

Robotic Air Gap Inspection



Comprehensive generator inspection with rotor in-situ

Are you looking to minimise your generator downtime caused by a major outage?

Do you need to extend intervals between lengthy generator major overhauls?

Would you consider a more comprehensive minor inspection to establish generator condition?

Utilising an ultra-slim 15mm or 16mm-thick crawler, we perform comprehensive air gap inspections, including visual, EL-CID and wedge tightness testing, without rotor removal. This proven methodology delivers an immediate, accurate and cost-effective assessment of machine condition, enabling early fault detection and informed maintenance planning decisions.

Robotic air gap inspection can easily and reliably inspect the condition of the stator and rotor stator core, stator wedging system and insulation, as well as the rotor surface condition, and any visible problems within the cooling ducts, helping with the early detection of issues that might otherwise cause a critical failure or only present during a major planned outage, increasing the schedule and cost. Importantly, carrying out such enhanced inspections can prove instrumental in decision making for future planned maintenance.

Key Benefits

- | Minimised lost productivity
- | Reduced schedule and outage costs
- | Rapid identification of significant faults
- | Extended time between or replacement of major overhaul
- | Data recorded and presented quickly

ACCURATE RESULTS IN-SITU

Without the need to remove the generator rotor, the crawler can be accurately positioned in tight air-gaps and access otherwise unseen areas to study the generator condition through the following three key inspections:

Visual Inspection

For a complete 360-degree view of the air gap, our crawler features multiple cameras, powerful LED lighting, high-definition video and still image capture to inspect the stator and rotor throughout the machine. By mapping every slot, we can accurately assess unit condition between major outages.

This detailed visual inspection helps identify deterioration, contamination, overheating, mechanical damage, insulation movement, blocked cooling passages, foreign objects, corrosion, and stator wedge migration. Results enable effective maintenance planning and clearly indicate whether immediate action is required or work can be scheduled for a future outage.

Stator Wedge Tightness Assessment

With automated positioning, mechanical tapping and precise acoustic signature analysis, the crawler accurately evaluates wedge tightness and generates an intuitive, colour-coded map recording the machine's as-found condition. By delivering a data-led engineering evaluation, this process supports informed decisions on future stator re-wedging requirements and planning.

EL CID

Electromagnetic Core Imperfection Detection (EL-CID) is the industry standard for evaluating stator core insulation integrity, reliably identifying interlaminar faults before they develop into overheating or catastrophic machine failure. Using our automated, fixed-speed crawler, we deliver highly accurate and repeatable results, removing the variability associated with manual testing. This enables consistent condition trending between outages, supporting informed maintenance decisions and long-term asset management strategies.



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