



# NATIONAL ELECTRIC COIL®

**Our Experience Generates Results!**

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(1) Evidence of excessive corona activity on the end winding of an air-cooled generator. (2) Corona activity often occurs near the end of the core. (3) PD often occurs between adjacent bars, especially if they are too close or are in different phase groups. (4) Damage can also occur in the slots. Severe damage can deteriorate slot fillers. (5) NEC is an expert in corona suppression applications. Our R&D department continues to develop the best corona suppression materials in the industry for use in our manufacturing.

Specialized Engineering Solution™ SES-407-AM-0807

## SES 407: Repairs to Corona Suppression Systems

**A Stator Winding May Show Visual Signs of Corona Activity or High PD Readings**

### Application

Industry-wide, corona damage to stator windings is receiving more attention. This condition is usually observable in air-cooled generators where it is seen as a white substance, in and around the end of the stator core, often between adjacent coils in the end arm area. Excessive corona activity can ultimately lead to a stator winding ground fault requiring partial or full winding replacement. Repairs may be possible, depending upon the machine's original design.

### NEC's Specialized Engineering Solution™

Some original equipment manufacturers (OEMs) include a Corona Suppression System as part of winding design and manufacture for their air-cooled generators. Others do not.

If you have a Corona Suppression System that is deteriorating, its design may not be up to the rigors of your generator's actual operating conditions. It is also possible that corona activity shows your generator winding was manufactured with no Corona Suppression System whatsoever.

National Electric Coil is an expert in the design and repair of Corona Suppression Systems. As a world-wide manufacturer of replacement stator windings, we are knowledgeable of every OEM's design for corona suppression. Each winding manufactured by NEC includes an engineered Corona Suppression System.

NEC has a five-step approach for determining if a unit is a good candidate for a Corona Suppression System repair.

First, the stator winding must be carefully inspected in order to identify the sites of all existing areas of corona damage.

### NEC Qualifications & Resources

National Electric Coil has specialized in the manufacture of generator windings for the last 90 years. These include windings for air-cooled generators, as well as inner-gas and water-cooled windings. We typically repair or rewind more than 80 generator units per year.

### Call Us Today!

To schedule an inspection of your stator, please call or email Steve Jeney at (614) 488-1151 x105, [sjeney@national-electric-coil.com](mailto:sjeney@national-electric-coil.com). If you have additional technical questions, please call or email Bill Moore at (614) 488-1151 x125, [bmoore@national-electric-coil.com](mailto:bmoore@national-electric-coil.com).

Second, the inspection will also document sites vulnerable to future corona activity.

Third, a determination must be made as to the compatibility and viability of repairs to the existing stator winding insulation and corona protection systems.

Fourth, it must be shown that it is possible to set up a monitoring program to monitor and evaluate future corona activity.

Last, steps must be developed that will minimize the effects of a long, forced outage should the inevitable failure occur. This could include data banking (see TMM 402), the design and manufacture of a "Coil Ready Package" (see SES 401) or a spare winding (see SES 403).

National Electric Coil can help you at each step of the process. Give us a call the next time you suspect corona activity or your rotor is out of the stator and you see corona damage. We will inspect your machine and give you recommendations for prolonging the life of your machine.

