

DTTS

DISTRIBUTION TRANSFORMER TEST SYSTEM

www.haefely.com





DISTRIBUTION TRANSFORMERS: ROUTINE TESTING MADE EASY

Distribution transformers are “mass production equipment”; high testing-throughput is a must without compromising quality. Our DTTS aims at a highly automated test procedure using well-prepared sequences and minimal manual intervention to keep the test duration of a single transformer as short as possible and to avoid human errors.

Our Distribution Transformer Test System (**DTTS**) has been designed with these requirements in mind, as **a multifunctional tool** for testing distribution transformers. All supported tests are performed in conformity with IEC, IEEE/ANSI and GOST.

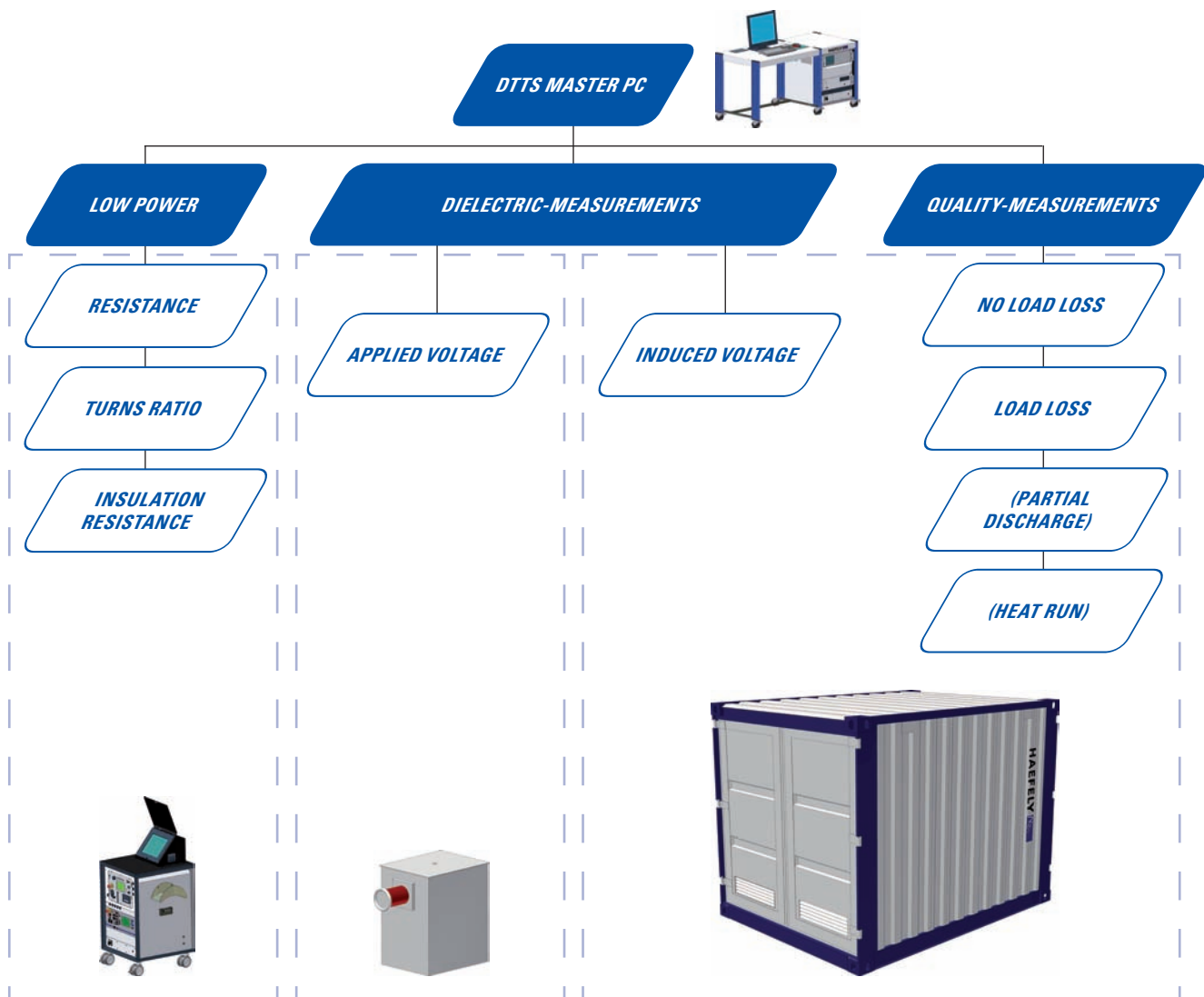
Focus is on flexibility and maximum testing throughput, while ensuring quality and accuracy, continuing Haefely’s philosophy of more than 100 years.



BENEFITS

- Integrates all routine tests within one unique system
- Fulfills all international standards (IEC, IEEE/ANSI and GOST).
- Reduced testing time
- Plug and Play
- Centralized controlling and reporting
- Easy integration into existing production lines

BLOCK DIAGRAM



FEATURES

- State of the art frequency converter
- The highest accuracy and the only completely calibrated and certified measurement system
- The lowest system-noise level allowing highly sensitive Partial Discharge measurements
- Powerful operating software with intuitive interface and automated test sequences

Craw bar
Sphere gap

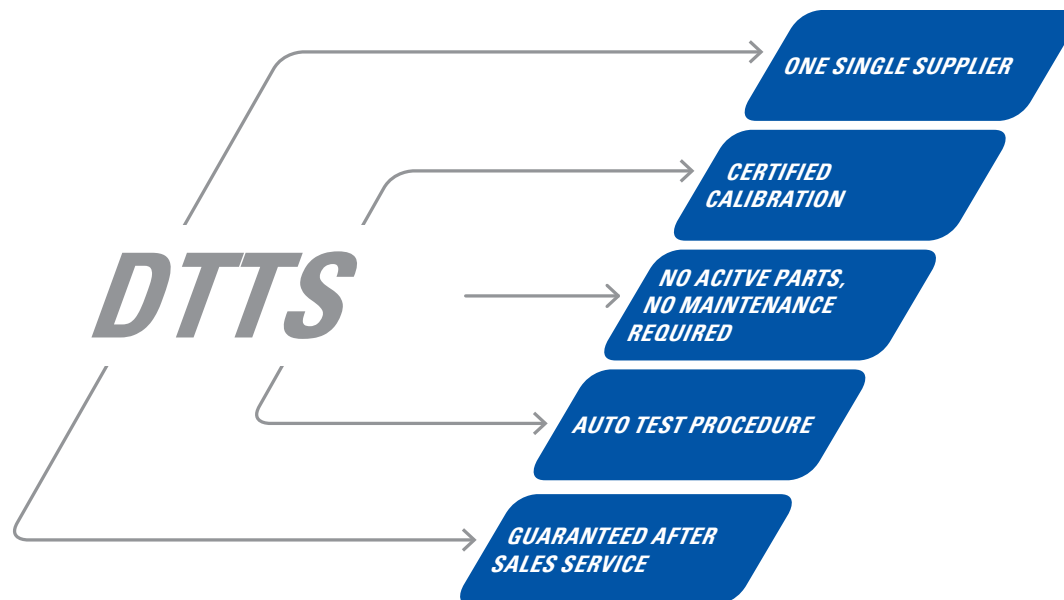
Impulse generator

Voltage divider

APPLICATIONS

It is unique in the market, integrating all routine tests within one compact system. The DTTS is a complete turnkey solution assuring the customer 100% satisfaction.

The DTTS is capable of testing both dry type and oil immersed distribution transformers.



Low voltage capacitor bank switched automatically, reduces mains power consumption.

PRODUCT OVERVIEW

		DTTS 1-533	DTTS 3-500	DTTS 3-1600	DTTS 3-2500	DTTS 3-5000
TRANSFORMER POWER	1 Ph 533 kVA	●	●	●	●	●
	3 Ph 500 kVA		●	●	●	●
	3 Ph 1'000 kVA		○	●	●	●
	3 Ph 1'600 kVA			●	●	●
	3 Ph 2'500 kVA			○	●	●
	3 Ph 5'000 kVA				○	●

- Fulfills all routine tests **AND** heat run
- Fulfills all routine tests

TESTING CAPABILITY

- High voltage side: 6 kV .. 36 kV
- Low voltage side: 110 V .. 2100 V





HIGH CLASS HARDWARE: THE FIRST CHOICE

FREQUENCY CONVERTER - HEART OF THE DTTS

Thanks to our cutting edge frequency converter based front end, the DTTS is smaller, quieter, more flexible and maintenance free compared to a traditional motor generator based system.

Hardware Benefits

- **Testing at any frequency (50Hz to 400Hz) possible**
- **Active harmonic compensation allows $THD_U \leq 3\%$ and symmetric test voltage, even on highly non-linear loads.**

New: Frequency Converter compatible with PD measurement

- Our unique filter topology allows **highly sensitive partial discharge measurements**, even for cast resin transformers.



TMS-560 TRANSFORMER LOSS MEASURING SYSTEM

Our TMS-560, based on the TMS-580 known worldwide for accuracy loss measurement, guarantees the most accurate results also at low power factor

- **The only calibrated and certified measurement system** on the market, fulfilling IEC and IEEE requirements



APPLICATION SOFTWARE

Our DTTS/SWR software, based on years of collaboration with many customers, performs complete automated test sequences from a single computer.

- Advanced test procedure with Pass/Fail functionality
- Automated calculation of all results and reporting in a single document
- Built-in alarms for safe operation
- Transformer templates for easy test object data input
- Graphical DUT connection support



Test Report B117003

YOUR LOGO		Test Report		Order No. : 150641 Serial No. : B117003	
Type	DT03A400/04 D	Customer		Rated Power	400 kVA
Standard	IEC 60076-1	Rated Voltage	18000 V / 420 V	Reduced Power	---
Frequency	50 Hz	Rated Current	13.75 A / 548.88 A		
Conn. & V.G.	Dyn5				
Taps					
Winding	Step	Bottom Tap	Normal Tap	Top Tap	
HV	±1.2 38 %	1 / 17200 V / 13.32 A	2 / 18800 V / 13.75 A	3 / 18300 V / 14.17 A	
Guaranteed:					
Ratio Tolerance			Phase Tolerance		
No Load Loss	400 W ±10%	No Load Current [%]		±0.6 -0.9%	
Load Loss	2000 W ±10% (HV - LV)	Short-circuit Voltage [%]			
	±0.5% (HV - HV -)				
	±0.5% (HV - LV)				
Documents:	Drawing: ...				
Specification:	Specification: ...				
Voltage Ratio Measurement					
Configuration:	HV - LV	Conn. & V.G.:	Dyn5	Detailed V.G.:	
Tap	Normal	U-V: u-u	V-U: u-u	W-V: v-u	Passed
		Ratio	Deviation [%]	Ratio	Deviation [%]
1	41.19	41.21	0.006	41.20	0.009
2	38.82	38.81	0.002	38.81	0.001
3	38.81	38.82	0.019	38.81	0.004
Tested: _____ H.P. Motor Date: 2/13/2011					
Winding Resistance Measurement					
Winding:	HV	T _{amb} [°C]	Deviation Limit between Phases: 2 %		U _{th} : 0
Tap	Current [A]	T _{amb} [°C]	U-V	V-W	W-U
1	1.310	19.1	4.8573	4.8428	4.8639
2	1.310	18.8	4.5084	4.4907	4.5125
3	1.440	18.6	4.3582	4.3430	4.3621
Average Avg @ T _{amb} ΔR [%]					
			0.0044597	0.0044597	0.0044597
Winding: LV					
Tap	Current [A]	T _{amb} [°C]	u-v	v-w	w-u
---	32.62	18.8	0.0024537	0.0024531	0.0024762
Average Avg @ T _{amb} ΔR [%]					
			0.0024597	0.0024597	0.0024597

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Automated report generation. All test results in a single document.



FOR MORE INFORMATION, PLEASE CONTACT OUR SALES DEPARTMENT

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