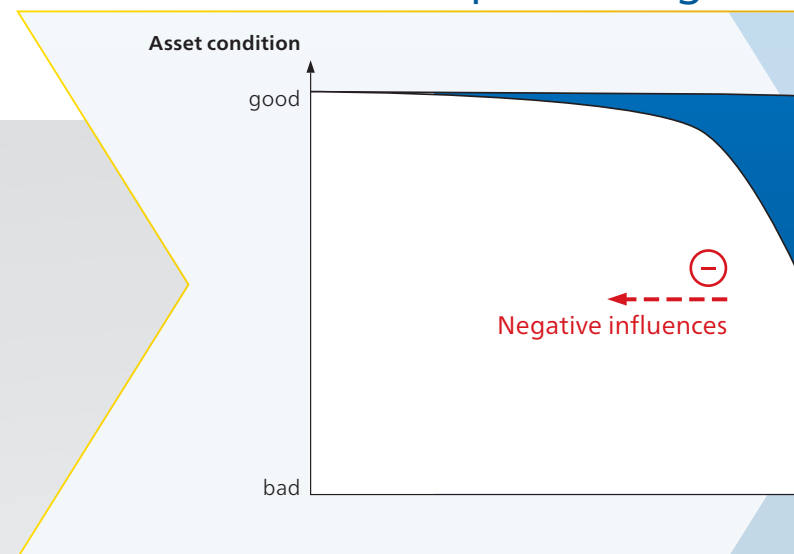
Together with the CPC 100, the Primary Test Manager (PTM) is the ideal software choice for extensive asset testing. With its active, intuitive user interface and easy-to-understand test procedures, the software offers test engineers and asset managers direct support throughout their daily work.



Negative influences

- > Thermal influences
Overload, overheating, ambient conditions
- > Electrical influences
Switching surges, lightning, overvoltages, short-circuit currents
- > Mechanical influences
Transportation damage, short-circuit stresses, seismic activity
- > Aging
Moisture, acids, oxygen, contamination, leakages
- > Protection problems
Underfunction, failure

Proper testing for



This is how easy your diagnostics can be

The PTM enables you to keep time and effort to a minimum while testing power transformers, current transformers, and circuit breakers according to applicable international standards such as IEEE 62 (C57.152) or IEC 60076-1 and IEC 60076-3.

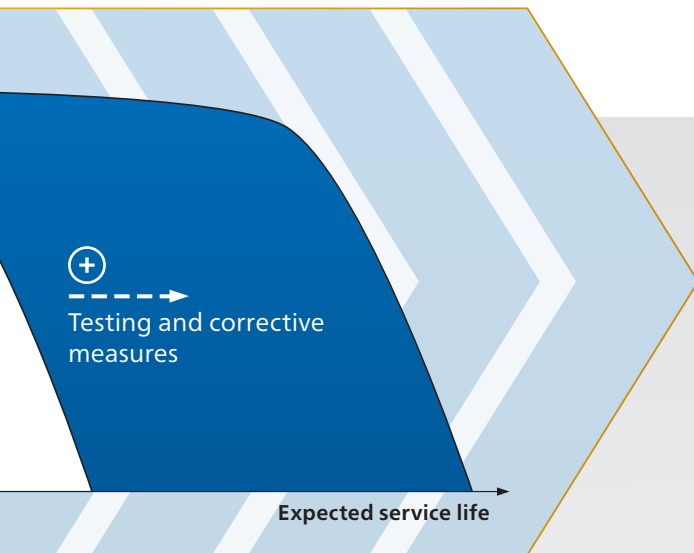
Users can easily;

- > define and manage test objects
- > generate individual test plans
- > carry out user-guided tests
- > generate comprehensive, clearly structured test reports.

Your asset diagnostics couldn't get much easier or much more effective than that, right?



an extended service life



Testing and corrective measures

- > Auxiliary components
Tap changers, bushings, surge arresters
- > Replace worn parts
Gaskets, pumps, fans, contacts, shielding rings, LTC linkages, control circuits
- > Insulation maintenance
Drying, oil retrofilling, degassing, passivators, inhibitors, oil changes



Fast and easy testing

Software support from the outset

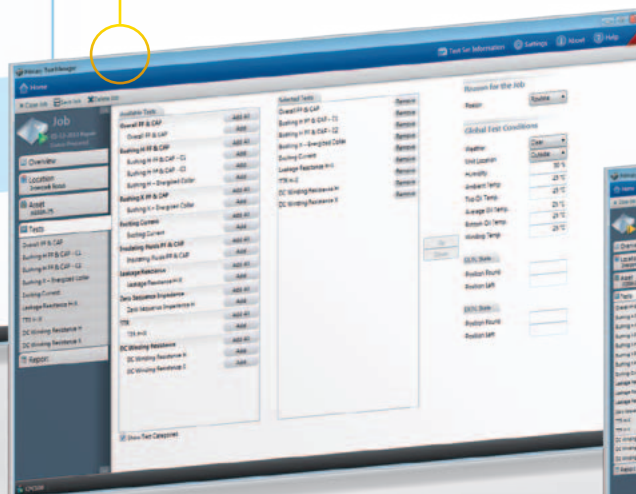
Do you want to generate new tests, import pre-defined tests, or work directly via the connected database? Not a problem, since the clearly structured PTM software intuitively guides you through the entire test procedure in no time at all.

Scale your tests in line with your requirements

You only need to specify electrical data such as the vector group or the bushing type of a transformer.

From this data, the PTM generates a tailored test plan in line with current standards. This not only saves you time, but also prevents errors.

By selecting or de-selecting individual measurements, you can tailor the test procedure to your specific needs with minimum effort.



Asset management at a glance

The PTM's well-structured, comprehensive database enables you to manage all your asset data with ease, including the respective tests, test plans, and reports. In fact, electrical data forms the basis for the dynamic generation of test plans.

A built-in filter function ensures that you are provided with an optimum overview, thereby enabling maximum productivity levels during testing.





Automatic assessment

The PTM enables you to control and operate the CPC 100 directly from a computer. Simple and easy-to-follow wiring diagrams help you to properly connect the test set-up.

Limit values can be defined according to current international standards and classes, or based on many years of OMICRON expertise.

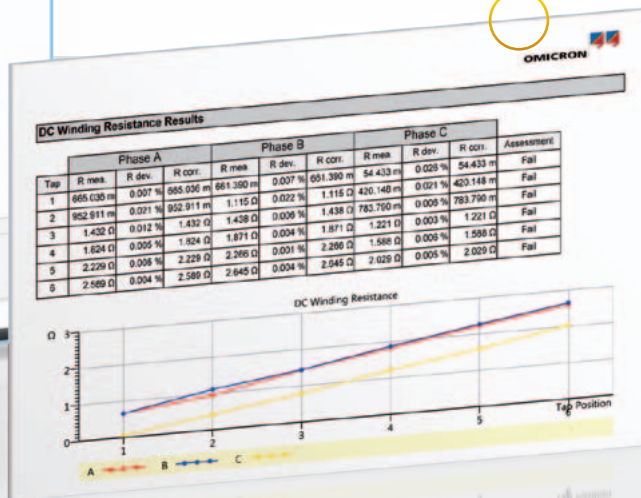
A real-time overview of the test results is given, including a progress update and any open tasks.

An instant "pass/fail" assessment of the test results is displayed based on specified limit values.

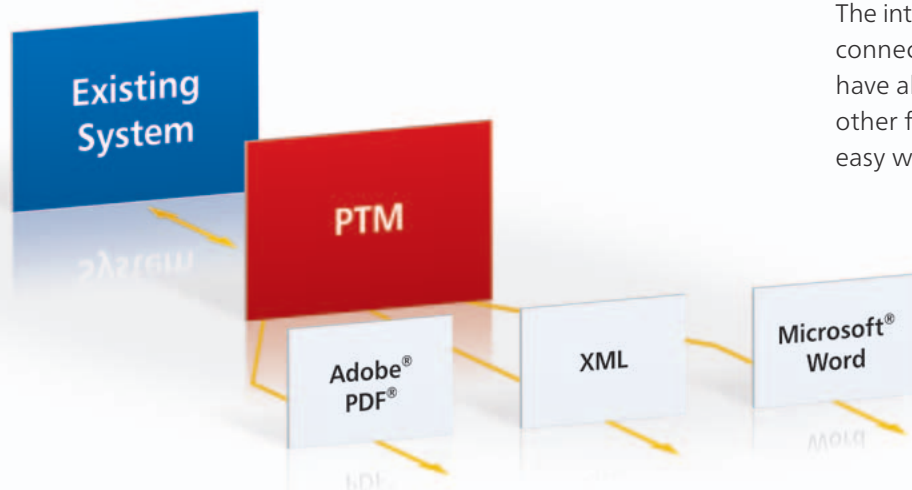
Individual reports in no time at all

The PTM automatically generates protocols for all tests performed. Moreover, you can decide exactly which parts are included in the test report.

Quickly incorporate your company logo, photos and other test results and before you know it, you have your own fully customized test report.

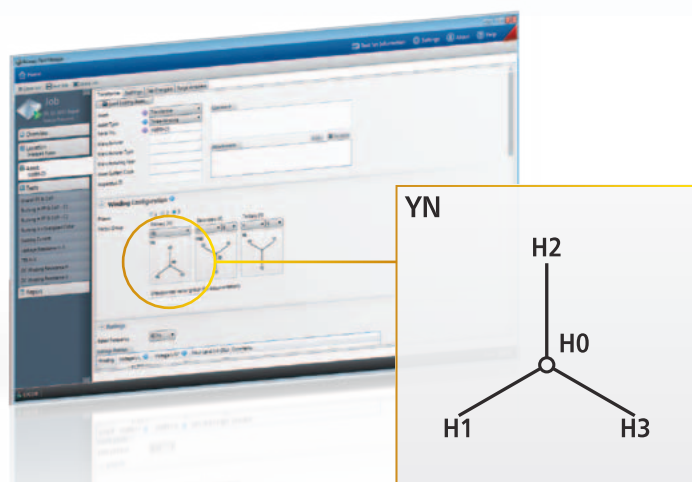


Smart functions for faster testing



Open data exchange

The interfaces on the PTM ensure straightforward connection to the systems and databases you have already installed. Exporting PTM data to other file systems works in exactly the same easy way as an import.



User guidance for enhanced safety

The PTM enables you to enter the necessary asset data quickly and easily, such as vector groups for power transformers as well as accuracy classes for current transformers.

Via recommended and mandatory entry fields the PTM helps you create complete test plans.

Tailor-made test procedures

The test plans are generated by the PTM based on defined asset properties. In addition, you can add or remove further tests.

Parameters such as frequency, current, voltage or ambient conditions can be set during the test.

Helpful wiring diagrams

These diagrams assist you with setting up the test equipment in the right way. In doing so, you ensure maximum safety and minimize the likelihood of measurement errors. This ultimately provides you with even faster, accurate test results.



Clearly structured test results and assessment in real time

During the test the PTM displays all results in real time. With just one click you can switch the display between the table and plot view.

To achieve the best possible overview, you can display or hide various elements of the user interface. In addition, the PTM offers you a zoom function to provide the optimum view, even on smaller screens.



Rapid decisions based on automatic assessment

Limit values are defined according to international standards. If no applicable standards exist, you can access values based on years of OMICRON expertise and adjust these as required.

The PTM actively lightens your workload by automatically assessing individual test results. What's more, the assessments based on defined limit values are clearly displayed in the test reports.

Testing solutions ready for tomorrow

The combination of PTM and the innovative CPC 100 test system offers you a diverse range of test options. As such, you can thoroughly examine power transformers, current transformers, and circuit breakers. In addition the PTM offers you a basis for OMICRON's testing solutions that is ready for tomorrow.

Power and distribution transformer diagnostics



- 1 Power factor / dissipation factor and capacitance of transformers
- 2 Power factor / dissipation factor and capacitance of bushings
- 3 Exciting current
- 4 Surge arresters
- 5 Insulating fluids
- 6 Short circuit impedance / leakage reactance
- 7 Transformer Turns Ratio (TTR)
- 8 DC winding resistance
- A1 Power factor / dissipation factor with variable frequency
- A2 Frequency Response of Stray Losses (FRSL)
- A3 Dynamic tap changer diagnostics (OLTC test)

A = Advanced diagnostics

Current transformer diagnostics



- 1 Ratio with primary current injection
- 2 Power factor / dissipation factor and capacitance
- A1 Power factor / dissipation factor with variable frequency

Circuit breaker testing

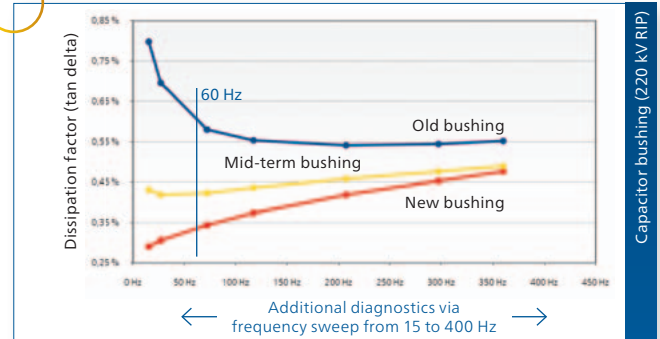


- 1 Power factor / dissipation factor and capacitance of circuit breakers
- 2 Power factor / dissipation factor and capacitance of bushings
- 3 Contact resistance
- A1 Power factor / dissipation factor with variable frequency

The advanced CPC 100 diagnostics functions with the PTM enable you to carry out a high-precision, fast and detailed condition assessment of your assets.

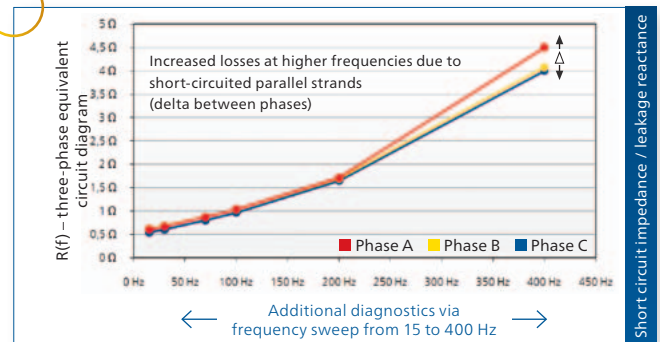
A1 Power factor / dissipation factor with variable frequency

This measurement provides you with values that cannot be determined with individual measurements at line frequency. As such, this enables you to determine whether or not moisture has penetrated the cellulose or oil has been contaminated. Furthermore, measuring at variable frequency helps you to decide whether more intensive analysis or immediate corrective measures are necessary.



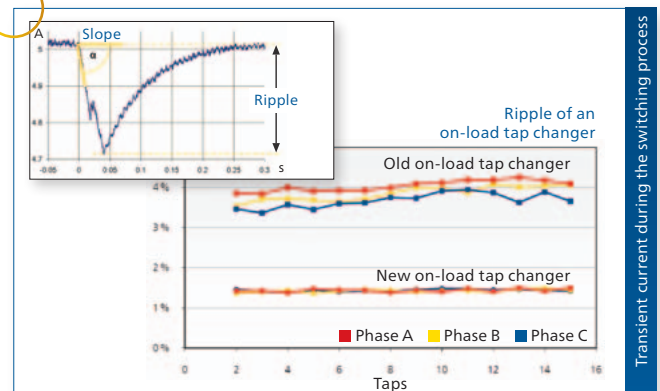
A2 Frequency Response of Stray Losses (FRSL)

The short circuit impedance / leakage reactance test allows you to detect short circuits between parallel strands over the frequency. These short circuits cannot be detected by means of line frequency testing or via other tests such as transformer ratio or DC winding resistance.



A3 Dynamic tap changer diagnostics (OLTC test)

This diagnostics test records and graphically displays the switching sequence – slope and ripple. In doing so, you can detect damaged on-load and de-energized tap changers, tap selectors, and load resistors.



The hardware to go with it – lightweight, robust and

Our all-rounder

The CPC 100 is the perfect solution for you – in terms of generating new tests in and out of substations, as well as during asset manufacturing. You can either operate the CPC 100 directly without a PC or via the PTM software using a PC.

You can find an overview of the full scope of functions of the CPC 100 in our CPC 100 product brochure. Combined with a variety of intelligent additional devices, the CPC 100 is the ideal system for all essential applications in the field of primary testing.



Ordering information

'PTM Advanced Software' for CPC 100

Mandatory license to operate your CPC 100 via PTM.

> Order No. VESM0671

'PTM Universal Software' upgrade

PTM software upgrade with additional analysis features.

> License for 1 computer
Order No. VESM0672

> License for 5 computers
Order No. VESM0673

> License for 10 computers
Order No. VESM0674



3-stage safety switch and warning lamp: safety accessories for the CPC 100.

Safe and fast

The CP SB1 switch box is available as an accessory to the CPC 100. It drastically reduces the length of time needed for testing 3-phase power transformers and, at the same time, significantly increases safety.

Your power transformers only have to be connected once to test the transformer ratio, the DC winding resistance and the dynamic tap changer process.

Reduced wiring work at the transformer results in increased safety for you during testing. The automatic tap changer control makes the test procedure easier, while helping you to prevent errors during testing.



Laboratory precision in practice

Combined with the CPC 100, the CP TD1 measures the capacitance and the power factor / dissipation factor with laboratory precision even in environments experiencing strong interference. This enables the condition of insulation on power transformers, current transformers and other assets to be tested in accordance with applicable, international standards.



In need of more current?

The CP CB2 current amplifier boosts the output current of the CPC 100 (800 A) up to 2,000 A. Thanks to its short connection cables, only very low losses occur.

OMICRON is an international company serving the electrical power industry with innovative testing and diagnostic solutions. The application of OMICRON products allows users to assess the condition of the primary and secondary equipment on their systems with complete confidence. Services offered in the area of consulting, commissioning, testing, diagnosis, and training make the product range complete.

Customers in more than 140 countries rely on the company's ability to supply leading edge technology of excellent quality. Broad application knowledge and extraordinary customer support provided by offices in North America, Europe, South and East Asia, Australia, and the Middle East, together with a worldwide network of distributors and representatives, make the company a market leader in its sector.

The following publications provide further information on the solutions described in this brochure:



CPC 100 Brochure



*Diagnostic Testing Solutions
for Power Transformers*

For a complete list of available literature please visit our website.

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