

A close-up photograph of a synchronous machine rotor. The rotor is a large, circular, reddish-brown metal component with several holes around its perimeter. A bundle of grey cables is connected to the rotor, with some cables having yellow and red markers. Handwritten text on the rotor includes "ROT 09" and "106/034".

# Rotoguard

## An ideal protection scheme for synchronous machine rotors

Lack of maintenance, operational knowledge or monitoring systems can cause catastrophic failures in large machines and with this in mind, experts at Quartzelec have designed a state of the art system which provides protection, operational information and ongoing monitoring, allowing detection of early signs of deterioration.

ATEX certified, Quartzelec's Rotoguard is a telemetry system designed for monitoring and protecting the rotor winding of synchronous machines. It enables a true measure of fault resistance from 50k $\Omega$  to 500 $\Omega$  to be made, without any influence from the DC field component of excitation. By giving an early warning of deterioration of the rotor insulation and providing a continuous readout of the rotor earth leakage resistance and winding temperature, the system forms the basis for an ideal protection scheme for synchronous machine rotors.

Being separately powered, the system is active at all times. It can detect deterioration in insulation resistance due to condensation when a machine stands idle for an extended period. Alternatively, it can also detect insulation resistance during acceleration to speed.

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## Key benefits

- Can be retrofitted to most over hung exciters
- With the addition of a shaft mounted current shunt, Rotor Current and Rotor Winding temperature are displayed in addition to Earth Leakage and Rotor volts values
- Monitors for earth fault whilst machine is stationary and during run-up as well as during normal operation
- No sliprings or brushes means reduced maintenance
- Certified for hazardous area applications
- Last one-minute average reading
- A continuous stream of instantaneous readings updated every four seconds
- A complete set of one-minute averages for the previous twenty-four hours
- Data can be downloaded to a PC and the time history of the rotor operating conditions examined in the event of a machine breakdown
- Four isolated 4-20mA loops for remote display of voltage, current, temperature and leakage
- The Rotor Module is designed to accommodate a purpose built optional Encapsulated RC unit

## Specification

Display	4-line vacuum fluorescent alphanumeric display Green LED: flashing once every 4 seconds to indicate correct operation of the connected modules
Outputs	4-20mA loops: - Voltage - Current - Leakage resistance - Temperature Earth Fault Relay output USB port to connect to a PC (Mini USB 'B', IP68)
Earth fault level	0-50k $\Omega$ , user adjustable (Default setting 5k $\Omega$ )
Operation time	4 seconds maximum, (temperature averaged over 12 readings)
Max. field voltage	Continuous $\pm$ 600V DC Transient $\pm$ 1000V DC
Cable types	Distance between machine mounted unit and Rotoguard Monitor: - Power: Up to 100 metres: 2 core 2.5mm <sup>2</sup> - Up to 300 metres: 2 core 4.0mm <sup>2</sup> - Signal: Up to 300 metres: Coax RG223/U
Output relay rating	3 Amps maximum (250V AC, 50V DC) (resistive)
Input Voltage	110 - 250, 50-60Hz, Input fuse: UL/IEC127 250 Vac S 3.15 A
Rack dimensions	3U 19 inch rack
Certifications	Sira 03ATEX4219U (Ex nA mc IIC Gc, II 3G) IECEX SIR 14.0005U

Supported by a team of electrical and mechanical engineers, you can rely on Quartzelec for all your equipment monitoring requirements. Contact us to discuss your next project or to find out more about our range of products and services.

