

# Robotic Inspection Vehicle

In-situ inspection for rotating machines

RIV inspections offer operators of rotating electrical machines a cost effective and modern alternative to the traditional inspection techniques.

The Robotic Inspection Vehicle (RIV) was initially developed to ease normal ELCID testing, with automated scanning at a fixed speed providing more consistent results than an ELCID core test performed manually.

With the support of additional transducers, the RIV enables remote scanning of machine stator cores with the rotor in-situ, providing test options which include:

- Visual Inspection
- Wedge Tightness Detector
- ELCID

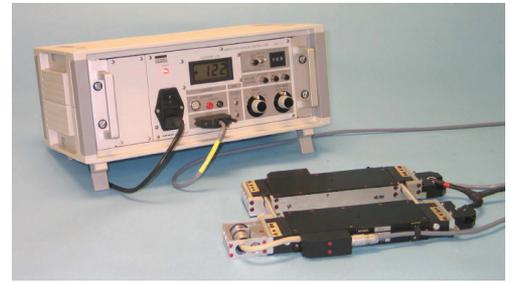
and in conjunction with a rotor boroscope inspection can provide operators with the following:

## Benefits

- Shorter outage duration
- Reduced inspection cost
- Extended time between rotor pulls
- Early problem detection
- Less risk of disassembly damage

## Accurate results in-situ

The Robotic Inspection Vehicle enables remote scanning of the stator core of large motors and generators with or without the rotor in place. Controlled from outside the stator bore, the RIV provides easier and more efficient testing of stator lamination insulation when used with the ELCID module. The RIV can also carry other lightweight transducers for stator inspection such as slot wedge tightness probes and allows for visual inspection through the use of video recording.



The RIV is held to the stator core by magnets and advances or reverses at various speeds. A guidance system detects the edges of the teeth allowing the RIV to automatically follow a slot.

## Visual Inspection

With a trained specialist using the RIV in conjunction with a remote access camera (RAC) moving through the gap between the stator core and field, a visual inspection is now possible. A clear view of the stator core laminations, stator windings, rotor surface and cooling ducts, wedges, coil end turns and the surfaces on the inboard ends of the retaining rings is provided.



## Stator Wedge Tightness Assessment

A test to accurately determine stator wedge tightness or the need for wedge tightening or replacement. With a 'tight' stator winding lasting significantly longer than a winding considered to be 'loose', test results can be used to produce a 'wedge tightness map', colour coded or displayed as specific tightness values.



## Core Insulation Testing (ELCID)

Electromagnetic Core Imperfection Detection (ELCID) is an accurate means of testing the condition of the stator core lamination insulation, especially for hot spots, a technique that has been proven to be valuable on machines where core loosening has occurred. The technique uses a low core excitation level to establish the magnetic field.



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