



Assignment:

Write the website copy for National Electric Coil, a 93 Million dollar engineering and service company.

Deliverable:

Establish a brand image that communicates the brand's unique and desirable attributes. Create a tone of voice that supports the brand image. Write all the copy for the website and support materials.

Context:

High-voltage generators are used at power plants to generate electricity. High-voltage generators can be powered by coal, nuclear, hydro and other sources of energy. High-voltage generators require regular maintenance. Generator down-time is an expensive liability for a Public Utility, so expedience of service and quality of repair are essential. Public Utility companies and their high-voltage generators are served by two camps: the original equipment manufacturer, or OEM, such as GE, Mitsubishi, Siemens etc., and the other camp: independent service companies.

The service and repair costs provided by the OEM are in some instances, not perceived by the Public Utility as competitive with independent service companies, such as NEC and others. However, the OEM's have a strong advantage, they made the generator. Often, the OEM is perceived as the best source for quality maintenance.

The liability of being an independent is overcoming the perception of being a small player in a field dominated by the large OEM's. You must be able to communicate your service and engineering capabilities and the caliber of your solution.

First, establish engineering and service credibility that is on par with the OEM's. Secondly, identify yourself as a solutions provider, not a service & parts house.

**Solution:****Tone of Voice**

The copy was written to set a tone that “this is what we do - all we do. Our focus and commitment enables us to be the very best.” Copy that exudes an assured confidence that’s been earned by almost a hundred years of quality work in demanding situations, thousands of top-flight employees and an infrastructure that covers over a million square feet.

There are two major components of the branding message that needed to be developed and communicated: NEC’s singular focus and NEC as a solutions provider.

Singular Focus

The majority of NEC’s competition have other companies, or services. GE makes products from airplane engines to dishwashers. Mitsubishi makes cars to televisions. Their liabilities are that they support many, many non-related products and services, none of which, support their endeavor to be the leader in the field of high-voltage generators. NEC is unique with a singular core focus, specializing in the manufacture and repair of high-voltage generators.

Solutions Provider

Secondly, eliminate the liability of NEC as being perceived as a parts and installation company. The engineering capabilities and manufacturing infrastructure of NEC are world-class. To be on equal footing with the large OEM’s, NEC needed to be presented as a “solutions provider”. This positions them with the ability to design, engineer, specify and manufacture in-house. And very few of NEC’s non-OEM competition - have this capability.

Format:

Website and literature.



> FOCUS

At National Electric Coil, for 95 years, solutions for high-voltage generators are what we are, and all that we do.

> YOU ARE HERE: Solutions /

SOLUTIONS

- Evaluation
- Engineering Design
- Rewinds & Retrofits
- Repair Solutions
- Manufacturing
- Replacement Parts
- Emergency Outage
- Field Services
- Maintenance Service

Solutions for generators

NEC is one of the most responsive and technically-effective solution provider in the world, for the repair, service and maintenance for any type of generator.

Our Goal: Get your machine back on-line quickly. With NEC's vast team of highly experienced **Engineers, Project Management Team**, and **Field Services**, we are the high-voltage generator & motor winding solutions provider with the capabilities and resources to work on the largest of installations, anywhere in the world.

We **manufacture** all our windings and coils with **ISO 9001** certification, our infrastructure can service generators up to 1,000 mVA, and with an **engineering staff of 25** and a **field technical staff of 50**, we have the human resources to tackle the most challenging of service projects.

We are solely focused on being the best high-voltage generator solution provider in the world.



We have the manufacturing capabilities, infrastructure and resources that in many situations surpass the OEM. As importantly we deliver a business process tooled and engineered for the most important specification... our customers satisfaction.

⊕ The NEC Difference

⊕ NEC Generator Services Group

⊕ NEC Value Proposition

⊕ NEC Tour our Plant





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At National Electric Coil, for 95 years, solutions for high-voltage generators are what we are, and all that we do.

> YOU ARE HERE: Solutions / Evaluation

SOLUTIONS

Evaluation

Inspection
Test
Analysis

Engineering Design

Rewinds & Retrofits

Repair Solutions

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Evaluation: we read and speak Generator

Evaluation is where we begin to gain a solid understanding of your generator. Our evaluation is comprised of three distinct and sequential processes: **Inspect**, **Test**, and finally, **Analysis**.

We've been evaluating generators for almost a hundred years and we've seen all types of generators in all areas of applications and environments. A generator and its environment create unique wear characteristics that write specific tell-tale signatures, which to the knowledgeable eye, tells a very detailed story - in any language.

Solutions start with a thorough evaluation of the situation. This is no time for shortcuts.

Evaluation can be performed in one of our facilities or in-field. We'll bring it to us - or we'll come to you. We begin with an evaluation to gain a thorough understanding of your generator in your environment.

EVALUATION



We read and speak Generator.

A negative sequence event or generator motorization can leave a unit significantly damaged. With the clock ticking on lost revenues, we respond quickly by bringing our **Generator Services Group** to your unit as quickly as possible or making expedited arrangements to get the unit into one of our service facilities. This is what we do - everyday.

⊕ Generator Services Group



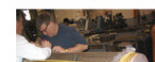
⊕ Specialized Engineering Solutions



⊕ Project Management Group



⊕ The NEC Difference



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Stators

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> YOU ARE HERE: [Solutions](#) / [Evaluation](#) / [Stators](#) / [Hydrogenerator](#)

Generator stators: not so stationary

Our experience in the manufacture of windings hydrogenerators is extensive. We design, repair and manufacture, and of course, service all makes, models and types of hydrogenerators.

INSPECTION

Detailed visual inspections from every angle examine the stator for:

- Loose or damaged wedges or side fillers
- Blocked vent duct passages
- Dusting, greasing and other signs of movement of coils/bars or bus, surge and connection rings or their supports, including the axial support system...



TESTING

Testing utilizes established and proprietary testing methods including:

- Winding resistance tests to identify poorly brazed joints, or shorted or open strands
- Tests for RTD continuity and resistance
- Polarization Index measurements and megger tests and comparisons to verify insulation resistance and condition of the stator winding ground insulation
- Wedge tightness survey including wedge tapping for tightness

ANALYSIS

- Analysis of stator frame structure and measures for eliminating deficiencies.
- Theoretical calculations for rotor winding temperature change due to change in rotor coil insulation.
- Calculations of stresses at normal and run-a-way speeds for hydrogenerators.
- Electromagnetic Core Imperfection Detection (EL CID) test to identify shorted core iron laminations. In some cases a Core Loop test is used in ...

[+ The NEC Difference](#)[+ Specialized Engineering Solutions](#)[+ Project Management Group](#)[+ Field Services](#)



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Fossil

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> YOU ARE HERE: Solutions / Evaluation / Rotors

Generator rotors: built to perfection

At our rotor facility, we have made significant investments in design, equipment and process development for our rotor winding manufacturing line. This includes the achievement of **ISO 9001 certification** for our quality management systems.

Throughout manufacturing, our focus is quality.

INSPECTION

Detailed visual inspections from every angle examine the stator for:

- Loose or damaged wedges or side fillers
- Blocked vent duct passages
- Dusting, greasing and other signs of movement of coils/bars or bus, surge and connection rings or their supports, including the axial support system...



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+ The NEC Difference



+ Specialized Engineering Solutions



+ Project Management Group



+ Field Services





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> YOU ARE HERE: Solutions / Evaluation / Exciters

Generator exciters: simply complex

Exciters Evaluation:

Because their size makes shipping reasonably easy and cost-effective, exciters are usually inspected and tested at our Columbus, Ohio service facility. If you prefer on site service, our **Generator Service Group** will perform **Field Services** work.

INSPECTION

Detailed visual inspections from every angle examine the exciter for:

- Out of tolerance bearing clearances to the journal and shaft seals
- Out of tolerance conditions for the Permanent Magnet Generator (PMG) air gap and fan to shroud clearance... >



TESTING

- Measurement of diode forward and reverse bias resistance and voltage drop
- Measurement of resistances of fuses for diodes. Results may indicate necking down of fuse element.
- Verification and comparison of capacitor charging with Fluke meter on highest resistance scale
- Verification of the operability of bearing thermocouples... >

ANALYSIS

- Optional balance at rated speed and ten percent overspeed.
Fuse and insulation resistances checked afterward
- Operation of ground detector solenoids verified; all RTD's inspected and tested; replaced as needed.
- Bearing clearances to the journal and shaft seals measured: re-babbiting or machining of bearings scheduled if needed... >

+ Generator Services Group



+ Specialized Engineering Solutions



+ Project Management Group



+ Commitment to Quality





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At National Electric Coil, for 95 years, solutions for high-voltage generators are what we are, and all that we do.

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 - Turbogenerator
 - Fossil
- Rotors
- Exciters
- High Voltage Motors
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High voltage motors: high turns

High Voltage Motor Evaluation:

With few exceptions inspect and test regimens for high-voltage motors are similar to those for generators. Because their size makes shipping reasonably easy and cost-effective, high voltage motors are usually inspected and tested at our Columbus, Ohio service facility. If you prefer on site service, our **Generator Service Group** will perform **Field Services** work.

INSPECTION

Detailed visual inspections from every angle examine the exciter for:

- Out of tolerance bearing clearances to the journal and shaft seals
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+ Generator Services Group



+ Specialized Engineering Solutions



+ Project Management Group



+ Commitment to Quality





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At National Electric Coil, for 95 years, solutions for high-voltage generators are what we are, and all that we do.

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Redesign & Upgrades
Specialized Tooling
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> YOU ARE HERE: Solutions / Engineering Design

Focus on engineering design

NEC focuses solely on generator retrofit designs.

We are a service based, solutions oriented company, so every generator stator or rotor rewind design undergoes a thorough **Evaluation** and several **Engineering Studies** to assist you in improving every aspect of your machine's performance, efficiency and reliability.

We work to reveal every opportunity to maximize the lifetime return on investment for your generator.

We work to reveal every opportunity to maximize ROI for your generator

We feature state-of-the-art facilities with the most revealing analysis instrumentation, using our own proprietary software.

All of this is just part of our commitment to be the best generator solutions provider in the world.

Engineering Design

A Rewind or Retrofit project provides you opportunities to review and revise deficient aspects of the original design, which often compromise machine efficiency or long-term maintainability. Our **Engineering Studies** or **Specialized Engineering Solutions** address any deficient design liabilities or issues you decide to resolve.

NEC's Engineering Design team's capabilities are extensive. Below are some of our **capabilities**:

Turbogenerators

- Life assessments
- Calculations involving stress, flexure, fatigue, and fracture mechanics necessary to select the appropriate materials for replacement retaining rings, fans, couplings, hubs, keys, wedges, lead bars and lead studs.
- Full redesign of generator stator core technology and execution of on-site or in-shop restacking after catastrophic failure or just for improvement of machine performance.
- Analysis of rotor spring key migration....

NEC is directly involved in hundreds of projects requiring Engineering Design for large generators and motors.

Hydrogenerator

- Calculation of performances, parameters, losses and the efficiency of the entire size range of hydrogenerators
- Full redesign of turbo/hydro generator stator core technology and execution of on-site or in-shop restacking after catastrophic failure or just for improvement of machine performance.
- Calculations of stresses at normal and run-a-way speeds for hydrogenerators.
- Redesign of hydrogenerator spider, pole pieces and field winding to improve/change machine performance... ➤

NEC is an expert with exciters and provides extensive service capabilities

Exciters

- Optional balance at rated speed and 10 percent overspeed. Fuse and insulation resistances checked afterward...
- TC replacement
- Repair or replace glass banding... ➤

NEC can custom build new replacement parts for your legacy high voltage motor

High Voltage Motors

- Redesign both the rotor bars and laminations, .
- Strategic use of graded materials or other changes in the physical characteristics of the bars or laminations to increase reliability and extend operable life.. ➤

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> YOU ARE HERE: Solutions / Engineering Design / Engineering Studies

Focus on engineering

Engineering Studies

Engineering studies help identify & define solutions for project-critical issues. NEC design engineers are ready to respond to any generator design issue that may arise during a generator repair or retrofit project. While the individual backgrounds of our engineers vary, their career paths are similar, many began their careers at OEMs or worked for major utilities before coming to NEC. This broad perspective of knowledge and experience gives our design team the desirable cross-platform of experience with generating units of all ages, applications, makes, sizes and types in all ranges of operating environments.

We work to reveal every opportunity to maximize ROI for your generator

Uprate Studies

Performed to determine what can be done to **increase the output capability**. These studies analyze the electrical, magnetic, mechanical and ventilation aspects of the generator in order to determine best combination of design parameters to meet output requirements.

Life Extension Studies

Based on **inspection, non-destructive testing and analyses** that:

- Estimate for the unit's remaining life
- Identify what actions needed to extend the overall machine life
- Identify a time window until a possible failure
- Guide the development of a maintenance plan that maximizes unit reliability and availability

Performance Studies

Noise Reduction – for generator designs that are susceptible to slot passing frequency noise or other harmonics

- Reduction of Vibration due to intermodulation effect of magnetic circuits
- Optimum Eddy Current Loss Reduction schemes...
- Effects of Changes – insulation and ventilation schemes, including calculation of steady state and transient temperatures of all components
- Heating and Ventilation studies – evaluate existing schemes or to achieve improvements in friction and windage losses, reduction in hot spots, and general improvement in machine temperature.
- Theoretical modeling and analysis of Generator Reliability

Failure Analysis

Performed prior to any repairs – analyses include recommendations to mitigate the possibility of a similar failure on another machine, or a reoccurrence of the same failure.

Re-Engineering Studies

Re-Engineering Design is performed, as necessary. Our advanced proprietary design software assures the compatibility of replacement components, and our ability to manufacture to the highest standards, **our replacement parts are equal and in many cases, superior in quality and performance to the originals.**

Features include but are not limited to:

- CAD/CAM design and element analysis
- Full electromagnetic calculations for all sizes and types of units
- Calculations of estimated machine characteristics from physical dimensions
- Calculation of performances, parameters, losses and the efficiency of the entire size range of fossil, hydro, and nuclear generators
- Specialized tooling design, such as tooling for large high voltage stator coils to fit into skewed stator cores

Comprehensive Solutions

In addition to complete uprates, including rewinds of both the rotors and stators, specific engineering tasks have included thermal analysis of complete generators, field winding thermal analysis, redesign of field windings to improve thermal performance, fan design, stator winding vibration analysis and testing, stator core vibration analysis and testing, electromagnetic force analysis, rotor component stress analysis, rotor and retaining rings specifications, and rewind specifications.

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Focus on engineering

Redesign and Upgrades

Once the **Evaluation** and **Engineering Studies** have been completed, **NEC engineers** are able to develop an engineering solution that is based on a thorough understanding of the project scope and reflects NEC's state-of-the-art development tools tempered with decades of hands-on experience.

We work to reveal every opportunity to maximize ROI for your generator

NEC's team has been directly involved in hundreds of projects directly related to specific engineering problems that have required minor to major redesigns. A sampling of the redesigns are listed below:

Hydrogenerator

- Redesign hydrogenerator to change the number of coolers
 - Design of new field poles (convert from cast iron to laminated)
- Full redesign of turbo/hydro generator stator core technology and execution of on-site or in-shop restacking after catastrophic failure or just for improvement of machine performance.
- Upate of generator, providing and installing stator coils, new bus rings...

Turbogenerator

- Full redesign of generator stator core technology and execution of on-site or in-shop restacking after catastrophic failure or just for improvement of machine performance.
- Design and implementation of the direct cooling system of the rotor winding end turns to reduce the coil temperature to improve the reliability or increase the machine output.
- Analysis of stator frame structure and measures for eliminating deficiencies.
- Redesign of the tooth structure to reduce and/or eliminate the susceptibility...

+ Specialized Engineering Services

+ Technical Maintenance Memo's

+ NEC Service Managers





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At National Electric Coil, for 95 years, solutions for high-voltage generators are what we are, and all that we do.

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Generator solutions are our focus

With no loyalty to a particular machine design, our engineers can look instead to a wide range of design solutions that have performed effectively and implement them in your generator. This broader perspective provides you with an innovative and cost-effective approach to your generator repair. When we do a complete **Evaluation** of your generator, we also recommend **Engineering Design** solutions to correct and prevent problem occurrences in the future.

We can accurately anticipate generator failure, so you can confidently take measures to prevent it.

We are active serving the entire power generation sector: utilities, cogenerators, refineries, paper mills and other industries. We can address any rotor problem, large or small. We've seen a full range of failure modes or near-failure conditions for machines of almost every make and model and our experience has created a culture in our work-force in getting your generator back online, on-time and on-budget.

Stator Solutions

NEC's **Coil Ready Kit** allows owners to jumpstart their planned outages. Our **Spare Winding solution** provides insurance against unplanned outages. The benefits of a **Stator Core Restack** can range from improved unit performance to prevention of an unplanned outage. Large air-cooled generators can be rehabilitated to eliminate a number of troublesome generic design issues, including **Corona Damage** or **Spark Erosion**. **Stator End Turn Vibration** can be a major problem with certain generator units.

Rotor Solutions

A number of different turbogenerator units are experiencing **Rotor Dovetail Cracking** and **Rotor Turn Migration** NEC's Specialized Engineering Solutions™ thoroughly address both issues to provide permanent solutions.

+ NEC Technical Library

+ Technical Maintenance Memo's

+ NEC Service Managers



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> YOU ARE HERE: Solutions / Rewinds & Retrofits / exciter

Exciters are deceptively simple

In the hands of the inexperienced, brushless exciters appear deceptively simple. The real expert will not fail to recognize their innate complexity. Indeed, the design of the brushless exciter - with its many rotating and high voltage component parts - is often at the root of the most common failure modes. Age, contamination and stress are the triple enemies of reliable operation of rotating brushless exciters.

NEC has over-hauled and rewound brushless exciters for over a quarter century

Regardless of the age or condition of your brushless exciter(s), NEC engineers can discuss your maintenance needs and expectations. Together, we can arrange a schedule and implementation program that provides you with the highest level of reliability synonymous with NEC aftermarket services. From simple maintenance and testing programs to complete AC exciter rewinds and restacks, NEC has the skills and resources to meet your needs.

Dynamic Balancing

NEC has the ability to dynamically balance exciters at rated speed and subject them to over-speed testing. This dynamic balancing is very important, considering the number of rectifier components present that can affect the unit's balance at running speed. Photo above shows the reinstallation of a large Siemens Westinghouse hydrogen-cooled exciter unit into its housing after balancing...



Dedicated Facility

The NEC service facility in Columbus, Ohio, provides a unique combination of experience, shop capabilities and technical resources especially well-suited to the overhaul of single and double wheel brushless exciters. NEC has overhauled and rewound brushless exciters for over 20 years...



Scope of Work

A typical scope of work is:

- Bearing clearances to the journal and shaft seals measured; re-babbiting or machining of bearings scheduled if needed
- Components, including diodes and fuses, cleaned, tested, bagged and labeled; parts replaced as needed
- Heat sinks inspected and tested; insulation replaced as needed...





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Repaired and back online - no excuses

NEC focuses solely on generator solutions.

We are a services based, solutions oriented company. We manufacture everything in house. Everything. We have repaired generators that would challenge even the most resourceful company. Our ability to design, reverse engineer and manufacture a given component, makes even the most daunting project, a manageable one.

Repairing generators is what we do - and we do it all here. We are able to evaluate, engineer, design, manufacture and repair in-house or on-site. And get you back on-line. No excuses.

If we don't have the parts - we'll make it.

If we don't have the plans - we'll engineer it.

Repairing generators is our business 24/7.

If it goes in a generator - we make it.

If we don't have the part - we'll fabricate it.

If you don't have the plan's - we'll engineer it.

If you don't have the spec's - we'll extrapolate it.

> We can repair any generator.

REPAIR

One of our advantages is that we've been doing this for almost a century and have kept meticulous records along the way. We call this **Data Banking**. It enables us to pull data from literally thousands of serviced generators and extrapolate that data when blueprints and schematics are no longer available, or the OEM has chosen them to make them "unavailable". At NEC, we're able to deliver solid engineered solutions despite the challenges. We take pride in saying "We can repair any generator."

NEC's Engineering Design team's capabilities are extensive.

Below are some of our **capabilities**:

Turbogenerators

- Life assessments
- Calculations involving stress, flexure, fatigue, and fracture mechanics necessary to select the appropriate materials for replacement retaining rings, fans, couplings, hubs, keys, wedges, lead bars and lead studs.
- Full redesign of generator stator core technology and execution of on-site or in-shop restacking after catastrophic failure or just for improvement of machine performance.
- Analysis of rotor spring key migration....

NEC is directly involved in hundreds of projects requiring Engineering Design for large generators and motors.

Hydrogenerator

- Calculation of performances, parameters, losses and the efficiency of the entire size range of hydrogenerators
- Full redesign of turbo/hydro generator stator core technology and execution of on-site or in-shop restacking after catastrophic failure or just for improvement of machine performance.
- Calculations of stresses at normal and run-a-way speeds for hydrogenerators.
- Redesign of hydrogenerator spider, pole pieces and field winding to improve/change machine performance...✚

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Exciters

- Life assessments
- Calculations involving stress, flexure, fatigue, and fracture mechanics necessary to select the appropriate materials for replacement retaining rings, fans, couplings, hubs, keys, wedges, lead bars and lead studs.
- Full redesign of generator stator core technology and execution of on-site or in-shop restacking after catastrophic failure or just for improvement of machine performance.
- Analysis of rotor spring key migration.... ✚

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High Voltage Motors

- Calculation of performances, parameters, losses and the efficiency of the entire size range of hydrogenerators
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Quality Management System - QMS™

Coil Manufacturing

Stator Manufacturing

Generator Stators

Generator Rotors

Custom Manufacturing

Replacement Parts

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> YOU ARE HERE: Solutions / Manufacturing

Quality starts here

If it goes in a generator or high-voltage motor - we make it.

Very few generator solution providers can make that claim. We manufacture our own products for many reasons, and they revolve around one issue - quality. Quality in three essential aspects: consistency, predictability and reliability. We know exactly what we are installing, how it will behave in the most strenuous application, demanding installation and its performance over the long-term.

If it goes into a generator or high-voltage motor - we make it.

Manufacturing our own components is one more reason how we are focused on being the world's best solution provider for the power generation industry for almost a hundred years.

Manufacturing

Striving to be the best solutions provider in the world can only be accomplished with one of the largest generator manufacturing facilities in the world.

Our two dedicated plants occupy over 400,000 square feet and have a throughput of over 10,000 coils and 10,000 rotors per year. Each factory and employee focuses on doing just one thing, **making the worlds best coils and rotors.**



Tour our facilities:

Our two dedicated plants occupy over 400,000 square feet and a throughput of over 10,000 coils and 10,000 rotors per year. Our state-of-the-art manufacturing processes and techniques deliver ISO 9001 certified products.

Take a tour and see how we can serve your needs.

Columbus, Ohio



Capabilities: Any generator or high-voltage motor, any unit size or type

Manufacturing Focus: Rotors • Specialty: Fossil or hydro units

Production: 10,000-windings annual throughput • CAD-based design-to-manufacture
• ISO-9001:2008 quality management systems • Specialized large machine facilities
with programs for designing and analyzing specific issues >>

Brownsville, Texas



Capabilities: Any generator or high-voltage motor, any unit size or type

Manufacturing Focus: Stators • Specialty: Fossil or hydro units

Production: 10,000-coils annual throughput • CAD-based design-to-manufacture
• ISO-9001:2008 quality management systems • Specialized large machine facilities
with programs for designing and analyzing specific issues >>





> FOCUS

At National Electric Coil, for 95 years, solutions for high-voltage generators are what we are, and all that we do.

> YOU ARE HERE: Solutions / Replacement Parts

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Legacy or Discontinued
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Parts - always available

At NEC, if it goes in a generator - we make it.

We are a solutions oriented, service driven company. Our clients come to us for results - not restrictions. It isn't acceptable to say that a part is no longer available and with our capabilities, it isn't necessary. We have the engineering staff and manufacturing facilities to engineer and fabricate virtually any generator or high voltage motor component.

The ability to design, engineer and fabricate any replacement part is one more reason how we are focused on being the world's best solution provider for the power generation industry for almost a hundred years.

Our clients
come to us for
results - not
restrictions.

Replacement parts are always available.

If it goes in a generator - we make it.

If we don't have the part - we'll fabricate it.

If you don't have the plan's - we'll engineer it.

If you don't have the spec's - we'll extrapolate it.

Replacement Parts

> We can repair any generator.

One of our advantages is that we've been doing this for almost a century and have kept meticulous records along the way. We call this **Data Banking**. It enables us to pull data from literally thousands of serviced generators and extrapolate that data when blueprints and schematics are no longer available, or the OEM has chosen them to make them "unavailable". At NEC, we're able to deliver solid engineered solutions despite the challenges. We take pride in saying...
"We can repair any generator."

+ NEC Technical Library



+ Technical Maintenance Memo's



+ NEC Service Managers



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On call and fully prepared: 24/7 - 365

Support - at the critical time

When you are off-line and the clock is ticking on lost revenues, response time is critical. NEC recognizes the magnitude of generators off-line and developed a specialized response team with the key assets that facilitate a rapid response to demanding situations when time and an effective solution is vital.

NEC's Generator Services Group was assembled for one reason: the successful completion of an outage in the field. A late night January ice storm or a scorching July afternoon, Generator Services Group is fully prepared with tailored resources, purposed infrastructure and highly qualified personnel on hand and fully prepared to be in the field.

Down generators are critical situations, this is no time for the inexperienced or unprepared.

Emergency Outage

Business hours:

9-5 Monday - Friday (EST)

(614) 488-1151

Dan Bucklew: ext. 111

Steve Jeney: ext. 105

After hours:

Dan Bucklew: (614) 580-9304

Steve Jeney: (614) 580-9306



Generator Services Group is uniquely prepared to address situations often far beyond the scope of smaller companies. We have on staff **over 25 engineers** and able to rapidly deploy over **50 field technicians** to your installation, and bringing your unit back online efficiently and effectively.

⊕ Generator Services Group



⊕ Repair Solutions



⊕ NEC Service Managers



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Stator Core Restacks

Hydro Rotor Services

Stator Rewedges

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Field Services - on deck and at hand

Support - at the critical time

When you are off-line and the clock is ticking on lost revenues, response time is critical. NEC recognizes the negative business impact and developed a specialized response team with key assets that facilitate a rapid response to demanding situations when time and an effective solution is vital.

A late night January ice storm or a scorching July afternoon, Generator Services Group is fully prepared with extensive resources, tailored infrastructure and skilled personnel on hand and in the field. NEC's Generator Services Group was assembled for one reason: **the successful completion of an outage in the field.**

Field Services brings all the resources of NEC to you - coordinated to achieve a rapid response.

Project Management Team

Directing the Generator Services Group through your project, is the NEC Project Management Team. They manage your project from initiation to completion and will coordinate and leverage all the facility resources and field services of NEC. The end result is a singular point of contact with the charge of keeping you in the know and your project on track.



Generator Services Group is uniquely prepared to address situations often far beyond the scope of smaller companies. We have on staff **over 25 engineers** and able to rapidly deploy over **50 field technicians** to your installation, bringing your unit back online efficiently and effectively.

⊕ NEC Technical Library



⊕ Technical Maintenance Memo's



⊕ NEC Service Managers



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GSG: total preparation for installation

Generator Services Group (GSG) is uniquely prepared to address situations often far beyond the scope of smaller companies. **We have on staff over 25 engineers** and able to rapidly deploy **over 50 field technicians** to your installation, bringing your unit back online efficiently and effectively.

Generator Services Group is instrumental in the successful completion of a planned or unplanned outage. Our field service supervisors and senior staff bring decades of experience and guidance to our crews. Many have worked for various OEMs. Whether an on-site installation or other generator field work, returning your unit/s to service efficiently and effectively is Generators Services Group focus.

Field Services brings all the resources of NEC to you - coordinated to achieve a rapid response.



Generator Services Group is uniquely prepared to address situations often far beyond the scope of smaller companies. We have on staff **over 25 engineers** and able to rapidly deploy **over 50 field technicians** to your installation, bringing your unit back online efficiently and effectively.

Installation is our forte'

NEC's Generator Services Group utilizes proprietary installation methods and techniques developed out of our long-term experience with all makes and sizes of machines and working under various site conditions. Installation of NEC stator windings, stator cores and hydro field pole windings by NEC's Generator Services Group or Generator Service Partner (GSP) insures components will perform exactly as designed.

⊕ **NEC Technical Library**



⊕ **Technical Maintenance Memo's**



⊕ **NEC Service Managers**





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Critical Maintenance Issues

Technical Maintenance

Memo's - TMM™

Specialized Engineering Solutions

Maintenance Team

Network

Maintenance - predicts performance

Maintenance - your best predictor of future performance

From assessing the generator's performance using many sophisticated analysis programs and procedures, to reading the tell-tale visual signatures, we can provide an accurate profile of your generators performance profile and condition.

With expert maintenance - you gain insight and options

With the benefit of insightful information, you have the opportunity to take preventive measures to extend and improve your generators performance. We have two facilities each tailored for specific maintenance projects or we can come to you. Expert maintenance is the key to your generators current performance and long term reliability and viability.

With expert maintenance, you gain insight and options

Predictive Maintenance

We believe that maintenance is the most under leveraged aspect of generator ownership. Why? Consistent monitoring of the generator coupled with the tell-tale clues will communicate to our skilled technicians, the state of health of the generator, now and in the future. In other words, **preventive maintenance** quickly becomes **predictive maintenance**.

Service Capabilities

National Electric Coil's service facilities, located in strategic locations within the U.S. provide a desirable combination of experience, extensive shop capabilities and technical resources especially well-suited to the overhaul of all types generators. From single wheel brushless exciters to the massive 1,000 MVA big iron we do it all in house or yours.

Capabilities: **Any generator or high-voltage motor, any unit size or type.**

Our **Specialized Engineering Solutions** were specifically developed and manufactured to address documented generator problems and provide you with a proven solution that will address a generator problem - before failure.

⊕ Specialized Engineering Solutions



⊕ Technical Maintenance Memo's



⊕ NEC Technical Library



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