



ROTOR INTER - TURN SHORTS DETECTOR (RITSd)



APPLICATION

A Low Voltage Test Unit For Detecting Winding Faults In Power Plant Alternator Rotors.

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This semi-automatic equipment allows inter-turn and earth faults in the rotor windings of large electrical generators to be detected and located by a simple, rapid and safe low voltage test. The test may be carried out with the unexcited rotor winding stationary or at speed and is therefore particularly useful for detecting and locating faults which are speed dependent.

Typical applications include the routine testing of generators by power utilities and the monitoring by manufacturers and repairers of the rotor winding during its initial fabrication and any subsequent repair.

The RITSD may be left permanently connected to the rotor winding during re-insulation work, so that any defects are immediately apparent.

The equipment is easy to use, and the adjustment of the controls is non-critical, making it almost impossible to produce erroneous results due to maladjustment. The test should ideally be carried out on a routine basis so that any winding deterioration may be spotted and correlated with other effects such as increased excitation current or mechanical vibration.

The unit is housed in a hard (polycarbonate, polypropylene, ABS) case and is supplied complete with a set of connecting leads, contact magnets and a comprehensive manual containing examples of typical fault conditions.

Also included is an in-built oscilloscope (8-inch screen), a simulator/calibrator that simulates a rotor winding and can be used to demonstrate the principle of operation of the RITSd.

The instrument has an additional internal rechargeable battery pack for use where mains supplies are not readily available.

Oscilloscope: It is a full-functional oscilloscope with a touchscreen. The waveforms can either be stored within the device or can be saved on an external flash disk via USB port, or can be connected to a laptop (not provided with the instrument) if required.

PRINCIPLE OF OPERATION

A DC voltage step is applied to each end of the rotor winding in turn. Each reflected wave, at the input end of the winding, is monitored, and the two waveforms are superimposed automatically and monitored on a single-channel oscilloscope. As the half windings in a rotor are identical, the two waveforms monitored at each end of the rotor will also be identical for a healthy winding. Fig. 1 shows the two waveforms superimposed for a typical fault-free winding.

A winding with a fault will cause different voltages to be monitored at the two ends, and Fig. 2 shows a typical oscilloscope display of inter-turn shorts.

Photographic techniques are not required as the display is continuous.

A facility is included to allow the injection of pulses into either Slip Ring 1 or Slip Ring 2 as well as the normal 'AUTO' operating mode.

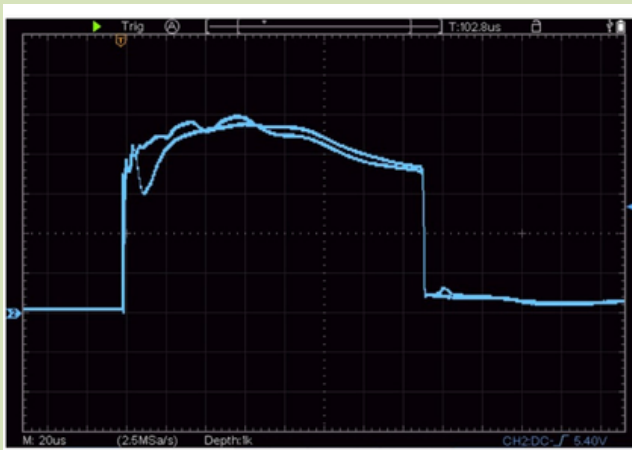
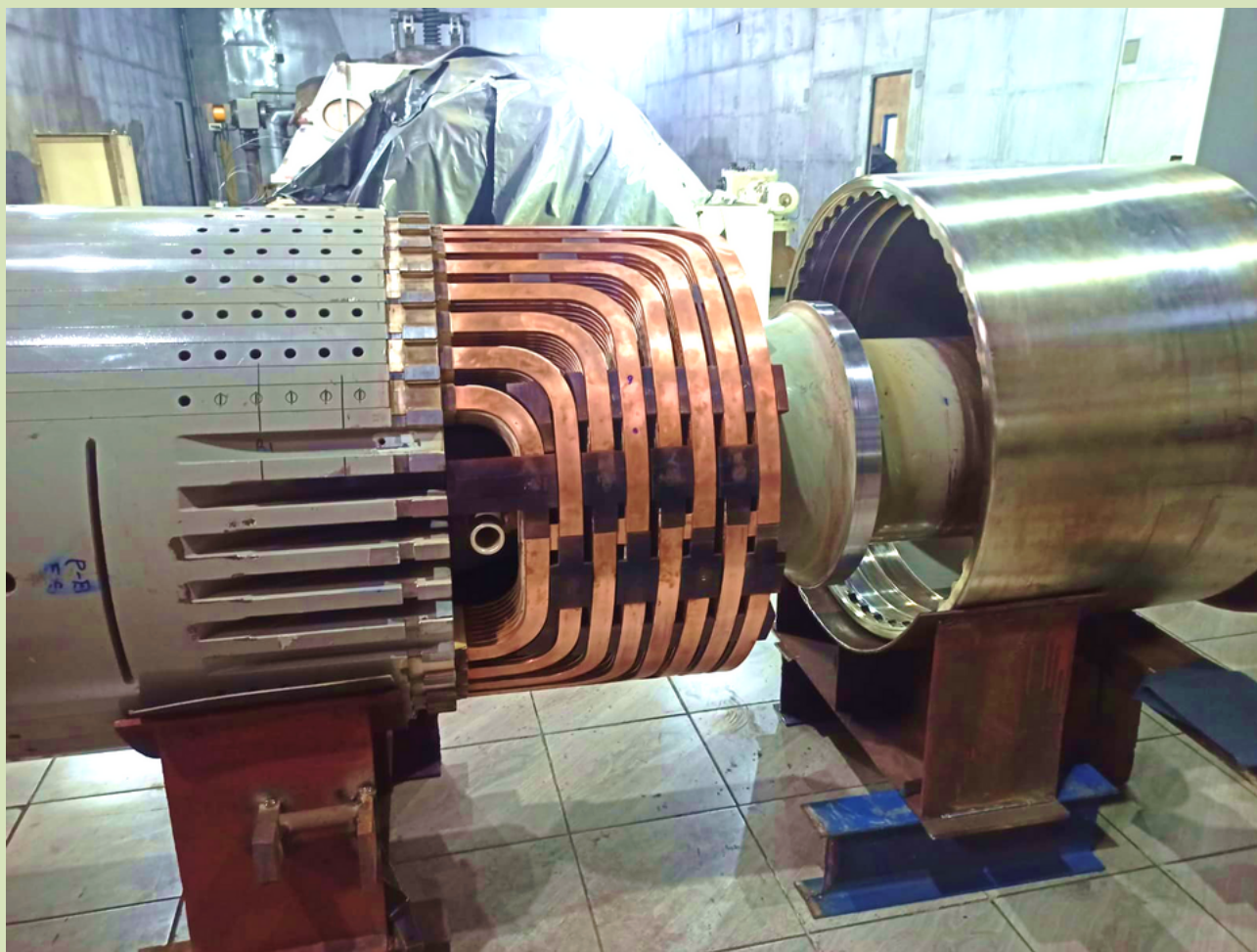


Fig 1. Inter-turn shorts



Fig 2. Super – impose healthy waveform



SPECIFICATIONS

Supply voltage	110 - 220 V; 50/60 Hz
Impedance matching ranges	5 - 500 Ω or 500 - 1000 Ω
Pulse rate	120 - 950 Hz continuously variable
Pulse width	5nS to 100S in three switched ranges.
Pulse amplitude	Built within a Hard Rugged Case
Enclosure	120 - 950 Hz continuously variable
Dimensions:	L: 380 mm x W: 300 mm x H: 170 mm
Weight:	8 kg. (including all in one single unit)

Maintenance free rechargeable Lithium Ion Battery pack with an integral charger, giving over 3-5 hours continuous use under average operating conditions.

S.No	Description	PtA's RITSd	Other make
1	Capture 2 waveforms in single Channel / Window?		
2	Analyze both waveforms in real-time		
3	Built-in Oscilloscope within the instrument		
4	Calibrator / Fault Simulator		
5	Built-in Fault Simulator		
6	Accessories		
7	Accessories can be packed within the instrument		
8	All supplied in a rugged case or one suitcase		
9	Built-into the rugged case?		
10	Number of items to be carried in the case	1	many



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