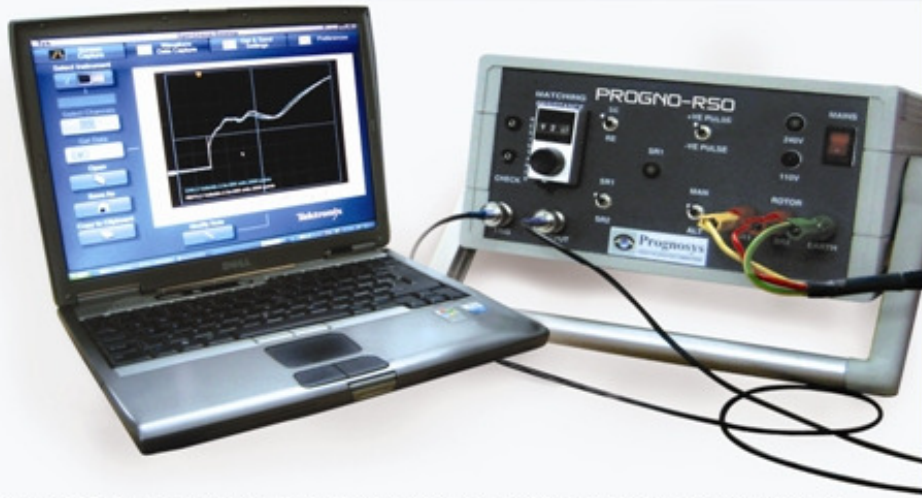


PROGNO-RSO

- Rotor Winding Condition Analyser



Progno-RSO detects rotor winding faults like shorted turn, ground fault and high resistance connections.

Progno-RSO uses the technique known as Recurrent Surge Oscillograph (RSO) to detect rotor winding faults. This technique applies travelling wave transmission principles and is implemented based on neural network signature and high frequency waves transmission symmetry through the same medium. This method has been successfully tested in the laboratories and on generators. This RSO technique uses the time domain reflectometry theory to detect a shorted turn in field windings. In essence, when a pulse is applied to the rotor winding circuit, a shorted turn would cause reflections that can be analyzed. A signal generator is used to send a succession of step-shaped low voltage pulses along the rotor field windings, and at the fault location, there will be a sudden impedance change that will cause a reflected wave and a transmitted wave to occur, resulting in a response characteristics curve that is different from that of a normal loop back circuit that does not have sudden impedance variations.

The RSO technique uses the variation in impedance along the field windings experienced by the travelling wave to detect anomalies. The extent of the inter-turn short circuit is indicated by the degree of variation in the wave impedance. The resultant reflected signals could be viewed on a dual-channel oscilloscope screen as two separate waveforms or as a single summed trace. The non-flatness of the combined trace is indicative of faults; blips on the combined trace mean anomalies in the field windings and the wave amplitude of a blip indicates the extent of damage. By analyzing the position of the anomaly on the oscillogram, the location of the fault can be inferred.



PROGNO - RSO Features

1. Tests and analyzes rotor winding faults in very early stage thereby avoiding catastrophic failure in occurrence.
2. Uses fault analysis technique, which locates the fault position in the rotor winding, thereby contributes to the easy in winding repairs.
3. Performs test with Generator rotor in full speed condition and obviously at standstill. RSO test performed at speed is always advantages as it detects faults which occur in dynamic condition.
4. Test instrument is made to operate with easy, it works in attachment with dual channel oscilloscope, and data can be transformed to computer for analysis.
5. Suitable for Generators of any capacity for brushless and with brush excitation rotors.
6. Comes with rotor winding fault simulator, Progno-RSO in conjunction with rotor winding fault simulator can be used in demonstrating various types of faults and detection technique.



Specifications:

Power Input	99 to 250v AC
Voltage output	12 Volt PK-PK (Square Wave zero bounce switching)
Output	2mV Pk-PK typical
Matching	33 ohms to 1033ohms,
Impedance Range	scale set 033 to 999
Weight	3 kgs
Dimensions	23cm x 12cm x 20cm

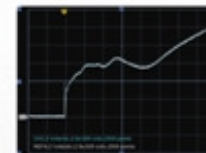


Fig.1 Healthy Rotor winding

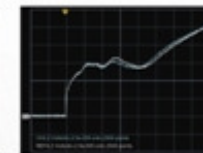


Fig.2 Inter-turn fault

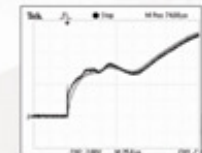


Fig.3 Inter-coil fault

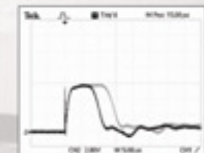


Fig.4 Earth fault

KIT Contents:

- 1.0 Progno-RSO instrument
- 2.0 Rotor Winding fault simulator
- 3.0 Test leads with clips
- 4.0 Operational Manual
- 5.0 Dual Channel Oscilloscope with Software (Optional)



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