



## GENERATOR SERVICES

To keep outage windows at a minimum, our generator service group is turn-key and field based, providing stator and rotor inspections and most repairs at the plant site. Some common repairs include:

- Stator re-wedging
- Rotor retaining ring removal / replacement
- Stator core repairs
- End winding repairs
- Rotor and Stator Rewind

### IN SITU-GRIP® TESTING PROGRAM

**Powered by the 3angles ARGIS** Advanced Robotic Generator Inspection System

The *in situ-GRIP*® program is a complete and comprehensive rotor in situ generator assessment. Minimal disassembly of the generator is required; thus the generator never becomes the critical path of the outage unless an outage is planned specifically to address major maintenance on the generator

### A UNIQUE CONCEPT FOR IN-SITU GENERATOR INSPECTIONS:

Condition testing normally requires the rotor to be removed from the generator. Not only could this possibly damage the generator, but it is also time-consuming work that can only be performed during a major shutdown. However, PSG and 3angles NDT, Engineering and Consulting offer the Advanced Robotic Generator Inspection System (**ARGIS**). With ARGIS, removal of the rotor can be avoided. The ARGIS system is a unique concept for in-situ mechanical inspections which can be performed on many brands of generators.

### HOW THE ARGIS ROBOT WORKS:

A chain containing motor drives and a docking station for the Generator Inspection Vehicle (GIV) is mounted around one of the retaining rings of the generator. The chain is positioned accurately in front of each slot so that the GIV can be inserted into a gap as small as 17mm (0.669-inches) and up. The GIV then moves to the other end of the stator core and back in order to perform the ELCID, wedge test and visual inspections all in the same run to save time.

### WHICH TESTS IN SITU-GRIP® AND ARGIS PERFORM:

#### Stator:

- Visual & Borescopic Inspection (*ARGIS powered*)
- Copper Resistance Measurements
- Insulation Resistance Test & Polarization Index
- DC Ramped Voltage Test
- Power Factor Dissipation & Tip-up Test
- Corona Camera Examination
- End Winding Bump Test (optional)
- Off-Line Partial Discharge Analysis (optional)
- EI CID Core Test (*ARGIS powered*)
- Wedge Tightness Mapping (*ARGIS powered*)
- RTD Electrical Test

#### Rotor:

- Visual & Borescopic Inspection (*ARGIS powered*)
- Copper Resistance Measurement
- Insulation Resistance Test & Polarization Index
- AC Impedance Test
- AC Pole Drop Test (as accessible)
- Recurrent Surge Oscillograph (RSO)

#### Brushless Exciter:

- Visual & Borescopic Inspection
- Insulation Resistance Test & Polarization Index
- Rectifier Wheel Electrical Test

### KEY BENEFITS OF IN SITU-GRIP® AND ARGIS:

- Less manpower is required to prepare the generator for inspection.
- Reduction of outage costs.
- Reduction of lost productivity due to outage time (which can amount to millions of dollars).
- Fewer risks of damage to the generator stator and rotor parts.
- A generator inspection is no longer on the critical path of an outage.
- High reproducibility.
- All data is stored for future comparison and data trending.

800-226-7557