

Iris Power RFA//

PERIODIC ON-LINE ROTOR FLUX ANALYZER TO DETECT ROTOR WINDING TURN SHORTS

A second-generation advanced tool to find rotor winding shorted turns, during service, in round rotor motors and turbo generators and in salient pole motors and hydro generators.

Aging of the turn to turn insulation in both high speed round rotors and salient pole rotors in generators and synchronous motors will eventually lead to turn to turn shorts. These turn shorts will increase the bearing vibration in high speed machines and may limit the reactive power that a machine can provide. Although rotor turn shorts do not directly cause motor and generator failure, if the number of turn shorts is increasing over time, then it is also likely the rotor ground insulation is aging and may eventually fail. On-line rotor winding flux monitoring is an essential Condition Based Maintenance tool plan for determining if rotor winding maintenance should be planned.

The portable Iris Power RFA// analyzer is intended for on-line detection of shorted rotor turns on salient pole rotors (Iris Power RFA//S™) and round rotors (Iris Power RFA//R™). In addition to manual measurements, the Iris Power RFA// analyzer is capable of stand-alone data acquisition once it is configured, i.e. without a connected computer, and the collected measurements are saved in its internal memory. The analyzer is compact, simple to use, and user-friendly, while maintaining high resolution and powerful algorithms.

FEATURES

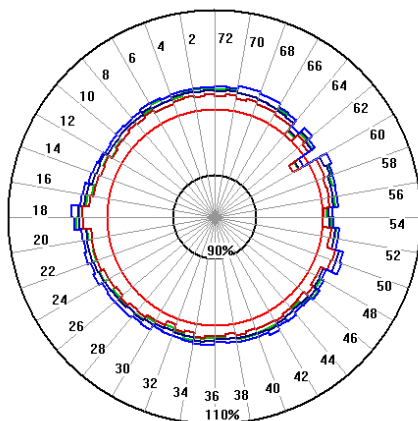
- Rugged portable instrument with USB and Ethernet computer interfaces
- Custom built, ultra-high-resolution digital data acquisition and on-board switchable attenuation for maximum resolution measurements using any manufacturer's flux probe
- High speed acquisition with deep memory for complete and accurate data collection
- Capable of storing over one hundred and fifty flux waveforms
- Usable with the Iris Power FFProbe, TFProbe and older style flux probes
- Can be synchronized to a power frequency signal, or ideally to an external shaft sync signal (key phasor)
- Use with 2-pole or 4-pole rotors (RFA//R) or 4 to 128 poles (RFA//S)
- Predictions of turn-shorts in any slot, often regardless of the generator load point during data acquisition
- A high-speed acquisition mode immediately creates a table of results covering each coil at each load point, including flux waveforms
- Stand-alone mode where the Iris Power RFA//R can collect data automatically as the generator goes through normal load changes
- Uses Windows™ based software for data display, analysis, and trending
- Analysis software capable of reading and analyzing data files from other manufacturers' portable instruments
- Systems are available for remote and continuous monitoring
- RFA//R Optional mode for finding shorts in spin pits with the rotor operating at different speeds
- Optional instrument (RFA//RS) that can be used with both round rotors and salient pole rotors

WHY TEST?

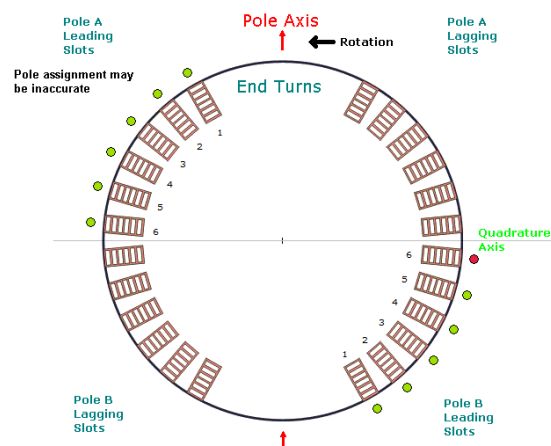
If the number of shorted turns are increasing over time, it is likely the ground insulation is also degrading

Failure of the ground insulation normally leads to tripping of the machine.

Hydrogenerator pole 61 with short



Turbogenerator with short on pole B, coil 6



CAPABILITIES

- Instant analysis of round and salient rotor winding condition, usually at any operating load
- Where needed, ability to analyze tests at different loads for a more certain prediction of rotor winding condition
- Able to perform a spot measurement, or automatically acquire results over days during normal generator load changes, without operator intervention
- Works with conventional wedge-mounted flux probes, or the stator tooth-mounted Iris Power TFProbe™, which can often be retrofitted with the rotor in-place

ENVIRONMENTAL CONDITIONS

- Temperature (operating/storage):
0 °C to 40 °C/-20 °C to 50 °C
- Relative humidity:
<90 % non-condensing

FLUX DATA ACQUISITION	RFA//R	RFA//S
Number of rotor Poles	Up to 4	4 to 128
Time per Measurement	5 s	30 s
Number of Measurements (Internal Memory)	180	300
MEASUREMENT MODE:		
Manual	✓	✓
Time Based	✓	✓
Spin pit	✓	
Load Based	✓	
Digitizer: high-speed,>80 dB SNR	✓	✓
Measurements at any load	✓	✓

SOFTWARE

- Iris Power RotorFluxPro™ software for configuration, downloading, and data analysis (included with instrument)
- Runs on any computer with MS Windows 7 or later operating system
- Signal simulation utility (included with software)

SPECIFICATIONS

Power Source	<ul style="list-style-type: none">• Voltage: 115/230 V, 50/60 Hz• Consumption: <100 W
Communications	<ul style="list-style-type: none">• USB Port (type B connector), Ethernet Port (RJ45)
Flux Signal Inputs	<ul style="list-style-type: none">• Connectors:<ul style="list-style-type: none">– BNC for both single ended (1) or differential flux signals (2)– 8-pin, polarized, for integrated flux and sync sensor signal (combination probe)– Signal range: 0.3 V to 48 V– Impedance: 10 kΩ
Synchronization Inputs	<ul style="list-style-type: none">• Sync Sensor• Connector: BNC (1)• Impedance: > 10 kΩ• Range: 1- 24 V peak• Combination probe (see Flux inputs)• External ac sync• Connectors: banana jack (2)• Range: 50 Vac to 237 Vac
Carrying Case Dimensions	<ul style="list-style-type: none">• 47 x 36 x 18 cm (18.5" x 14.06" x 6.93")
Carrying Case Weight	<ul style="list-style-type: none">• 7.5 kg (16 lb)

ORDER NUMBER

M1300	RFA//R portable flux analyzer for detecting shorted turns in round rotor machines.
M1310	RFA//S portable flux analyzer for detecting shorted turns in salient pole machines.
M1320	RFA//RS portable flux analyzer for detecting shorted turns in round rotor and salient pole machines.
C0010	Modular on-site training seminar. Travel time and expenses are extra.

KIT CONTENTS:

- User Manual
- Connection Cables
- Software
- Carrying Case

GET IN TOUCH

Iris Power
3110 American Drive
Mississauga, Ontario
Canada, L4V 1T2

+1 905 677 4824
sales.iris@qualitrolcorp.com
www.irispower.com
www.qualitrolcorp.com