

# TDAcompact

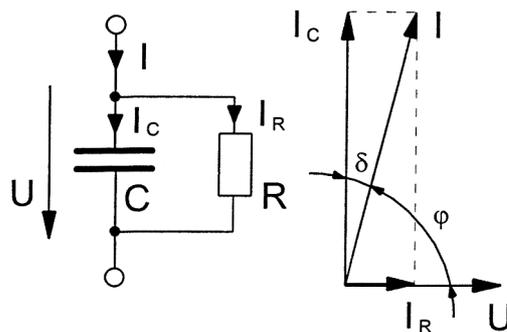


The TDAcompact is a portable capacitance and  $\tan\delta$  analyzer. The focus of the instrument's application is on the analysis of the epoxy-mica insulation of rotating machines. Besides this, the unit is applicable for oil-paper insulation systems and especially for mass-impregnated cables.

Analyzing the dissipation factor ( $\tan\delta$ ) is a traditional method to assess the condition of an insulation system. With the analysis of the dissipation factor, emphasis is more put on the overall health of the insulation system, whereas with partial discharge analysis, the focus is on individual defects producing discharge activity. Therefore, the application of  $\tan\delta$  measurements concentrates on insulation systems, which are relatively stable against partial discharge.

Most prominently, the health of an epoxy-mica insulation of a rotating machine can be assessed using a  $\tan\delta$  analyzer. Especially, the presence of humidity within the winding, the surface contamination of field grading elements, or the polarization losses of improperly cured resin, can be detected. Thus, the  $\tan\delta$  analysis is still a good complement to the partial discharge testing.

## Portable and accurate $\tan\delta$ Analysis



Dissipation Factor

### Principle of Operation

The TDAcompact simultaneously samples the ac current drawn by the device under test and the current drawn by a reference capacitor. Subsequently, the two current traces are evaluated and the capacitance, the  $\tan\delta$ , and the level of the high voltage are calculated. The unit continuously displays and refreshes these results.



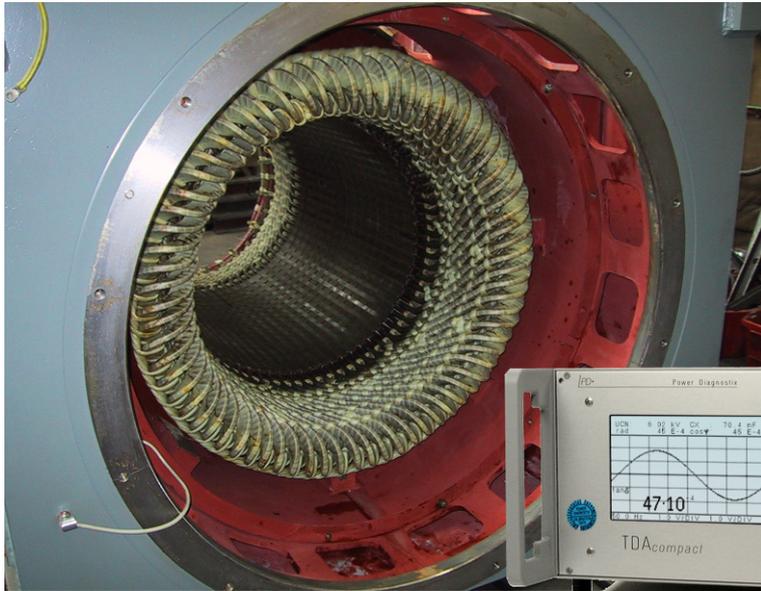
CN :	1000.0 pF	10E-2
tanδ:	46·10 <sup>-4</sup>	10E-3
UC <sub>N</sub> :	6.02 kV	10E-4
C <sub>x</sub> :	70.4 nF	SCOPE
		SETUP
50.0 Hz		MAINP



CN :	1000.0 pF	TDN :	0 E-4	tanδ
RN :	700.000 Ω	FOT N :	10 V	cosφ
CRN :	1000.0 pF			UCN
RX :	10.000 Ω	FOT X :	50 V	CX
CRX :	1000.0 pF			EXIT
50.0 Hz LIN		1.92 V UC	1.83 V	DISP



UCN	6.02 kV	CX	70.4 nF	10E-2
Yad	45 E-4	cosφ	45 E-4	10E-3
tanδ	47·10 <sup>-4</sup>			10E-4
50.0 Hz		1.0 V/DIV	1.0 V/DIV	METER
				SETUP
				MAINP



Therefore, the instrument does not require any user interaction as with the traditional Schering Bridge, nor does the refresh of the display take that long as with automatic adjusting bridge-type analyzers. The basic resolution of the  $\tan\delta$  measurement is  $10^{-4}$ , which fulfills the requirements for rotating machine testing as well as for testing on mass-impregnated cables.

### Stand-alone Instrument

The *TDAcompact* is designed as a stand-alone instrument. In its basic configuration, it comes with precision shunts to measure the two currents. Optionally, the unit can be supplied with a normal capacitor. Generally, the *TDAcompact* is with digital fiber-optic links to the precision shunts, which allow operation on any

potential including the high voltage connection of the device under test. The measuring frequency can vary between 20 and 500Hz or is fixed to 0.1Hz (VLF). Upon request, Power Diagnostix can supply complete portable  $\tan\delta$  testers including the high voltage transformer.

### Modular Concept

Besides the stand-alone field test application of the *TDAcompact*, the instrument can also become a part of a larger and automated test system. Using the software *HVpilot*, the instrument will be read according to a pre-programmed test sequence. Besides  $\tan\delta$  measurements, such automated test systems further include partial discharge measurements and so-called step tests.

Offering adequate resolution and accuracy as well as an unmatched portability, the *TDAcompact* is an excellent choice for field-type dissipation factor measurements. Additionally, the *TDAcompact* can be used as a module of a flexible automated test system.

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