

Zensol new instrument for OLTC testing

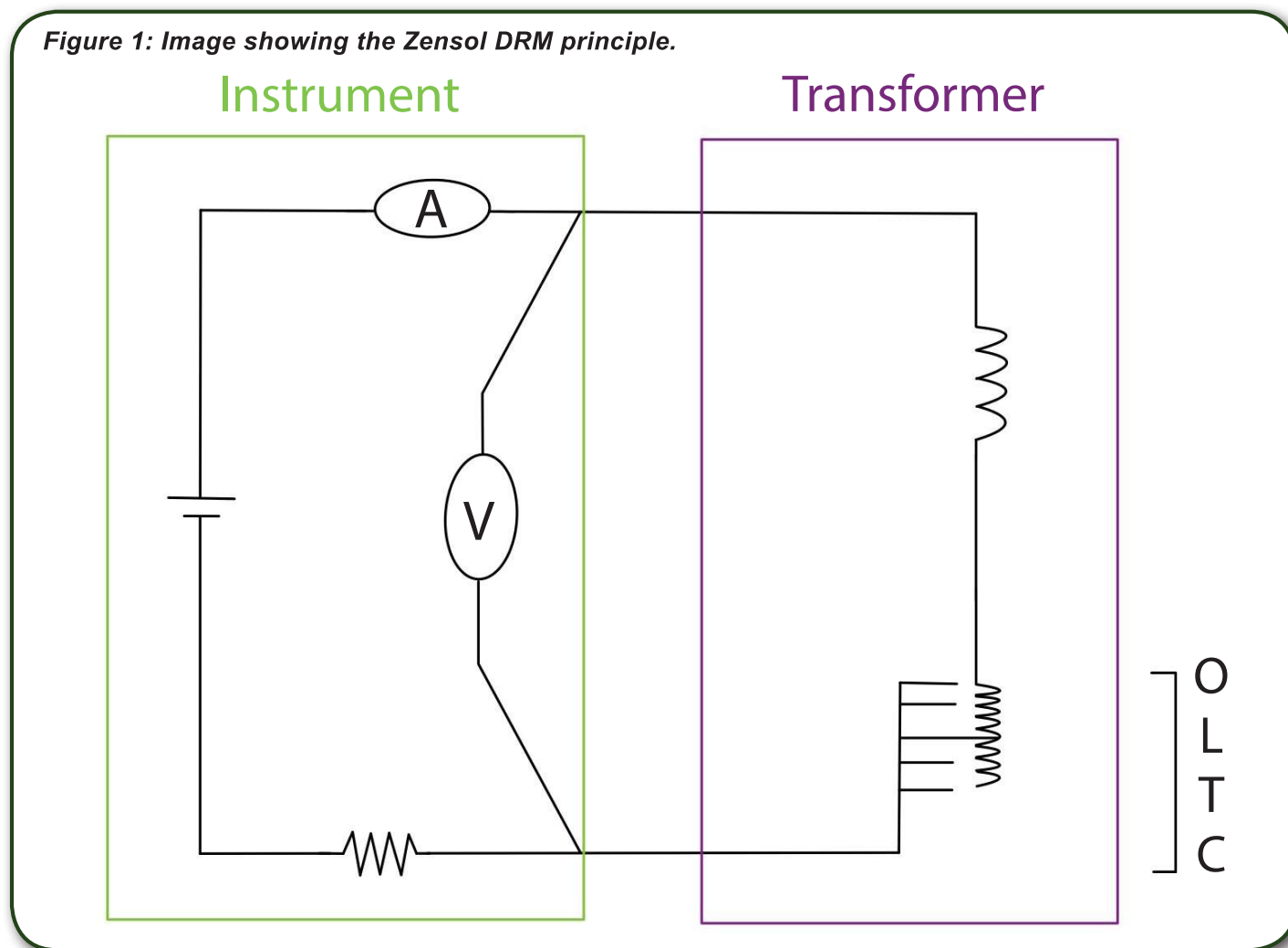
According to CIGRE A2.34, the dynamic resistance measurement or DRM (OFFLINE) is a test that offers diagnostics for several diverter or selector switch malfunctions such as: contact problems, broken springs, broken transition resistors, poor contact pressure, inadequate transition time, momentary open circuit, and synchronism motion issues.

ZENSOL'S DRM PRINCIPLE

Tap windings are powered with a DC voltage source. The current fluctuations are recorded during the switching process. The schematic below shows the principle of the dynamic resistance measurement.

"The TAP-4-PLUS with TAP-DRM accessory can perform dynamic resistance, vibration recordings, and motor current at the same time."

Figure 1: Image showing the Zensol DRM principle.



Like the TAP-4, the TAP-4-PLUS can test all types of OLTC: resistor, reactor, or vacuum, of any brands (Maschinenfabrik Reinhausen (MR), ABB, Federal Pioneer, Ferranti, etc.).

Figure 2: Image showing the typical switching sequence of a tap changer.

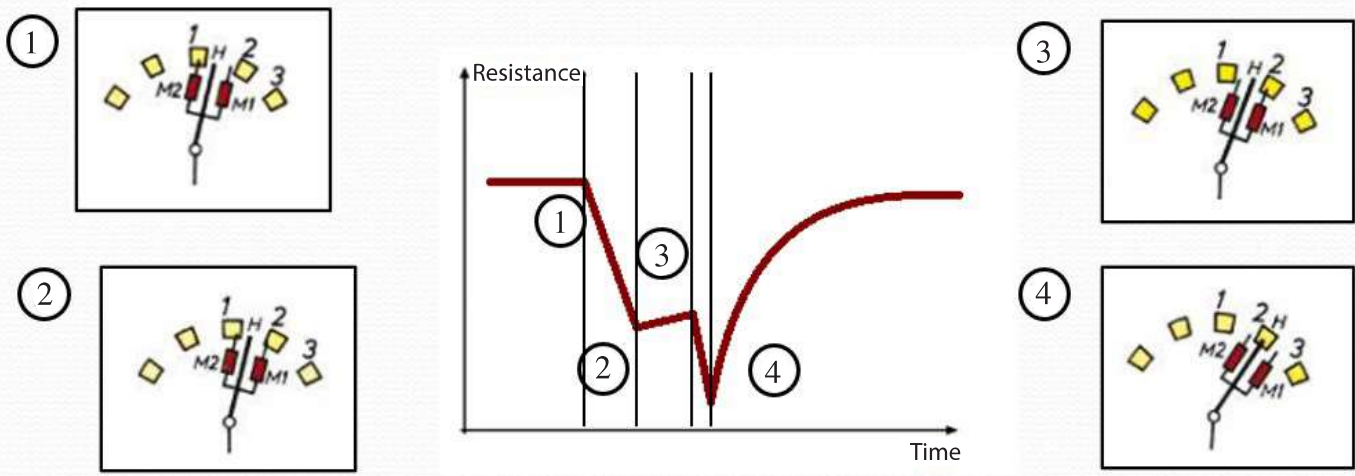
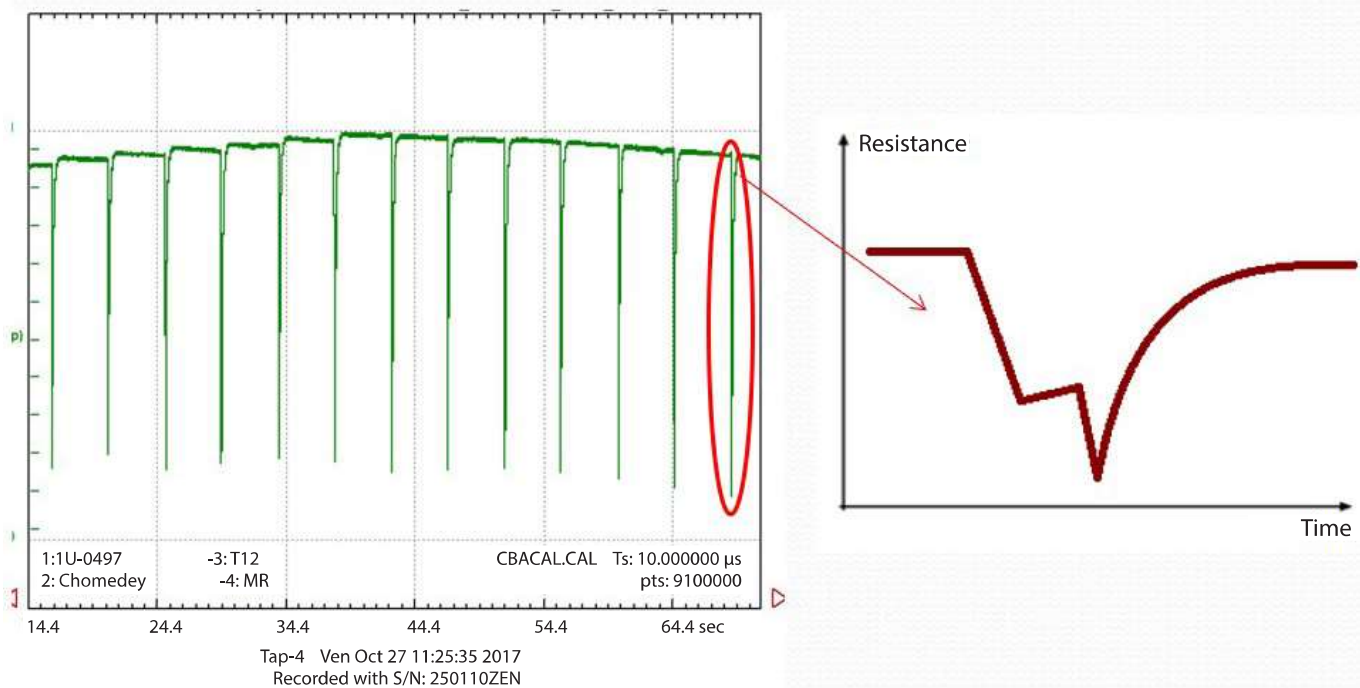


Figure 3: Image showing an example of DRM graph for an OLTC



The TAP-4-PLUS is the newest instrument by Zensol for OLTC testing. The TAP-4-PLUS with TAP-DRM accessory can perform dynamic resistance, vibration recordings, and motor current at the same time. Thus, this will benefit easy timing correlation between motor current, vibration, and DRM.

Figure 4: Front panel of the TAP-4-PLUS

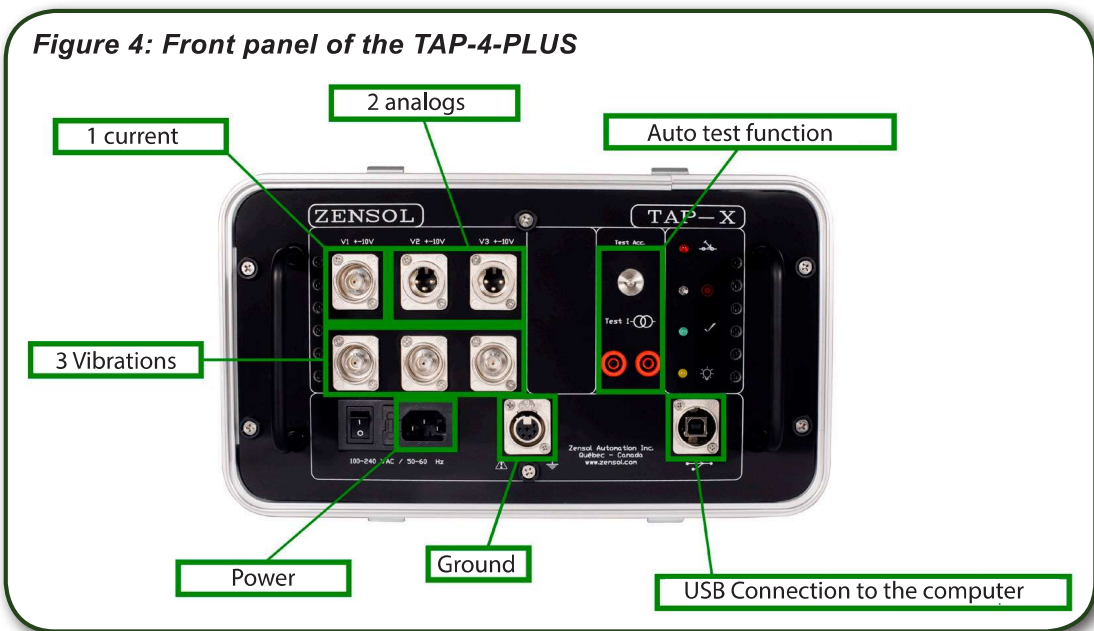


Figure 5: Image showing the different malfunctions detected on a transformer.

PROBLEMS DETECTED AND METHODS OF TESTING ON THE OLTC		
DIAGNOSTIC METHOD	OLTC TYPE	
Zensol Test	VIBRO-ACCOUSTIC	Vacuum Reactor Resistor
	MOTOR	All
	DYNAMIC RESISTANCE	All
	DISOLVED GAS ANALYSIS	Vacuum Reactor Resistor
	IR THERMOGRAPHY	In-Tank Compartment
	PROBLEMS	
	L - Low	Linkage/Gears
	M - Moderate	Timing/Sequence
	G - Good	Control/Relays
	E - Excellent	Motor Brake Lubrication
	Contacts alignment :	
	Arcing	
	Overheating/Coking	
	Contact wear	
	Transition	
		G G G G G E E E E G E E G G G G E E E L M L M E M L E E E E
		TAP-4
		TAP-4-PLUS

Widest detection spectrum

Table from CIGRE A2.34
Vibro-acoustic monitoring also recommended by IEEE.PC57.143

For more information, visit our Sharing knowledge page on OLTC <https://www.zensol.com/general-articles-about-oltc-testing-tap-changer-testing/> and read the article: "The vibro-acoustic method as fast diagnostic tool on load tap changers through the simultaneous analysis of vibration, dynamic resistance and high speed camera

recordings" (<https://www.zensol.com/general-articles-about-oltc-testing-tap-changer-testing/#section5>)

Contact us at info.support@zensol.com or visit us at www.zensol.com



ZENSOL

TAP-4-PLUS

The newest instrument for OLTC testing



Correlate **dynamic resistance (DRM)**, **vibration** and **motor current** recordings