POWERLINE

The Voice of the On-Site Power Generating Industry

Q1 24

2024 Spring Conference Preview

Power Generation for Healthcare Facilities

Electrical Generating Systems Association
PO Box 7206
Washington, DC 20056

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EGSA George Rowley Schools of On-Site Power Generation

EGSA's Two-Tiered Power Schools

EGSA's Power Schools cover the theory and practice of all the components within a generator system. All course modules are led by volunteer industry experts in a non-brand specific, generic format. School registration includes a copy of the 5th edition of **On-Site Power Generation: A Comprehensive Guide to On-Site Power**, a 700-page reference book that covers all aspects of On-Site Power Generation.

Basic School

Perfect for staff new to the power generation industry or someone who needs an introduction to basic concepts and technologies, this school is appropriate for students seeking a foundation in generator technology. Whether you are in sales, marketing, management, application engineers, engine technicians, or administrative personnel, you will find great value in this course! The Basic School is a general, yet technical, overview of On-Site Power.

COURSE MODULES INCLUDE:

- Introduction to EGSA
- Basic Electricity
- Prime Movers
- Introduction to Generators/Alternators
- Starting Systems
- Introduction to Automatic Voltage Regulators
- Introduction to Governors/ Speed & Load Controls
- Introduction to Transfer Switches
- Load Bank Fundamentals
- Generator Set Instrumentation
- Codes and Standards
- Generator Set Systems: Putting the Pieces Together
- Understanding Bid and Specification Documents

Advanced School

Our Advanced School is designed for those who have a good understanding of the basic mechanical and electrical systems found in an on-site generator site. A minimum of three years of experience in the industry is recommended. It will be particularly useful for those employed in engineering, project management, service positions, and business owners.

COURSE MODULES INCLUDE:

- Advanced Generators/ Alternators
- Generator Set and Critical Power System Controls
- Generator and System Protection
- Advanced Automatic Voltage Regulators (AVRs)
- Advanced Governors/ Speed and Load Controls
- Advanced Transfer Switches
- Multiple Generator Paralleling Switchgear
- Engine Emissions
- Noise Control
- Communications
- Advanced Generator Systems: Sizing to Service

Visit our website at ***EGSA.org*** for additional details on the EGSA George Rowley School of On-Site Power Generation.

2024 SCHEDULE

BASIC SCHOOL

March 18-20 ..... Virtual
July 15-17 ..... Virtual
September 30-October 2 ..... San Antonio, TX
December 9-11 ..... Virtual

ADVANCED SCHOOL

May 13-16 ..... Charlotte, NC
November 4-7 ..... Virtual

POWERLINE

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Aberdeen, MD

MARCH

Mar 5-7
Load Bank Certification
Dallas, TX

Mar 18-20
EGSA Basic School of On-Site Power
(Virtual School)

APRIL

Apr 7-9
EGSA Spring Conference
Miami, FL

Apr 18
Free Webinar - ASCO Power Technologies

MAY

May 13-16
EGSA Advanced School of On-Site Power
Charlotte, NC

JUNE

Jun 11-13
Load Bank Certification
Chicago, IL

JULY

Jul 15-17
EGSA Basic School of On-Site Power
(Virtual School)

AUGUST

No events scheduled

SEPTEMBER/OCTOBER

Sep 15-17
EGSA Fall Conference
Bellevue, WA

Sep 30 - Oct 2
EGSA Basic School of On-Site Power
San Antonio, TX

NOVEMBER

Nov 4-7
EGSA Advanced School of On-Site Power
(Virtual School)

Load Bank Certification
Location TBD

DECEMBER

Dec 9-11
EGSA Basic School of On-Site Power
(Virtual School)

Advertiser Index

Electrical Generating Systems Association
PO Box 73206
Washington, DC 20056
561-750-5575
e-mail@egsa.org • EGSA.org

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Powerline is published four times per year on a quarterly basis. Articles and information submitted for publication should be forwarded to the attention of the Editor at the address above 30 days prior to publication. Technical articles and articles of general interest to the electrical generation industry are actively sought and encouraged. Powerline reserves the right to limit information appearing in its pages to that which, in its sole discretion, will reflect positively on EGSA and the industry which it serves. Throughout every issue of Powerline, trademark names are used. Rather than place a trademark symbol at every single such occurrence, we aver here that we are using the names in an editorial fashion only. EGSA has no intention of infringing on these trademarks.

Message from EGSA's Chairman

Daniel Barbersek
EGSA Chair
Waukesha-Pearce Industries, LLC

I am excited to start the new year as your 2024 Chair for the EGSA Board of Directors. I am truly looking forward to working with our current Board members along with EGSA's CEO and staff, committees, and members. With another year behind us moving away from the pandemic, the momentum that our market of on-site power is experiencing has never been stronger.

The impact of the global desire to find more effective on-site power technologies along with the search for more efficient and environmentally friendly alternative fuels has been tremendous on our industry. This impact not only transcends industry technologies, but also influences our overall approach to on-site power solutions and product configurations.

The EGSA organization provides the perfect platform to not just stay informed about these rapid changes but can help guide you and your organization and place you in a position to have a say and to be a part of these changes. There are a lot of non-profit organizations. Some of them have a place for on-site power, but no other organization has the singular focus on on-site power and all the technologies that this industry requires that EGSA does. Simply put, EGSA brings everything together in one organization.

Our next conference is currently open for registration. This year's EGSA Spring Conference will be held at the Hyatt Regency Miami, in Miami, Fl. The conference will start on April 7, 2024, and conclude on April 9, 2024. Our conferences provide the perfect platform for networking, professional development, and continuing education opportunities. The conference also includes a variety of networking options as well as formal power engineering level classes and will also play host to our internal committee meetings.

These committees dissect the on-site power industry into key segments, help guide our organization, and enable EGSA membership to speak out to the industry. Every committee meeting provides an extraordinary framework for bringing together a wide variety of industry knowledge and experience calibrating towards a common goal. The committees are open committees, and I encourage you to sit in on any of them and find the right committee for where your interest and experience lie.

Beyond our Spring and Fall Conferences, this upcoming year EGSA will also see EGSA place a greater emphasis on providing training to the on-site power industry, both on the civilian side as well as to our US military branches. This training will include everything from general generator technology, to testing and maintenance requirements, and much more.

In closing, as your new EGSA 2024 Chair, I can confidently state that this year will be another transformative year for our industry and EGSA is committed to leading the charge. Thank you all for your past and future contributions to our industry. I truly look forward to seeing you and continuing the conversation at our upcoming conference.

Warm Regards,
Daniel Barbersek

EGSA's Commitment to Supporting the Armed Forces

Nathan Harris
EGSA Director of Education
n.harris@EGSA.org

Pearl Harbor, Hawaii

EGSA has always had a great relationship with the US Armed Forces and that commitment is as strong as it has ever been. In 2023 we were honored to host two Rowley Schools of On-Site Power that provided valuable training for US Navy Facilities (NAVFAC) personnel on the West Coast and Pacific. Attendees joined the schools from facilities in Guam, Japan, the Marianas, Hawaii, and the entire West Coast. Over sixty engineers received the training and EGSA's dedicated volunteer instructors delivered a customized school that catered to the needs of the Navy.

"Here at the Naval Facilities Engineering Command (NAVFAC) we strive to develop and maintain our design skills through active project development. Our engineers require the training that you have provided in order to deliver high quality designs and services for our combatant commands. The training provided a sound foundation not only on application, but also on the equipment itself, the design, manufacturing, and performance characteristics. Thank you to EGSA and the entire team."

— Judd Sakomoto
NAVFAC Pacific

I am especially proud of our instructors who adjusted their courses for a very specific audience and delivered the same level of professionalism and expertise that we would see at our traditional schools. Also, a special thank you for sacrificing their time to teach at unconventional hours to support an audience that was located on the other side of the world.

2024 started similar to the end of 2023 as our instructors traveled to Maryland to host another Rowley School of On-Site Power for engineers at Aberdeen Proving Ground. Just like the Navy, we were able to adjust to a new audience and provide valuable training that supported the needs of the US Army.

"One of the core competencies of C5ISR Center RTI is power generation. For new and junior engineers, within the organization, there is a lack of functional training on generator sets, the primary power source for most Army weapon systems. Electrical Generating Sources Association (EGSA) Basic School is a customizable and relevant training course that complements the engineering work being done within C5ISR Center RTI. This course was designed for those that needed an understanding of the theory and application of the mechanical and electrical components within a generator system and was taught by experienced industry experts in the field of on-site power generation. Modules were informative, interactive, and open to questions and feedback from the trainees. Contact information for the instructors was provided and encouraged to be used as a resource."

— Scott Mahoney
US Army Futures Command

As EGSA continues to grow its relationship with the Armed Services we hope to expand our offerings to include Load Bank Schools and other customized training opportunities. ●

Nathan Harris
Director of Education

Information and quotes shared in this column are "unclassified" and have been approved to be shared.

ARE YOU CONFIDENT YOUR TECHNICIANS HAVE THE KNOWLEDGE TO GET THROUGH THE NEXT ELECTRICAL EMERGENCY?

MAKE SURE THEY ARE EGSA CERTIFIED!

What is EGSA Technician Certification?

Generator technicians vary in skill level from employer to employer and market to market. Finding a way to identify a proficient and knowledgeable technician, or even identifying a technician's skill level can be challenging. The EGSA Technician Certification Program has expanded to meet these challenges.

We offer two levels of certification!

APPRENTICE LEVEL

(certification valid for 3 years)

The Apprentice level exam provides technical college students, recent graduates, military personnel, and other 1st or 2nd-year technicians with proof that the basic skill set has been met.

JOURNEYMAN LEVEL

(Initial certification valid for 5 years. Option to extend up to 2 additional years with education/recertification credits)

Our Journeyman exam assures an employer that this technician meets or exceeds 3 years of practical field experience. It tests 61 individual areas of expertise and has been upgraded to reflect current technologies.

How to get Certified?

- Apprentice and Journeyman certifications are each achieved by taking multiple choice tests that are designed to ensure technicians have the knowledge and experience to get the job done.
- The Apprentice test is completed in one sitting at an approved testing site.
- The Journeyman test is split into four modules that will be taken separately. This allows technicians additional time to prepare for each portion of the test.

Where to get Certified?

- EGSA has approved testing centers across the world. To find out where the closest testing site is located, contact **egsa@ferris.edu**.
- If your company is interested in getting multiple technicians certified, you can also contact **egsa@ferris.edu** for more information on becoming a proctor site. All you need is an HR/ Administrative department to register as a proctor.

EGSA

Please visit **EGSA.org/Certification** for additional details on the program.

Discover 5 Compelling Reasons for Leadership in Your Industry

Cody Phillips
The NEXT Academy

Leadership development is of critical importance in the On-Site Power Generation industry due to its unique challenges, complexities, and demands. In an industry where reliability, safety, efficiency, and sustainability are paramount, effective leadership is essential for driving innovation, ensuring operational excellence, and navigating dynamic market forces.

Here's 5 Reasons Why Developing Leadership Capacity in Your Organization is Crucial:

1. **Safety and Compliance:** Safety is a top priority in your industry, where employees work with high-voltage equipment, complex machinery, and hazardous materials. Effective leaders prioritize safety protocols, promote a culture of safety awareness, and ensure compliance with regulatory standards and industry best practices. They implement rigorous training programs, conduct regular safety audits, and empower employees to identify and mitigate potential risks, thereby safeguarding personnel and assets.

2. **Operational Efficiency and Reliability:** On-Site Power Generation facilities play a critical role in providing reliable electricity to various sectors, including healthcare, manufacturing, data centers, and telecommunications. Leaders in your industry focus on optimizing operational efficiency, minimizing downtime, and maximizing system reliability to meet the growing demand for uninterrupted power supply. Leadership is critical in implementing predictive maintenance strategies, leveraging data analytics, and investing in advanced technologies to enhance equipment performance, reduce energy waste, and optimize resource utilization.

3. **Adaptability to Technological Advancements:** Your industry is witnessing rapid technological advancements, including the integration of renewable energy sources, energy storage solutions, and smart grid technologies. Effective leaders embrace innovation, anticipate market trends, and capitalize on emerging opportunities to stay ahead of the curve. They foster a culture of continuous learning, encourage experimentation, and invest in research and development initiatives to harness the full potential of new technologies and drive industry innovation.

4. **Customer Satisfaction and Service Excellence:** Each one of you operate in a competitive market where customer satisfaction and service excellence are paramount. Effective leaders prioritize customer needs, deliver personalized solutions, and exceed expectations through superior service delivery and support. They foster strong relationships with clients, address concerns promptly, and demonstrate a commitment to reliability, transparency, and integrity, thereby enhancing brand reputation and customer loyalty.

5. **Talent Development and Engagement:** Developing future leaders is essential for ensuring organizational continuity, fostering a culture of excellence, and driving long-term growth in the On-Site Power Generation industry. Leaders invest in talent development programs, mentorship initiatives, retention and leadership training to groom emerging leaders and cultivate

a pipeline of skilled professionals. They identify high-potential employees, provide opportunities for growth and advancement, and foster a collaborative work environment that values diversity, inclusivity, and innovation.

Leadership development is critical for driving success, innovation, and sustainability in the On-Site Power Generation industry. Strong leaders prioritize safety, optimize operations, embrace innovation, deliver exceptional service, and invest in talent development, positioning their organizations for long-term growth and resilience in an evolving energy landscape. By fostering a culture of leadership excellence, the On-Site Power Generation industry can navigate challenges, seize opportunities, and continue to power progress and prosperity for communities around the world.

Join us at the **2024 EGSA Spring Conference in Miami** to gain invaluable insights into ***why leadership matters*** more than ever. Explore the mounting evidence supporting the pivotal role of leadership and how it contributes to Team Cohesiveness, Employee Satisfaction, Commitment, Retention, Worksite Safety, Work Group Performance, and Increased Employee Engagement. Elevate your understanding of leadership's critical importance in your organization and industry.

Don't miss this chance to enhance your leadership prowess! Attend our session and discover how The NEXT Academy, a premier performance-based training provider in the construction industry, can empower you on your leadership journey. #BeNEXT ●

SEO and Content Marketing in Today's Digital World

Shana Duthie
Chair, Membership and Marketing Committee
Duthie Consulting Group

Marketing experts often talk about Google Analytics, SEO, and the need for a content strategy, and in today's digital world, a company cannot afford to have a website without a digital strategy. To get your website to work for you, your site must rank well. This is where SEO comes into play, and your site must continuously contain new and relevant content.

Let's start with SEO (Search Engine Optimization) and why it is essential. Here are the top 3 things for companies to focus on:

- *Organic Search* drives most of the website traffic. According to multiple studies, it's estimated that around 53% of all trackable website traffic comes from organic search.
- High search engine rankings are directly correlated with high CTRs (*Click-Thru-Rates*). In fact, websites ranking in the top three positions in search engine results pages (SERPs) tend to receive over 50% of clicks.
- *Mobile Optimization* is crucial. Recent studies suggest that around 60% of Google searches are performed on mobile devices, underscoring the importance of mobile-friendly websites for SEO.

SEO is indispensable for websites seeking to enhance online visibility, attract targeted traffic, and achieve business objectives. By optimizing various aspects such as content, SEO, and mobile compatibility, websites can improve their search engine rankings, increase organic traffic, and, ultimately, drive meaningful results.

Additionally, in today's digital world, content is "king". Good content is paramount to strong Google rankings due to several key factors:

- Relevance to User Intent. Google's primary objective is to deliver users the most relevant and valuable results based on their search queries. High-quality content that directly addresses the user's search intent will rank well. Google's algorithms analyze various signals to determine content relevance, including keywords, topic coherence, and user engagement metrics.
- Authority and Trustworthiness. Google prioritizes content from authoritative and trustworthy sources. High-quality content demonstrates expertise, authoritativeness, and trustworthiness (E-A-T), which are crucial factors in Google's evaluation process.
- User Experience (UX). Google places significant emphasis on user experience when ranking content. Websites with well-organized, easy-to-navigate content that delivers value to users tend to perform better in search results. Factors such as page load speed, mobile-friendliness, readability, and multimedia integration contribute to a positive user experience, which can indirectly impact rankings.

For a company that counts on their website to drive new business, good content is indispensable for Google rankings because it satisfies user intent, demonstrates authority and trustworthiness, enhances user experience, and generates positive user engagement metrics. By prioritizing creating high-quality, relevant, and valuable content, websites can improve their chances of ranking well in Google search results and effectively reach their target audience. ●

ELECTRICAL GENERATING SYSTEMS ASSOCIATION

Electrical Generating Systems Association (EGSA) is the world's largest organization exclusively dedicated to on-site power generation.

Bringing together industry professionals from all aspects of the generation industry – manufacturers, distributors/dealers, fuel services, testing equipment, end users etc., this network comes together to promote, educate, share best practices, and influence appropriate codes and standards for the safe application of onsite electrical power generation.

For over 50 years, EGSA has furthered the discussions that fuel our industry. Historically, we have focused on the combustion engine as the prime mover; we have expanded into solar, wind, and turbine engine prime movers as the need to support local demand and micro-grid technology has grown. Common applications are in back-up power situations for healthcare, government operations, military, financial institutions, and the expansion of data centers.

Key Benefits of EGSA Membership:

- **Networking and Connection:** Dive into a world of connections and foster discussions with design engineers, manufacturers, distributors, and service providers at our annual Conferences.
- **Industry Influence:** Join our Committees and Task Forces for peer learning, networking, and leadership opportunities in the on-site power generation industry - leading and collaborating with the industry's best while advancing its interests.
- **Recognition and Visibility:** Use the EGSA logo to enhance your marketing initiatives. Plus, a complimentary member listing in the highly anticipated annual EGSA Buying Guide elevating your company's visibility in the industry.
- **Promotions and Discounts:** Enjoy substantial discounts on Events, Educational Resources, including the "On-Site Power Generation: A Reference Book" - the industry bible, and Job Bank Ads.

EGSA Exclusives:

- **Apprentice and Journeyman Certifications:** EGSA Technician Certification is the industry standard for on-site power generation technician skill level and competency, offering two levels - Apprentice and Journeyman. This rigorous program evaluates technicians on their comprehensive understanding and proficiency in installation, service, maintenance, and repair of On-Site Power Generation systems.
- **Schools and Specialized Training:** Enrich your skills at our Rowley Schools of On-Site Power and Load Bank Schools. Choose from in-person, online, or experiential learning formats to fit your style. We're here to help take your professional journey to the next level.
- **EGSA Resources:** Stay ahead of the curve with our acclaimed publications like our quarterly "Powerline Magazine", reference materials, and essential glossaries and standards - all tools for our members to stay informed and innovative about the latest developments, insights, and trends in the on-site power generation industry.

THE VOICE OF THE ON-SITE POWER INDUSTRY

Contact us: **info@egsa.org** Learn more: **www.egsa.org**
Connect with us: **egsa1** **egsa_power**

Roger Copeland, PE

Combined Heat and Power Can Be Steady Pulse of the Microgrid's Beating Heart

Properly configured and designed CHP solutions can provide microgrids with resilient, low-carbon power

Combined Heat and Power (CHP) plants are unsung microgrid heroes.

With the ability to produce a continuous, controllable baseload source of electric and thermal energy, CHP remains a uniquely practical resource, especially for mission-critical facilities operating microgrids.

Yet, despite incredible benefits, CHP's future potential may be limited as all-electric heating systems become more cost effective. In the age of rapid decarbonization, campus leaders are turning to district heating system technologies such as ground-sourced heat pumps or heat recovery systems that, unlike CHP, would operate without direct input of fossil fuels.

To fit within a zero-emission future, CHP systems need to adapt — or they risk becoming expensive, stranded assets.

Efficient, Reliable, Resilient Energy

An advanced microgrid integrates dispatchable generation, typically natural-gas-fired generators, creating an independent network of energy assets. Flexible energy resources enable integration of intermittent, inverter-based energy sources such as solar photovoltaics (PV), coupled with battery energy storage solutions (BESS). Together, these distributed energy resources provide stable, resilient energy.

In real time, microgrids must match generation sources to the connected facilities' load. A microgrid is significantly limited if generation is based solely on intermittent resources. Very large batteries would need to account for inter-day load swings — with even more capacity necessary to account for extended and unplanned outages. These back-up batteries would sit idle, charging in the event of an outage, and therefore provide little economic return.

Enter the anchor CHP system.

A CHP system provides a flexible, dispatchable electrical source that can respond in real time to these system dynamics. CHP offers the added benefit of being highly efficient. Also known as "cogeneration," CHP systems generate electrical power while capturing thermal energy that would otherwise be wasted. The captured heat is applied to on-site loads, creating a highly efficient, reliable, and resilient district energy system.

Within a microgrid, CHP systems keep humming — even when solar PV production is low or batteries are depleted. Outside of planned maintenance activities, CHP plants provide uninterrupted yet efficient energy. CHP truly becomes the steady pulse for resilient and efficient microgrids.

Carbon Conundrums

Motivated by carbon-reduction mandates or stakeholder-driven sustainability commitments, campus decision makers are increasingly choosing to shift to 100-percent renewables. In the not-distant-future, several district energy systems will be capable of running entirely on zero-emission thermal sources.

Phasing out natural gas-fired systems — CHP included — may seem like an intuitive decarbonization measure. However, electrification will result in dramatic increases to electrical demand, heightening the challenge for microgrid operations.

Excluding CHP from the energy mix also overlooks these systems' pollution-reduction benefits. The grid remains roughly 60-percent reliant on fossil fuels, while three quarters of

thermal energy comes from natural gas or heavy oil. A 1-Megawatt CHP plant operating a natural gas-fired CHP would emit nearly half the annual carbon emissions of traditional district energy applications — due largely to the plant's capture and reuse of thermal energy.

Facility leaders must also consider how CHP systems offer other undeniable benefits, particularly at campus scale, including:

- CHP systems are scalable and can be customized to meet a microgrid's specific design requirements.
- CHP plants are far more energy efficient than traditional energy options, achieving significant reduction in energy consumption as well as associated costs avoidance.
- Centralized CHP systems enable district energy campuses to provide both heating and cooling services in a central location. This reduces the need for on-site equipment in campus buildings, freeing up valuable real estate toward other core mission applications.

Alternative Fueling Options

Campus leaders may not have to choose between installing CHP and decarbonizing. Modern advances in combustion and emissions control are opening up possibilities for CHP systems to reliably operate on alternative, low-carbon fuel sources.

Of the 215 currently operating CHP microgrids, only five rely entirely on renewable fuels, according to the U.S. Department of Energy. In practice, biofuel and renewable gas options remain expensive. Production and distribution can be unpredictable. Many facilities lack capacity for on-site fuel storage, a key requirement for resilient operations in a low-carbon environment.

CHP installations can operate using fuel cells — a reliable, efficient, and scalable source of electricity. Fuel cells generate electricity by reacting fuel with oxygen through an electrochemical process to generate electricity (and waste heat). If the fuel cells' energy source is hydrogen, produced using renewables, the CHP system can generate zero-emission electricity.

Conventionally, hydrogen is created from methane-based fuel sources, mostly natural gas or biogas. Hydrogen production from unabated natural gas results in an emissions intensity in the range of 10-14 tons of carbon dioxide equivalent per ton of hydrogen (CO_2e/H_2). Natural gas production's upstream and midstream emissions are responsible for another 1 to 5 tons of CO_2e/H_2.

Looking ahead, hydrogen-powered fuel cells, turbines, and boilers may become cost effective as fuel costs fall and distribution networks expand. Federally funded "hydrogen hubs" promise to increase supplies of "green hydrogen" made with renewable electricity. Production currently remains limited with much development pending.

Don't Sleep on the Benefits of a Thoughtful CHP Application

District energy facility leaders can either wait until cost-effective, low-carbon hydrogen resources become widely available — still several years out. Or they act now, installing a thoughtful CHP system with immediate economic and environmental benefits.

A properly configured and designed CHP solution can provide resilient microgrid power with dramatically reduced carbon intensity. Practical facility leaders are installing CHP systems with future proofing in mind, designing provisions that accommodate alternative fueling sources as they become viable.

Burns has a long history of working with our clients to identify district energy systems best suited for their campus, maintaining operational resilience and reliability. In one recent example, Burns is supporting what will soon become one of the largest, most-innovative CHP microgrid installations. John F. Kennedy International Airport's New Terminal One 11.3-MegaWatt (MW) microgrid will provide fully resilient, grid-independent power for the 2.4-million-square-foot, 23-gate facility. A 3-MW CHP system involves fuel cell technology with heat recovery for heating and cooling, exceeding minimum local air pollution control requirements.

If a campus or district has a mutual goal of resilience with decarbonization, an optimized CHP solution presents facility leaders with a large step change and serious "bang for the buck." CHP remains a powerful solution for getting every useful bit of energy from the system's fuel sources.

Perhaps most importantly, CHP plants make microgrids work. All-electric heating systems increase reliance on limited power supplies, while CHP plants improve district energy systems' resilience. Electric heating systems place added strain onto microgrids, while CHP plants enhance microgrid reliability.

CHP remains a solution few can afford to ignore. ●

EGSA Certified Technicians

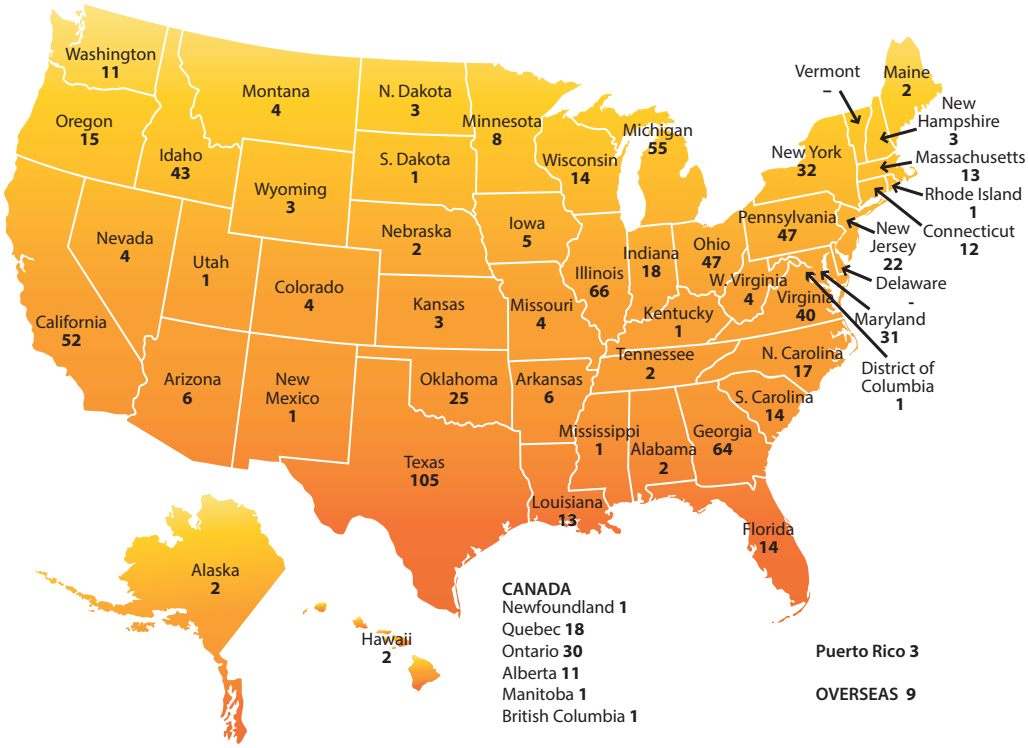
Advancing Professionalism in On-Site Power

As part of its commitment to advancing professionalism within the On-Site Power industry, EGSA has created the Electrical Generator Systems Technician Certification Program. Certification of personnel has become the hallmark of many industries in the United States today for one simple reason: It helps advance the profession by identifying consistent standards through which proficiency can be determined.

EGSA Technician Certification demonstrates a commitment to that ideal. Through rigorous testing, the program will identify those technicians who not only have a broad knowledge of electricity, mechanical and electrical components and the interaction between them, but are proficient in the installation, service, maintenance, and repair of On-Site Power generation systems.

Please visit egsa.org/Certification to learn more about EGSA Technician Certification. ●

916* EGSA Certified Technicians



EGSA Certification Levels

Apprentice
The Apprentice level exam provides technical college students, recent graduates, military personnel and other 1st or 2nd-year technicians with proof that the basic skill set has been met (certification valid for 3 years).

Journeyman
A passing grade on our Journeyman exam assures an employer that this technician meets or exceeds 3 years of practical field experience. This exam tests in 61 individual areas of expertise (certification valid for 5 years).

Partnerships Help CD & Power Transition to Clean Energy Future

In an era dominated by environmental concerns and the urgency to transition towards cleaner energy solutions, businesses across industries are facing the challenge of adapting to new technologies. CD & Power, a company that has long been synonymous with diesel generators, is at the forefront of this transition.

The challenge that management is tackling: how to remain the go-to company for backup power as new technologies enter the market?

CD & Power's Journey to Leading Backup Power Resource

Established in 1985 by Chuck Uischner, CD & Power began as a showcase of Chuck's diesel mechanic expertise and inspiring leadership. Thriving under his guidance, it grew into Northern California's largest independent generator service company. Involving Jannett, Chuck's wife, and both of their children over the years, CD & Power is now led by daughter Jill Collaro and a committed team with decades of experience, maintaining its status as the region's premier generator maintenance company.

In order to be seen as the top resource for backup power, not just diesel engine service, the CD & Power team developed expertise across the entire backup power system. Their services expanded to include:

- Automatic Transfer Switch (ATS) sales and service
- Regulatory compliance consulting and management
- UPS maintenance
- IR scanning and thermal imaging
- Turn-key solutions, including help with permitting

ATS Expertise and Compliance Management

CD & Power's proficiency in ATS technology showcases its commitment to providing seamless transitions during power outages. This expertise ensures that their clients experience minimal disruptions in critical operations.

Moreover, the company's compliance knowledge is crucial in an environment where regulations governing power solutions are becoming increasingly stringent.

UPS Maintenance and Thermal Imaging

Understanding the importance of Uninterruptible Power Supply (UPS) systems, CD & Power has positioned itself as a reliable partner for maintaining these critical systems. Additionally, their use of thermal imaging technology demonstrates a commitment to proactive maintenance, identifying potential issues before they escalate into major problems.

Turn-key Solutions and Permitting Assistance

CD & Power goes beyond merely supplying equipment; it offers turn-key solutions. This includes assisting clients with securing permits, a crucial aspect of deploying backup power solutions. Their comprehensive approach ensures that clients receive end-to-end support, from ordering the right equipment to installation, maintenance, and regulatory compliance.

Solution: Technology partners that value CD & Power's role in reaching and advising customers.

As low-emission and zero-emission technologies become viable as backup power options, two companies have risen to the surface as natural partners for CD & Power: 1) Bronco Power Boost for Battery Energy Storage Systems, and 2) ANA for its Energy Boss towable hybrid generator. These collaborations allow CD & Power to offer cutting-edge backup power options to its clients that already trust the company for its deep expertise.

Bronco Power Boost

Founded in 2019, Bronco power boost offers an eco-friendly, automatic battery energy storage system that allows a business owner or homeowner to protect essential devices on up to six circuits. As soon as an outage occurs, the unit automatically turns on, providing seamless power for up to 96 hours. CD & Power is now the exclusive distribution partner for Bronco Power Boost in Northern California and is busy educating electrical contractor partners and the market about this innovative solution.

ANA Energy Boss Hybrid Battery-Diesel Generator

The North American supplier of AIRMAN generators, ANA offers the Energy Boss hybrid generator that is engineered to dramatically reduce emissions and operating expenses, compared to traditional diesel generators. By allowing the engine to operate in its most efficient range, even as the load varies, the Energy Boss

cuts fuel consumption and emissions by 50% - 80% in many cases! CD & Power has been adding Energy Boss systems to its rental fleet, helping its towable generator customers achieve their emission reduction goals.

Training for Today and Tomorrow

Recognized by the California Department of Industrial Relations as offering the only Master Generator Technician certification program, CD & Power takes pride in its efforts to train its people in the latest technologies and safety practices.

Their teams are already conducting and receiving training on these new, lower-emission products, further solidifying the company's position as an industry leader in backup power.

What's Next? Exciting Potential and Commitment to Mutual Success

"Our journey towards a clean energy future is not just a commitment to change; it's ensuring our clients' power needs are met as we help them transition to lower-emission solutions. At CD & Power, we embrace the challenges of technology shifts and see them as opportunities to redefine what's possible in the world of back-up power."

—Lisa Carter,
Vice President, CD & Power

CD & Power's transition towards cleaner energy solutions is gaining momentum and the company's people are optimistic about the potential. Partnerships with ANA and Bronco Power Boost mark significant steps towards a more sustainable future where CD & Power remains Northern California's go-to company for backup power expertise and quality equipment. CD & Power is not just adapting to change; it is proactively embracing it, positioning itself as a key player in the clean energy revolution. ●

EGSA Job Bank Guidelines

EGSA will advertise (free of charge) EGSA Member company job openings in the Job Bank. Free use of the Job Bank is strictly limited to companies advertising for positions available within their own firms. Companies who are not members of EGSA and third-party employment service firms who service our industry may utilize the Job Bank for a $300 fee. Blind box ads using the EGSA Job Bank address are available upon request; company logos may be included for an additional fee. EGSA reserves the right to refuse any advertisement it deems inappropriate to the publication. To post an EGSA Job Bank ad (limited to approximately 50 words) please visit EGSA.org/Careers.aspx.

Meet the 2023 Technician of the Year Award (TOYA) Winner, Mark Gonzalez

The Electrical Generating Systems Association (EGSA) is proud to announce that Mark Gonzalez of Collicutt Energy Services was named the 2023 Technician of the Year (TOYA) winner. EGSA's TOYA award is our association's way of honoring and showcasing the on-site power industry's first responders and unsung heroes, who determinedly give their time and attention to the power generation systems and packaged engineered solutions around the globe.

Mark grew up in Southern California and started working as a shop-hand in a truck shop. During his time there, he would see generator technicians come in, pick up parts, and leave. He remembered thinking it was cool to come and go without anyone being over your shoulder. Mark told himself that's what he wanted to do. So, he pushed himself to learn as much as he could about the field of power generation. That included making friends with all the senior technicians, building a library of service manuals, and taking all available training classes.

"One of the most important things I learned was that the key of success is not necessarily to know everything, but being able to find answers to different problems and scenarios. I've got to where I am today with help from all the lead technicians, willingly teachers in disguise, and companies like Collicutt Energy that invest into their services technicians. Now, as a lead troubleshooting and start up technician, I do my best to help and teach new technicians that come into the industry."

Generator technicians are responsible for servicing, maintaining, selling parts and providing customer assurance. In our industry, technical knowledge is respected and expected, but the ability to think and act under pressure is what separates elite technicians from the shade tree mechanic. These pieces of equipment are sensitive and complex systems that require expertise to keep the power on! The systems a technician works on can sometimes be the difference between a life or death situation.

Congratulations to our 2023 TOYA recipient, Mark Gonzalez, your dedication and hard work in service to your customers represents the best in our industry. ●

Mark Gonzalez

Technician of the Year Award Recipients

2023 — MARK GONZALEZ - Collicutt Energy Services
2022 — RUSTIN RISS - Kelly Generator & Equipment, Inc.
2021 — DONALD STERNER - Penn Power Group
2020 — MATTHEW ERICKSON - PowerSecure
2019 — ANDREW VAN NOY - Loftin Equipment Company
2018 — ROB PLANE - LionHeart Critical Power Specialists
2017 — RICK ROTHFUSS - Prime Power Services
2016 — DAVID YURO - Modern Power Systems
2015 — MARK MICHAELSON - Collicutt Energy Services
2014 — TODD VAUGHAN – Kelly Generator & Equipment, Inc.

Collicutt Energy Services

Collicutt Energy began its journey in 1986 with a clear mission: to provide top-notch engine services regardless of make, model, or industry. Over the years, the company's dedication to this mission has fueled its expansion and success.From humble beginnings, Collicutt Energy has grown into a powerhouse in the energy sector, servicing a wide array of engines and peripheral equipment.

Collicutt Energy Services
Collicutt.com

Founded in 1986 with a steadfast focus on engines, Collicutt Energy has evolved into a premier provider of comprehensive engine services, catering to diverse industries and clientele.

With a commitment to excellence and innovation, Collicutt Energy has grown into a trusted partner for engine servicing, rebuilds, and solutions globally.

Powering Tomorrow through Unrivaled Solutions Today

Collicutt Energy's footprint spans across continents, with notable projects showcasing its expertise and reliability. In the heart of Alberta Canada's oil and gas industry, Collicutt Energy's 70,000 square foot facility stands as a testament to its commitment to excellence. With specialized services tai- lored for well servicing, from oil changes to major overhauls, including a 20,000psi frac test stand, Collicutt Energy plays a pivotal role in ensuring operational efficiency for its clients in the Canadian energy sector.

Demonstrating astute market insight, Collicutt has strate- gically expanded its footprint with a new, fully equipped facil- ity in Bakersfield. This hub, staffed with skilled technicians and sales professionals, serves the prime power market and the thriving agricultural sector of California. This initiative is part of a broader commitment to sustainable growth and superior customer service, reflecting Collicutt's dedication to not only meeting but anticipating client needs. The company has sharpened its focus on prime power enhancements, in- troducing an innovative fuel blending package that merges biogas with natural gas, maximizing resource efficiency while minimizing environmental impact. The company also supports critical infrastructures like data centers and large hospitals, which depend on multiple backup generators. Over the past two years, this focus has been honed, showcasing Collicutt's ability to specialize where it matters most.

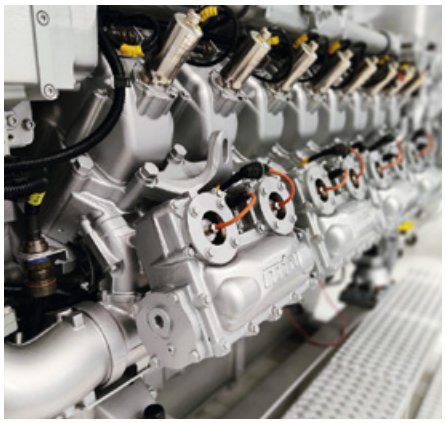
Beyond North America, Collicutt Energy's global presence extends to projects in Egypt and Bahamas. Leveraging its ex- pertise in engine solutions, Collicutt Energy contributes to the energy infrastructure of these regions, delivering reliable services and solutions tailored to local needs.

Collicutt Energy surpasses mere provision of power gen- eration equipment. With a seasoned team encompassing rentals, sales, engineers, project managers, technicians, and execution experts, Collicutt stands as an invaluable partner committed to the success of its clients. The company exhibits agility in navigating the ever-evolving landscape of ener- gy regulations and market demands.

From swiftly deploying emergency standby power units to delivering high-efficiency prime power systems for continuous and sustainable energy generation, Collicutt's manufac- turing crews consistently elevate service and product quality to align with the dynamic needs of clients.

The EGSA Connection

Collicutt Energy's commitment to excellence is further exemplified by its partnership with the Electrical Generating Systems Association (EGSA). As a member since 2013, Collicutt Energy has actively contributed to the advancement of the industry, serving as a valued representative for EGSA.



In 2023, Collicutt Energy was honored to receive the pres- tigious EGSA Technician of the Year Award for the second time, underscoring its dedication to technical proficiency and customer satisfaction.

With a rich history rooted in engine expertise and a global presence in energy solutions, Collicutt Energy stands as a beacon of excellence in the industry. From Canada to California, Egypt to Bahamas, Collicutt Energy continues to drive innovation and reliability in engine services, powering the world forward with its unparalleled commitment to quality and customer satisfaction. ●

Power Generation for Healthcare Facilities

By Brady Eifrid
Senior Project Engineer, Kohler Power Systems

When it comes to backup power within the health care industry, there is an extraordinary amount of detail and complexity in the design, inspection, and installation of electrical systems. Equally challenging is ensuring that these designs and installations meet a significant number of codes and regulations. This white paper will discuss key elements related to backup power system design to meet such requirements.

National Fire Protection Agency

Some of the more commonly known requirements fall within the National Fire Protection Agency (NFPA). The purpose of this document will be to provide clarification and interpretation of three specific NFPA standards – (NFPA 99, NFPA 110, and NFPA 70).

- NFPA 99 - Health Care Facilities Code
- NFPA 70 - National Electrical Code (NEC)
- NFPA110 - Standard for Emergency and Standby Power Systems

There are also many local regulations and codes that health care installations must meet. So, it is important to work with your local inspectors and authorities having jurisdiction to ensure compliance standards are being followed. However, the goal is to break down each of the above standards most referenced within healthcare installations, and more specifically, alternative power generation requirements within them

SCOPE AND APPLICATION

These codes reference one another heavily while sticking within their respective scope, and adoption of the most recent code varies by state. Because there are many similarities between the standards, the goal will be to highlight the specific scope and applications of each standard individually and summarize the references between them.

IMPORTANT TERMINOLOGY

First let us talk about what "Essential Electrical Systems" and "Emergency Power Supply Systems" (interchangeable with Emergency Power System) are:

- Essential Electrical System (EES) Series of circuits/electrical branches that are critical to life safety. These include but are not limited to emergency egress lighting, power for surgery units, and intensive care units (ICU) power
- Emergency Power Supply Systems/Emergency Power System (EPSS/EPS)

A system designed to retain electrical systems to a building. A stationary engine driven generator is one example. Battery cells or solar panels may be classified as EPS's as well. Keep in mind that EPSS and EPS's are interchangeable. However, definitions vary depending on location/jurisdiction.

Some may view the EPS as a stationary engine driven generator or some other source of electrical power generation. While the EPSS encapsulates the EPS, but also includes the switchgear or automatic transfer switch systems

NFPA 99 Healthcare Facilities Code

NFPA 99, Healthcare Facilities Code, covers a wide range of requirements from plumbing, gas and vacuum systems, and even emergency preparedness plans. Our focus within this standard will primarily be within chapter 6 – Electrical Systems. However, some terms to understand will include verbiage such as "type," and "category."

RISK CATEGORIES

Much of Chapter 6 will include requirements based on category. NFPA 99 is categorized in 4 levels as shown in Figure 1.

These categories are not all inclusive, and a facility has the right to design their systems to a higher risk category. Category space and electrical system requirements are dictated by these category levels and separated out accordingly within the chapter. From here, we will dive into EES.

EES requirements from NFPA 99 pull many references directly from NFPA 110 Standard for emergency and Standby Power Systems. NFPA 110 will be discussed a bit later, but each category number will require a "type" requirement of the EES. The below table Figure 2 summarizes the type requirements based on category.

NFPA 99 DEFINES TYPE 1 AND TYPE 2

NFPA 99 defines Type 1 and Type 2 EES's through subsections within chapter 6. Both Type 1 and Type 2 EES's require two independent power sources (e.g. utility and back-up generator). The next table shown in Figure 3, highlights some of the key differences between Type 1 and Type 2 requirements.

DIFFERENT DEFINITIONS FOR TYPE

An emergency power source must meet NFPA 110 Type 10, Class X, level 1 source requirements. The word "Type" has different meanings for NFPA 99 and NFPA

110. NFPA 99 EES "Type" refers to both the level of importance of the space and respective equipment needing power, where the NFPA 110 "Type" refers to just the time to provide power.

NFPA 70 - Article 517

It is important to note that many NFPA 99 requirements for type 1 and type 2 EES's are referred to directly in NFPA 70 under article 517. NFPA 70 and NFPA 99 often synchronize with each other for what has been covered so far.

Article 517 expands NFPA 99 EES requirements pertaining to the allowed use of energy storage solutions, and microgrids.

Additionally, Article 517 states that optional loads shall be served by their own transfer switches only if the generators are not overloaded by these loads. In other words, optional loads must be within the rating of the power source unless they can be shed to avoid an overload condition.

KEY 517 SECTIONS

In Figure 4 below the sections within article 517 are noted for important references on EES's.

FIGURE 1

NFPA CATEGORY LEVELS

OCCUPANCY TYPE	CATEGORY OF RISK	
HOSPITAL NURSING HOME LIMITED CARE FACILITY	Category 1 Major Injury or Death	Failure of systems and activities can cause major injury and/or loss of life.
	Category 2 Minor Injury	Failure of systems and activities may cause minor injuries.
	Category 3 Not Likely to Cause Injury	Failure of systems and activities unlikely to cause minor injuries (still possibility of minor injury).
	Category 4 No Impact on Patient Care	Failure of systems and activities will have no impact on patient care.

FIGURE 2

Essential Electrical Systems Categories

Category 1	Category 2	Category 3	Category 4
Type 1 EES	Type 1 or Type 2 EES	No EES required	No EES required

FIGURE 3

Comparison of Type 1 and Type 2 Essential Electrical Systems

Type 1 EES	Type 2 EES
1. Life Safety 2. Critical 3. Equipment	1. Life Safety 2. Equipment
Life Safety branch limited to life safety circuits	*One transfer switch permitted to serve multiple branches only if there are continuous loads 150kVA/120kW or less.
Alarms shall be tied to life safety branch OR critical branch	AC equipment for generator accessories shall be setup for automatic connection to onsite power.
Critical branch may be subdivided (multiple transfer switches)	Equipment critical to emergency power.
Critical branch category ties requirements for category 1 locations	
These circuits must be kept entirely independent of all other wiring *Direct verbiage is referenced within NFPA 70 (Article 517) for transfer switches.	

NFPA 110 Standard For Emergency And Standby Power

As stated previously, NFPA 99 EES's call out NFPA 110 Emergency Power Supply Systems (EPSS) requirements. NFPA 99 Type 1 and Type 2 require NFPA 110 Type 10, Class X, level 1 EPSS's. Let's break down what this means.

There is the type, class, and level.

See below points and tables referenced from NFPA 110 that break down these options within the standard:

- Type-maximum time (seconds) that the EPSS must supply power.
- Class - time (hours) the EPSS must run for.
- Level - indicator for life dependency:
  1. Level 1 = loss of life in event of power loss
  2. Level 2 = power loss less critical to human health and safety

INDOORS

Like location requirements stated within NFPA 99/70, the location of the EPSS under 110 is also important. For example, if the EPSS system is installed indoors, then the room needs to have a 2-hour fire rating. Furthermore, if used for a level 1 system, the EPSS room needs to be completely dedicated.

ADDITIONAL NOTES

A few other key notes for the emergency power source here are:

- For level 1 systems there may be no other equipment mechanically driven by the power source.
  1. The only exception is if the power source is mechanically driving accessories needed to run normally, and of course the generator (alternator).
- Air temperature for the system (not running, in standby mode), must be kept at a minimum of 40 degrees Fahrenheit (4.5C).
- Fuel tank capacity requires 133% of either low fuel sensor quantity or quantity required by the class.

FIGURE 4

Essential Electrical Systems (NFPA 70 [NEC article 517]) - NFPA 99 (Chapter 6)		
Life Safety Branch - 517.33	Critical Branch 517.34	Equipment Branch - 517.35
Note emergency automatic connection requires 10 second starts		Delayed transfers (local municipalities vary)

In Figure 5 below -Type reference per 2022 edition (Table 4.1(a)).

FIGURE 5

Designation	Power Restoration
Type U	Basically uninterruptible (UPS systems)
Type 10	10 sec
Type 60	60 sec
Type 120	120 sec
Type M	Manual stationary or non-automatic - no time limit

In Figure 6 below - Class reference per 2022 edition (Table 4.1(b)).

FIGURE 6

Class	Minimum Time
Class 0.083	0.083 hr (5min)
Class 0.25	0.25 hr (15min)
Class 2	2 hr
Class 6	6 hr
Class 48	48 hr
Class X	Other time, in hours, as required by the application, code, or user

As shown in Figure 7 the energy sources from NFPA 110 can be any of the following:

FIGURE 7

NFPA 110 Level 1 Energy Sources	
Spark ignition engines	Proton exchange membrane (hydrogen)
Diesel engines	Solid oxide
Turbine engines	Molten carbonate
	Phosphoric acid
	Alkaline

1. For example, if the system is a class 6 generating system, the low fuel sensor should annunciate if the fuel level drops below 6 usable hours at full load.

As shown in Figure 8 NFPA 110 EPSS Accessories for level 1 and level 2 per 2022 edition (Table 5.6.4.2).

FIGURE 8

NFPA 110 EPSS Accessories for level 1 and level 2 per 2022 edition (Table 5.6.4.2)

Starting Equipment Requirements	Level 1	Level 2
(a) Battery unit	X	X
(b) Battery certification	X	NA
(c) Cycle cranking	O	O
(d) Cranking limiter time-outs		
Cycle crank (3 cycles)	75 sec	75 sec
Continuous crank	45 sec	45 sec
(e) Float-type battery charger	X	X
dc ammeter	X	X
dc voltmeter	X	X
(f) Recharge time	24 hr	36 hr
(e) Low battery voltage alarm contacts	X	X

X: Required. O: Optional. NA: Not applicable.

NFPA 110 CONTROL AND ANNUNCIATION FUNCTIONS

For either conventional systems, or alternative solutions for emergency power, both must have the required control function and annunciations applicable to meet the intent of NFPA 110.

These include, but may not be limited to the following:

- Auto start capable
- "Run-off-automatic" switching/ modes
- Shutdowns and lockouts for a prime mover under fail to start within cranking cycles, overspeed, low oil, high temperature, use of remote emergency stops.
- Alarms to indicate the above shutdown conditions, along with being battery powered, visually indicated, needs to be audible in both onsite and remote locations if applicable, and needs a test button/light that tests the operability of all alarm indicating lights.

As shown in Figure 9 NFPA 110 Annunciation per 2022 edition for level 1 and level 2 systems (Table 5.6.5.4)

NFPA 110 TESTING AND OTHER REQUIREMENTS

There are monthly and annual testing requirements that are designed for healthcare facilities. Additionally, coordination studies for transfer equipment may be needed depending on your local authorities. The emergency power source ambient temperatures need to maintain a minimum of 40 degrees Fahrenheit (4.5 degrees Celsius).

The emergency system itself needs to be tested under loads. In some cases, this may be cost prohibitive which is why coordination reviews may be required. Otherwise, the site may require onsite or rented load banks to assure the power system is loaded at 100% per the recommended schedule.

Also, keep in mind that there may be additional local requirements for the EPSS, so it is important to discuss with local authorities having jurisdiction to remain in compliance.

TRANSFER SWITCH REQUIREMENTS

Transfer switch systems have their own additional list of key requirements to ensure proper operation of the EPSS. Transfer systems must be electrically operated and mechanically held, transfer loads automatically back and forth, and visually indicate when it is not in an automatic setting.

NFPA 99 again calls out requirements for transfer switches from NFPA 110. Source monitoring requirements are similar, however, the source monitoring does not need to be tied into the transfer switch if it is included already on the EPSS's control panel.

Healthcare Organizations

There may be other codes and standards required for overall health care building requirements. For educational and resource purposes, it is important to at least mention a few governing bodies to research. The Facilities Guidelines Institute (FGI), and the Joint Commission (JC) are two such bodies. FGI develops guidelines and best practices for designing, planning, and overall construction of hospitals, outpatient facilities, and more.

The JC additionally provides standards and evaluates/inspects these types of buildings and facilities to ensure compliance with applicable standards and ensure effective care is done safely. More information is included in the links below for readers.

Summary

Emergency power supply systems

ensure healthcare facilities and other critical care type locations have the redundancies needed for reliable power to keep people safe and equipment stable.

NFPA 99 Healthcare Facilities Code is a national installation guideline for healthcare facilities that refers to other NFPA installation standards like NFPA 70 and 110 which are used for all power system applications.

It is recommended to read the codes and standards in full to assure proper installation and compliance according to the authority having jurisdiction..

Kohler Advantages

KOHLER designs our power systems to meet the NFPA standards, as well as local requirements including 72/96-hour sub base tanks for diesel generators, 10 seconds or less to start our generators, hurricane rated and corrosion resistant enclosures for coastal regions, and control systems that meet the NFPA 110 annunciation requirements.

Kohler designs products (generators, paralleling switchgear, ATS, and controls) with total system integration in mind so that everything works as expected when it gets installed. ●

Associated Links/ Resources

NFPA
www.nfpa.org/Codes-and-Standards/All-Codes-and-Standards/List-of-Codes- and-Standards

NFPA 70 Adoption by State
www.iaei.org/page/nec-code-adoption

Facilities Guidelines Institute:
www.shop.fgiguidelines.org/

Joint Commission
www.jointcommission.org/resources/

FIGURE 9

NFPA 110 Annunciation per 2022 edition for level 1 and level 2 systems (Table 5.6.5.4)

	Level 1			Level 2		
Starting Equipment Requirements	CV	S	RA	CV	S	RA
(a) Overcrank	X	X	X	X	X	O
(b) Low water temperature	X	N/A	X	X	N/A	O
(c) High engine temperature prealarm	X	N/A	X	O	N/A	N/A
(d) High engine temperature	X	X	X	X	X	O
(e) Low lube-oil pressure	X	X	X	X	X	O
(f) Overspeed	X	X	X	X	X	O
(g) Low fuel main tank	X	N/A	X	O	N/A	O
(h) Low coolant level	X	O	X	X	O	X
(i) EPS supplying load	X	N/A	N/A	O	N/A	N/A
(j) Control switch not in automatic position	X	N/A	X	X	N/A	X
(k) High battery voltage	X	N/A	N/A	O	N/A	N/A
(l) Low cranking voltage	X	N/A	X	O	N/A	O
(m) Low voltage in battery	X	N/A	N/A	O	N/A	N/A
(n) Battery charger ac failure	X	N/A	N/A	O	N/A	N/A
(o) Lamp test	X	N/A	N/A	X	N/A	N/A
(p) Contacts for local and remote common alarm	X	N/A	X	X	N/A	X
(q) Audible alarm silencing switch	N/A	N/A	X	NA	N/A	O
(r) Low starting air pressure	X	N/A	N/A	O	N/A	N/A
(s) Low starting hydraulic pressure	X	N/A	N/A	O	N/A	N/A
(t) Air shutdown damper when used	X	X	X	X	X	O
(u) Remote emergency stop	N/A	X	N/A	N/A	X	N/A
(v) Overload alarm/load shed contact	X	N/A	X	N/A	N/A	N/A

CV: Control-panel-mounted visual. S: Shutdown of EPS. RA: Remote audible. X: Required. O: Optional. N/A: Not applicable.
Notes:
(1) Item (p) shall be provided, but a separate remote audible signal shall not be required when the regular work site in 5.6.6 is staffed 24 hours a day.
(2) Item (b) is not required for combustion turbines.
(3) Item (r) or (s) shall apply only where used as a starting method.
(4) Item (i) EPS ac ammeter shall be permitted for this function.
(5) All required CV functions shall be visually annunciated by a remote, common visual indicator
(6) All required functions indicated in the RA column shall be annunciated by a remote, common audible alarm as required in 5.6.5.2(4)
(7) Item (g) on gaseous systems shall require a low gas pressure alarm.
(8) Item (b) shall be set at 11°C (20°F) below the regulated temperature determined by the EPS manufacturer as required in 5.3.1.

ABOUT THE AUTHOR

Brady Eifrid, is a Senior Project Engineer within the Global Power Group Standards and Regulations team that ensures product compliance for all power system products, including safety certifications with UL, Canadian Standards Association (CSA), and structurally for the International Building Codes (IBC). Brady also drives certifications, as applicable, for the Commonwealth of Massachusetts Plumbers and Gas Fitters (Mass Gas) and California Department of Health Care Access and Information (HCAI).

Brady is a member of the Standard Technical Panel (STP) for UL 2200, UL 2200A, and UL 6200. He is also a Technical Committee board member for NFPA 37. He consults with many driving authorities within the industry to understand and provide feedback on the ever-changing world of standards and regulations.

EGSA is ready for another successful Spring Conference, this time in sunny Miami, FL. Located in downtown Miami, near one of the trendiest neighborhoods known as Brickell. The Hyatt Regency Miami boasts stunning views of the Miami Riverwalk, Bayfront Park, and is very close to the Port of Miami. Just 20 minutes from Miami International Airport, the Hyatt Regency Miami features exceptional amenities: heated outdoor swimming pool, near proximity to both Miami Beach and Key Biscayne, the Biscayne Bay jogging trail, and various dining options on property or within a short walk.

Why EGSA Spring?

EGSA Conferences are the only events that are for industry and by industry. This is your opportunity to **Network > Learn > Advance**. See what your colleagues have said about attending EGSA Conferences and why you don't want to miss Spring.

"EGSA has absolutely been fantastic for my career and my development, personally and professionally. The networking and education... you can't beat it. And that networking leads to opportunity, it leads to what we all want which is to grow our businesses."

– Fall Conference Attendee

Keynote Speaker

MONDAY, APRIL 8

8:30 am – 9:45 am

Monetary Policy and the Economy: So Far So Good

Charles Evans, *Economic & Financial Expert, Former President & CEO of the Federal Reserve Bank of Chicago*

Moderated by: Nelda J. Connors, *Former Director Federal Reserve Bank of Chicago and CEO of Pine Grove Holdings, LLC*

The Jay Powell Fed has signaled that they expect inflation will end 2024 near 2.5 percent, down dramatically from the elevated rates of 2022 and 2023. An economic soft landing is in sight, with continued low unemployment rates and economic growth only modestly below trend for 2024. Opinions vary widely between Fed policymakers and financial market participants as to whether financial conditions ease only a bit or more dramatically as 2024 unfolds.

Engineering Symposium General Session

MONDAY, APRIL 8

10:00 am – 11:00 am

Mastering Power System Equipment Specifications & Design: A Guide to Avoiding Common Pitfalls for Consulting Engineers, End-Users and Industry Participants

Moderator: Carlos Jimenez, *BR+A Consulting Engineers*

Panelists: Jim Briceno, *ASCO Power Technologies; Joseph Dickinson, Ring Power Corporation;* Joe Kendall, *Schneider Electric;* Jennifer Nekuda, *Kohler Energy;* Mariano Rojas, *Cummins*

This panel is comprised of leading industry professionals who, despite representing different companies, share a consensus on crucial topics within power system design. The collaboration of diverse perspectives will provide attendees with valuable insights, best practices, and tips for navigating the intricate landscape of power system equipment specification and design. Topics include recommendations for installation, operations, and servicability of power systems equipment; power studies and selective coordination; common pitfalls to avoid when

writing specifications and interpreting design documents; transfer switch specifications and uses; and when to include permanent docking station connections for temporary alternate power sources. The panel will be followed by in-depth engineering breakout sessions throughout the conference.

Education Sessions

MONDAY, APRIL 8

1:00 pm – 1:45 pm; repeated from 2:00 pm – 2:45 pm

Sustainable Onsite Power Generation for Data Centers – aka Microgrids
Presenter: Carsten Baumman, *Director Strategic Initiatives, Schneider Electric*

Data centers face unprecedented challenges. The demand for data centers services to support our digital economies continuing to grow at a rapid pace. In this session, we will explore microgrid possibilities that exists for them today and what's on the horizon moving forward.

Leveraging Data to Optimize Field Service Operations
Presenters: Andrew Knox, *Vice President of Sales & Marketing, MSI Data* and Dane Olsen, *Director of Operations, Generator Solutions, Inc.*

Gaining visibility into your critical service KPIs will unlock your ability to run your business more efficiently. Having insights into your service operations allows organizations to maximize profitability, while reducing costs. This session will help attendees understand access data and how to monitor it over time.

Leadership...Why Does IT Matter?
Presenter: Marty Riesberg, *Lead Instructor, The NEXT Academy*

This session will uncover the immense opportunities that leadership presents in the On-Site Power Generation industry. The landscape is evolving, with traditional leader-centric models giving way to dynamic distributed and shared leadership structures that empower individuals at every organizational level.

Clearing the Air: A Sustainable Approach to Minimizing Black Carbon and Greenhouse Gas Emissions from On-Site Diesel Generators
Presenters: Paul Anderson, *CEO, Rypos Inc.* and Bryan Dusza, *National Sales Manager, Rypos Inc.*

While sustainability efforts and a deepening of air quality regulations are increasing around the world, some industry sectors are proving harder to decarbonize than others. This session will break down the impacts of diesel emissions and provide a case study on Rypos partnership with local utilities to reduce diesel emissions.

TUESDAY, APRIL 9

9:15 am – 10:00 am; repeated from 10:15 am – 11:00 am

Microgrids for Resiliency and Energy Services
Presenter: Ian Walch, *Director Energy Solutions and Partnerships, Enchanted Rock*

Microgrids are now a proven solution for industrial customer resiliency. This session will discuss how microgrids are a cleaner, more reliable, and can provide dispatchable grid services to reduce the cost of on-site resiliency.

Women in On-Site Power—A Panel Presentation
Moderator: Shana Duthie, *Principal, Duthie Consulting Group*

Panelists: Lisa Carter, *Vice President, CD & Power* and Rebecca Lore, *Product Manager, Lex Products*

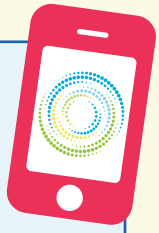
This session will discuss the challenges faced by women in the Onsite Power industry, look at ways of empowering women, adding more leadership opportunities, and discuss the benefits your business will have from broader engagement.

Development and Retention of Service Technicians
Presenters: Jon Pinney, *Learning & Development Manager, Buckeye Power Sales* and Randy Gross, *Head of Sales and QA, Duthie Power Services*

This session will discuss clear developmental pathways and how they lead to increased retention. We will review case studies on two separate EGSA Member companies that have found success in development and retention of service technicians.

Being the Hero for your Customer
Presenters: Tom Wein, *Owner, Wein Technical Training and Consulting LLC* and Sterling Dixon, *Power Rental Service Manager, Entech Sales*

In this session we will break down a project that experienced multiple hurdles and how preparedness by all aspects of the business led to successful completion of the project. From training, dispatch, technicians, supply, and admin all aspects of the business need to work together to complete the mission.



CONFERENCE APP

You will have everything you need to know about the conference in the palm of your hands using the EGSA Conference App! The app will provide easy access to speakers, sessions, sponsors, venue info, and more. All while providing the opportunity to network and engage with one another throughout the event.

For event registration, please visit: **www.egsa.org/spring**. The Conference App is available for both Apple and Android devices, search for "**EGSA Conferences**" in the Apple Store or Google Play Store.

NETWORKING EVENTS

SUNDAY, APRIL 7

Fishing Excursion
12:30 pm – 6:00 pm

South Florida is all about unbeatable fishing. The main aims at Lady Pamela 3 Sportfishing are for everyone on board to get the waters all to themselves! The knowledgeable crew will work hard to put you on trophy Sailfish, Wahoo, Mahi-Mahi, Tuna, Kingfish, Snapper, Marlin, Shark, Cobia, and whatever else is biting. Kite-fishing is another exciting method you can be using during the trip, which is always fun!

MONDAY, APRIL 8

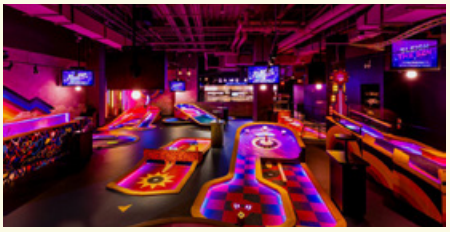
Spouse Program
9:30 am – 4:30 pm

Co-Sponsored by Bay Power Solutions and WPI

New this year we are offering a spouse program to allow spouses, significant others, and guests the opportunity to get off property and enjoy Miami and South Beach. Starting with a pick up from the hotel at 9:30 am, followed by free time and brunch in South Beach, and finally returning back to the hotel in plenty of time for the reception.

Putt Putt
8:00 pm – 10:00 pm

Join us for an offsite dinner reception while showing off your competitive



side at Putt Putt. Puttshack is an upscale, tech-infused mini golf experience in Miami, FL that pairs modern technology with crazy courses and trendy vibes for an experience that you won't forget.

Open to all attendees, free of charge!

TUESDAY, APRIL 9

Everglades Tour
12:30 pm – 4:30 pm

Co-Sponsored by PEG and United Rentals

Step into the world of Florida's "Gladesmen": gator hunters, moonshiners, skiffers, and outdoorsmen in this one-of-a-kind ecosystem. Upon arrival, board a private airboat and prepare to be swept deep into the sawgrass prairie as we make our way to a remote island or "hammock." You'll even have the unique opportunity to sample Everglades cuisine, as you find yourself immersed in the very sights and sounds that have permeated this region for centuries. On the menu are gator tail and frog legs, plus an assortment of other local favorites for the less daring among you. Following your airboat ride, you will get up close and personal with native and nonnative reptiles that call the Everglades home during a 20–30-minute wildlife presentation.

Golf Tournament
12:30 pm – 6:00 pm

Co-Sponsored by WPP and Mecc Alte

Enjoy 18-holes of golf at the Miami Shores Country Club. Miami Shores is one of the most unique courses in South Florida. With majestic oak trees and gently rolling terrain, our historic 18 hole championship layout will challenge and delight golfers of all skill levels.

Mojito Making Class
1:00 pm – 3:00 pm

Indulge in the Cuban experience and learn from a mixologist how to make an authentic mojito. Lunch provided before class starts. On-property activity.

Pickleball Tournament
1:00 pm – 4:00 pm

Co-Sponsored by Hotstart and Mall Energy

Be a part of the second annual EGSA Pickleball Tournament. Enjoy the latest fitness craze and compete to win prizes awarded during the Closing Reception. Equipment, transportation, and lunch will be provided.

ENGINEERING SYMPOSIUM SESSIONS

MONDAY, APRIL 8

1:00 pm – 2:00 pm

Considerations for Generator Set Selection

Presenter: Bob Kelly, *Cummins*

Sizing and selecting the right-sized generator set for a customer's loads can be a challenging endeavor; we're here to help! While most sizing exercises are best done with sizing programs or with the help of a manufacturer's representative, it is still important to understand the fundamental factors that affect the sizing of generator sets so you can be confident you have the right equipment for your application.

After completing this course, participants will be able to: Recognize the importance of key early decisions and where to get more information even before sizing for customer loads; Identify the impact of site conditions and overall loads on generator set performance; Describe how transient performance impacts generator set sizing: including load application techniques to optimize generator set performance while minimizing generator set size requirements for motor type applications; Recognize the fundamentals at work behind generator set sizing software.

1 CEU/PDH Available

2:00 pm – 3:00 pm

Application and Code Considerations for Specifying Generator Set Fuel Sources

Presenter: Bob Kelly, *Cummins*

The installation of gaseous generator sets in a wide variety of applications continues to rise in North America while facility performance requirements, codes and standards are often most closely linked to their traditional diesel counterpart. As natural gas and propane fueled generator sets reach the market with "diesel-like" performance, it's critical to understand how best to apply these products in order to maximize the value they provide. This course will provide an overview of gaseous generator set capabilities in various applications and will empower participants to recognize how to best apply gaseous generator sets to meet common performance and code requirements. After completing this course, participants will be able to Recognize performance requirements applicable to both diesel and gaseous generator sets; Describe key features and capabilities of gaseous generator sets; and List key application considerations unique to gaseous generator set installations.

1 CEU/PDH Available

3:00 pm – 4:00 pm

NEC Start Signal Integrity Update (Plus Bonus Material on NEC 2020/2023 Code Impact on Transfer Switches)

Presenter: Jim Briceno, *ASCO Power Technologies*

The 2017 revision of NFPA 70 (NEC) brought significant changes affecting emergency power supply systems, particularly the introduction of "start signal integrity" requirements outlined in section 700.10 (D) (3). However, upon their initial release, these updates were widely perceived as unclearly defined, prompting the implementation of a Tentative Interim Amendment (TIA) to temporarily supplement the base 2017 revision. This introduction followed by the TIA has led to confusion within the industry, as many engineers and inspectors are uncertain about which guidelines to adhere to, compounded by the slower adoption rate of NEC revisions by various states.

Adding to the complexity, manufacturers have approached this requirement in diverse ways, offering solutions that integrate control and proprietary communications-based solutions. This variety of approaches may pose compatibility challenges across equipment typically supplied by different manufacturers within a single power system, further complicating the situation. Participants in this session will walk away with a better understanding of the requirements of NFPA 70 related to "start signal integrity" and potential solutions to be considered for power system specifications.

1 CEU/PDH Available

4:00 pm – 5:00 pm

Achieving Optimal Selective Coordination in Emergency Power Distribution Systems

Presenter: Joe Kendall, *Schneider Electric*

This seminar delves into the critical aspects of selective coordination concerning emergency power distribution systems. Focused discussions will highlight the significance of time-based ratings for transfer switches, overcurrent protective devices, and generators. Participants will gain comprehensive insights into the intricate requirements and strategies for ensuring seamless and effective selective coordination in emergency power systems. The seminar aims to empower engineering professionals with the knowledge and methodologies essential for achieving robust and reliable emergency power distribution systems in compliance with industry standards.

1 CEU/PDH Available

ENGINEERING SYMPOSIUM SESSIONS

TUESDAY, APRIL 9

9:15 am – 10:15 am

Big Changes in NFPA 110: What You Need to Know

Presenter(s): Bill Kaewert and Eric Solanyk, *SENS (Stored Energy Systems, LLC)*

The NFPA 110, the standard for emergency and standby power system, is revised every 3 years. This session summarizes the coming NFPA 110 changes, and what those changes mean for the emergency and standby power generation industry.

1 CEU/PDH Available

10:15 am – 11:15 am

Specifications 101: How Design Intent Becomes a Manufactured Product

Presenter: Jennifer Nekuda, Kohler Energy

A specification outlines the technical requirements and performance expectations of equipment intended to be used in a particular application. In this course, we will discuss industry standard elements included in contract specifications, focusing particularly on the language used when specifying engine generator sets for emergency power applications.

At the end of this course, participants will be able to: Describe the difference between a Performance, Prescriptive and Proprietary Specifications, Define the relevant PARTs of a specification and what they cover, Discuss in-depth Part 1: General, Discuss in-depth Part 2: Product, and Discuss in-depth Part 3: Execution

1 CEU/PDH Available

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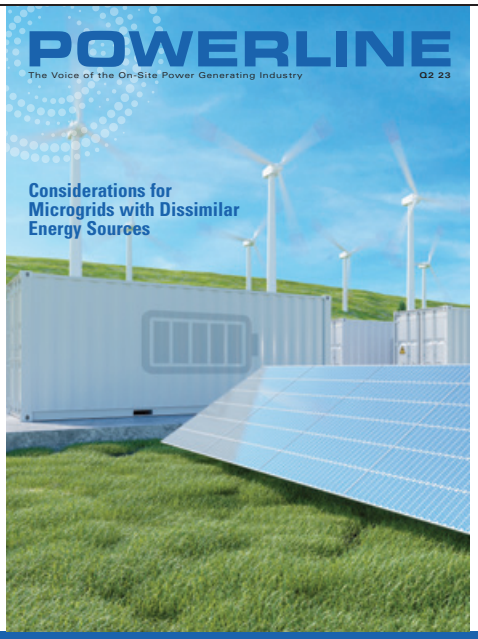

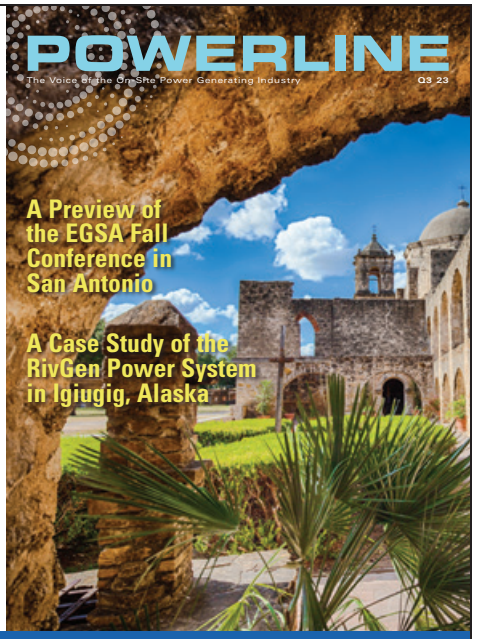

To view previous editions of *Powerline Magazine* visit
www.egsa.org/publications

We Can Come To You!
Looking for a cost effective way to get all of your staff up to speed on power generation all at once? Need to introduce basic principles of on-site power to your team? EGSA will work with you to provide the most appropriate training for your team at your facility or virtually.

Customize your school by selecting from the 23 Basic and/or Advanced school modules for your core program. Contact us for more information.

BASIC SCHOOL

Perfect for staff new to the power generation industry or someone who needs an introduction to basic concepts and technologies, this school is appropriate for students seeking a foundation in generator technology. Whether you are in sales, marketing, management, application engineers, engine technicians, or administrative personnel, you will find great value in this course! The Basic School is a general, yet technical, overview of On-Site Power.

2024 BASIC SCHOOL SCHEDULE

Virtual: March 18-20
Virtual: July 15-17
San Antonio, TX: September 30-October 2
Virtual: December 9-11

Basic School Topics:

- Basic Electricity & Prime Movers
- Understanding Generators/ Alternators
- Starting Systems
- Generator Components (Automatic Voltage Regulators, Governors, Instrumentation)
- Generator System Protection
- Transfer Switches
- Load Bank Fundamentals
- Codes and Standards
- Generator Set Systems: Putting the Pieces Together
- Understanding Bid & Specification Documents

ADVANCED SCHOOL

Our Advanced School is designed for those who have a good understanding of the basic mechanical and electrical systems found in an on-site generator site. A minimum of three years of experience in the industry is recommended. It will be particularly useful for those employed in engineering, project management, service positions, and business owners.

2024 ADVANCED SCHOOL SCHEDULE

Charlotte, NC: May 13-16
Virtual: November 4-7

Advanced Course Modules

- Advanced Generators/Alternators
- Generator Set and Critical Power System Controls
- Generator and System Protection
- Advanced Automatic Voltage Regulators (AVRs)
- Advanced Governors/Speed and Load Controls
- Advanced Transfer Switches
- Multiple Generator
- Paralleling Switchgear
- Engine Emissions
- Noise Control
- Communications
- Advanced Generator Systems: Sizing to Service

LOAD BANK CERTIFICATION

EGSA's Load Bank Certification is a 2.5-day course which includes classroom and hands-on training sessions. This school is designed specifically for experienced technicians looking to increase their knowledge and abilities. The school concludes with EGSA's Load Bank Certification test.

2024 LOAD BANK CERTIFICATION

Refer to **EGSA.org/Events** for dates and locations.

Load Bank Certification Modules

- Safety protocols
- Deciphering nameplate ratings of generators
- Different types of load tests
- Connections
- Testing requirements of the local authority having jurisdiction (AHJ)
- Applying the appropriate loads for the test required
- Gathering/calculating/documenting load test parameters and results
- Site and environmental conditions
- Potential problems/corrective actions

EGSA George Rowley Schools of On-Site Power Generation

Virtual Offerings

Live Virtual Rowley School

These live virtual schools are taught by the same knowledgeable and professional instructors who have been teaching at the in-person schools across the country. One of the best parts of physically going to the in-person school is the ability to speak directly with the instructors and ask questions. Rest assured, we have made our live virtual schools as interactive as possible and instructors are still able to answer your questions on the spot.

Virtual Basic Schools

March 18-20
July 15-17
December 9-11

Virtual Advanced School

November 4-7

Pre-Recorded Sessions

All live virtual sessions are recorded and access to the recordings are provided when you register for the live virtual school. These recorded sessions will also be available on EGSA.org as individual sessions or a package of the complete school. As we continue to complete live virtual schools, our library of recorded content will grow and be made available.

Check out ***EGSA.org*** for more information and available courses.

EGSA
Electrical Generating Systems Association

EGSA Membership Classification and Dues

Under the leadership of its Board of Directors and operating through its various committees and staff, EGSA strives to educate, provide networking opportunities and share relevant knowledge and trends with industry professionals including manufacturers, distributor/dealers, engineers, manufacturer representatives, contractor/integrators and others serving On-Site Power consumers.

FULL MEMBERSHIP

These Full Memberships categories are for corporations and their memberships cover all employees of the company.

MEMBERSHIP CATEGORY		CATEGORY DESCRIPTION	ANNUAL DUES	INITIATION FEE	TOTAL DUE
MF	**Manufacturer Membership**	Any corporation seeking membership must apply for a full membership as a manufacturer if they meet one or more of the following criteria: 1. They manufacture prime movers for power generation. 2. They manufacture generators or other power conversion devices producing electricity. 3. They manufacture switchgear or electrical control devices. 4. They manufacture or assemble generator sets, UPS systems, solar power, hydropower, geothermal, or any other power production or conversion system including related components, or accessories for national or regional distribution.	**$1354**	$257	**$1611**
DD	**Distributor/Dealer Membership**	Any corporation actively engaged as a distributor or dealer for products listed under manufacturers, Section 1, Paragraph a., may apply for full membership as a Distributor/Dealer. If an organization qualifies as a manufacturer under Section 1, Paragraph a., it is not qualified under this section.	**$508**	$128	**$636**
CI	**Contractor/Integrator Membership**	Any corporation actively engaged as a Contractor or Equipment Integrator of products listed under manufacturers, Section 1, Paragraph a., not brand by brand, geographic territory or contractually obligated as a Distributor/Dealer of a specific product, may apply for full membership. If an organization qualifies under Section 1, Paragraph a, or b, it is not qualified under this section.	**$508**	$128	**$636**
MR	**Manufacturer's Representative Membership**	Any corporation actively engaged in the representation of products listed under manufacturers, Section 1, Paragraph a., may apply for full membership as a Manufacturer's Representative. If an organization qualifies under Section 1, Paragraph a, or b, it is not qualified under this section.	**$508**	$128	**$636**
SMTR	**Service, Maintenance, Monitoring, Testing, and Repair Companies Membership**	Any corporation engaged in the service and maintenance, or monitoring, testing, or repair of products listed under Section 1, Paragraph a., may apply for full membership. If an organization qualifies under Section 1, Paragraph a, or b, it is not qualified under this section.	**$508**	$128	**$636**
RC	**Rental Companies Membership**	Any corporation actively engaged in the rent or lease of products listed under manufacturers, Section 1, Paragraph a., may apply for full membership as a Manufacturer's Representative. If an organization qualifies under Section 1, Paragraph a, or b, it is not qualified under this section.	**$508**	$128	**$636**
UIE	**Utilities, IPPs, and Energy Services Companies Membership**	Any public or private corporation engaged in energy generation and/or management, including public and private utilities, Energy Service Companies (ESCOs), Independent Power Producers (IPPs), Integrators, Aggregators, and other similar enterprises may apply for full membership. If an organization qualifies under Section 1, Paragraph a, or b, it is not qualified under this section.	**$508**	$128	**$636**
CSE	**Consulting Specifying Engineer Membership**	Any consulting specifying engineering firm may apply for full membership. If an organization qualifies under Section 1, Paragraph a, or b, it is not qualified under this section.	**$508**	$128	**$636**

ASSOCIATE MEMBERSHIP

These Associate Memberships categories are for corporations and their memberships cover all employees of the company.

MEMBERSHIP CATEGORY		CATEGORY DESCRIPTION	ANNUAL DUES	INITIATION FEE	TOTAL DUE
EU	**End-User Membership**	Any corporate or other public or private organization that purchases, owns, or operates, electrical generating equipment and/or related switchgear or components may apply for associate membership. If an organization qualifies under Section 1, Paragraph a, or b, it is not qualified under this section.	**$347**	$128	**$475**
EIGN	**Educational Institution, Government, and Nonprofit Membership**	Any school, university, postsecondary vocational-technical school or college, unit of federal, state, or local government, or nonprofit organization may apply for associate membership.	**$347**	$128	**$475**
PS	**Professional Services Firm**	Any professional services firm or other service-related organizations that do not exlusively service the electrical generating industry such as accounting, legal, financial services, communications, etc. may apply for associate membership.	**$347**	$128	**$475**
IND	**Individual Membership**	Any individual who was previously employed in the on-site power generation industry but is no longer actively employed in the industry.	**$142**	*FREE*	**$142**
MIL	**Military Membership**	Any individual who is currently enlisted may apply for membership within this category. Proof of military engagement is required by either current Military ID card.	**$84**	N/A	**$84**
RET	**Retiree Membership**	Any individual who retires from a member company may apply for Associate Membership. This classification does not apply to any individual who is employed more than 20 hours per week.	*FREE*	*FREE*	**$0**
STU	**Student Membership**	Any individual currently enrolled at an academic institution may apply for Associate Membership. This classification does not apply to any individual who is employed more than 20 hours per week	*FREE*	*FREE*	**$0**

Application via Website

Visit the EGSA Website: www.egsa.org.

Create an Account: On the EGSA website, locate the membership page and follow the guide to apply for membership. This process will involve creating an account on **MyEGSA**.

Set Up Your Organization's Profile: After creating your account, you will need to set up your organization's profile. Ensure all the necessary details are accurately filled in to avoid delays in your application process.

Review Process: Within two business days, the EGSA staff will verify the application details, conduct research on your organization, and assign the appropriate Membership Type based on your organization's qualifications and interests.

Congratulations on taking the first step towards becoming a member of the EGSA community! If you have any questions or need assistance during the application process, please do not hesitate to contact us at **info@egsa.org**.

Organization Information

Company _____

Address _____

City _____ State/Province _____ Zip/Postal Code _____ Country _____

Phone _____ FAX _____

Branches _____

Official Representative _____ Title _____

Representative's E-Mail _____ Company's Web Address _____

Organization's LinkedIn Page _____ Instagram Handle _____ Facebook Page _____

Organization Description _____

_____

Does the Organization employ EGSA technicians? ☐ Yes ☐ No

How did you hear about EGSA? ☐ Website ☐ *Powerline* magazine ☐ Colleague ☐ PowerGen ☐ Social Media ☐ Internet Search ☐ Other_____

Why are you joining EGSA? ☐ Certification Program ☐ CEU Program ☐ Power Schools ☐ Buying Guide Listing ☐ Networking ☐ Committees ☐ Other_____

Member Classification

Please use the worksheet on page one of this application to determine your membership type.

FULL MEMBERSHIP

- ☐ **MF** Manufacturer Membership
- ☐ **DD** Distributor/Dealer Membership
- ☐ **CI** Contractor/Integrator Membership
- ☐ **MR** Manufacturer's Representative Membership
- ☐ **SMTR** Service, Maintenance, Monitoring, Testing, and Repair Companies Membership
- ☐ **RC** Rental Companies Membership
- ☐ **UIE** Utilities, IPPs, and Energy Services Companies Membership
- ☐ **UIE** Consulting Specifying Engineer Membership

ASSOCIATE MEMBERSHIP

- ☐ **EU** End-User
- ☐ **EIGN** Educational Institution, Government, and Nonprofit
- ☐ **PS** Professional Services Firm
- ☐ **MIL** Military Membership
- ☐ **STU** Student Membership
- ☐ **RET** Retiree Membership
- ☐ **IND** Individual Membership

Membership Dues

(Please fill in the appropriate TOTAL amount from the dues schedule on page one.)

Membership Dues $ _____

Membership Plaque (optional)** $ 102.00

On-Site Power Generation: A Comprehensive Guide to On-Site Power (optional)** $ 260.00

Florida Residents: Add 7% Sales Tax to ** items $ _____

** Shipping and handling is included for Continental US & Canadian Residents.

All others should call EGSA Headquarters for $ _____ shipping charges for **items.

TOTAL $ _____

Organization Demographics

This information is for internal EGSA purposes only. It does not appear in the *EGSA Buying Guide* or the Member Directory.

Number of Employees: ☐ 1-20 ☐ 20-100 ☐ 100-500 ☐ 500+

Annual Revenue: ☐ $0-$500k ☐ $500k-1.5M ☐ $1.5M-$2.5M ☐ $2.5M-$5M ☐ $5M-$10M ☐ $10M-$20M ☐ $20M-$50M ☐ $50M-$100M ☐ $100M-$1B

Payment Method

Payment is prorated based on the membership start date, covering the remainder of the calendar year. Following acceptance of your application, EGSA Staff will reach out directly with detailed instructions for completing your payment. We appreciate your interest and look forward to your membership.

EGSA Buying Guide Listing Info

	Sells	Rents	Services
Batteries/Battery Chargers	☐	☐	☐
Control/Annunciator Systems	☐	☐	☐
Education	☐	☐	☐
Emission Control Equipment	☐	☐	☐
Enclosures, Generator Set	☐	☐	☐
Engines, Diesel or Gas	☐	☐	☐
Engines, Gas Turbine	☐	☐	☐
Engine Starters/Starting Aids	☐	☐	☐
Filters, Lube Oil, Fuel or Air	☐	☐	☐
Fuel Cells	☐	☐	☐
Fuel Tanks and Fuel Storage Systems	☐	☐	☐
Generator Laminations	☐	☐	☐
Generator Sets	☐	☐	☐
Generators/Alternators	☐	☐	☐
Governors	☐	☐	☐
Heat Recovery Systems	☐	☐	☐
Instruments and controls, including meters, gauges, relays, contactors, or switches	☐	☐	☐
Load Banks	☐	☐	☐
Motor Generator Sets	☐	☐	☐
Radiator/Heat Exchangers	☐	☐	☐
Relays, Protective or Synchronizing	☐	☐	☐
Silencers/Exhaust Systems/Noise Abatement	☐	☐	☐
Solenoids	☐	☐	☐
Switchgear and Transfer Switches (Automatic or Manual), Bypass Iso-lation Switches, and/or Switchgear Panels	☐	☐	☐
Trailers, Generator Set	☐	☐	☐
Transformers	☐	☐	☐
Uninterruptible Power Supplies	☐	☐	☐
Vibration Isolators	☐	☐	☐
Voltage Regulators	☐	☐	☐
Wiring Devices or Receptacles	☐	☐	☐

For Distributor/Dealers, Manufacturer's Representatives and Contractor/Intergrators Only—List the manufacturers that your organization represents, deals or integrates:

_____

For Manufacturers Only—List your organization's Representatives, Distributors and Contractor/Integrators:

_____

Sponsor(s):

A "Sponsor" is an EGSA Member who interested you in filling out this application. It is not mandatory that you have a sponsor for the Board to act favorably on this application; however, if a Member recommended that you consider membership, we request that individual's name and company name for our records.

Sponsor Name _____ Company Name _____

Official Representative's Authorization

Signature _____ Date _____

For any EGSA Membership questions, please contact us at **info@egsa.org.**

EGSA Enriches & Unites the On-Site Power Generation Industry with *POWERLINE Magazine!*

Tap Into the Captive Audience Your Organization Needs to Reach!

POWERLINE Magazine is one of the best ways to stay on top of the rapidly changing landscape of On-Site Power. From codes and standards, emerging technologies, best practices and education to industry trends, *POWERLINE* Magazine is the BEST vehicle to reach thousands in the Industry, with a targeted approach and vehicle.

Published quarterly, *POWERLINE* is the only magazine that thoroughly and exclusively covers On-Site Power, electrical generation or any method of producing power at the site in which it is generated. No other publication can match *POWERLINE* for its focus on On-Site Power.

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Our readership includes Manufacturers, Distributor/Dealers, Manufacturer's Representatives, Consulting and Specifying Engineers, Facility Managers, Service Firms, and end-users around the world who make, sell, distribute, and use generators, engines, switchgear, controls, voltage regulators, governors, and related products and services!

Every issue of *POWERLINE* includes important articles covering diverse industry issues, such as international markets, contracts, financing, trade agreements and more. Technical and "case studies educate readers about emerging technologies and commonly misunderstood applications. In addition, regular columns on industry codes and standards, news from Europe, manufacturer's representative issues, industry events and other compelling news keeps our readers engaged and informed year after year.

The EGSA member Job Bank is also a great industry resource for members and job applicants alike!

Harness the energy by advertising in POWERLINE *today!*

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m.charon@egsa.org
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No other publication can match ***POWERLINE*** for its focus on On-Site Power.

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- Manufacturer Reps
- Contractors
- End-users
- Consulting & Specifying Engineers

They read ***POWERLINE*** to gather product, market and trends information and make an informed final decision when recommending purchases or specifying components, services and equipment for new projects, upgrades, routine maintenance and retrofits.

EGSA

Submit Your On-Site Power Article!

POWERLINE Magazine is continually seeking feature articles (1,500 - 2,500 words) addressing any one of the many issues pertinent to On-Site electrical generating systems and equipment. To be considered, please e-mail a title, brief summary and highlights of your article to the Editor, Nathan Harris via **n.harris@EGSA.org**.

POWERLINE

the Official Publication of the Electrical Generating Systems Association (EGSA)

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2024

Ad Size	Dimensions in inches Width x Height	Member 1-time (per edition)	Member 4-times (per edition)	Non-Member 1-time (per edition)	Non-Member 4-times (per edition)
Full Page *Bleed Size* *Trim Size*	8.625" x 11.125" 8.375" x 10.875"	$1,250 *B&W* $2,220 *4-Color*	$1,100 *B&W* $2,000 *4-Color*	$1,350 *B&W* $2,425 *4-Color*	$1,250 *B&W* $2,220 *4-Color*
1/2 Page *Horizontal* *Vertical*	7.375" x 5" 3.687" x 10"	$800 *B&W* $1,770 *4-Color*	$700 *B&W* $1,600 *4-Color*	$900 *B&W* $1,975 *4-Color*	$800 *B&W* $1,770 *4-Color*
1/4 Page	3.687" x 5"	$475 *B&W* $1,445 *4-Color*	$410 *B&W* $1,310 *4-Color*	$525 *B&W* $1,600 *4-Color*	$475 *B&W* $1,445 *4-Color*

EGSA Electrical Generating Systems Association

CANCELLATIONS
In the event of cancellation of a multiple-month advertising space order prior to the final issue of the contract, the advertiser agrees to repay EGSA any discounts granted for multiple insertions. All cancellations must be received in writing prior to the advertising sales deadline.

TERMS
All quoted ad rates are non-commissionable. In the case of four insertions, EGSA will bill the total in four installments. *POWERLINE* reserves the right to refuse advertising that is deemed to be in poor taste, not within reasonable bonds of accuracy, or otherwise deemed unacceptable by the publisher.

MECHANICAL REQUIREMENTS
Electronic files are required. Materials may be submitted as high-resolution CMYK Adobe Acrobat files with embedded fonts. All full-page ads should be submitted at bleed size with 1/8" bleed included. For additional information, e-mail Marc Charon at m.charon@EGSA.org

Company Name: _____ EGSA Member? ❑ Yes ❑ No

Billing Address: _____ Agency (if any): _____

City/State/Zip/Country: _____

Contact Name: _____ Contact's Email: _____

Contact Phone: _____ Contact Fax: _____

Signature: _____

By signing above, I hereby authorize placement of advertising in EGSA's Powerline Magazine

PAYMENT: Please check one of the following options:

❑ Check # _____ Total Amount Due: $ _____

Signature: _____ Date: _____

Please contact Marc Charon via email (m.charon@egsa.org) if you wish to pay by credit card.

Ad Size	Color	Frequency	Position Request*
❑ Full Page ❑ Half Page ❑ Quarter Page	❑ B&W ❑ 4-Color	❑ 1-time ❑ 4-times	

**We will do our best to honor placement requests, but reserve the right to decide placement.*

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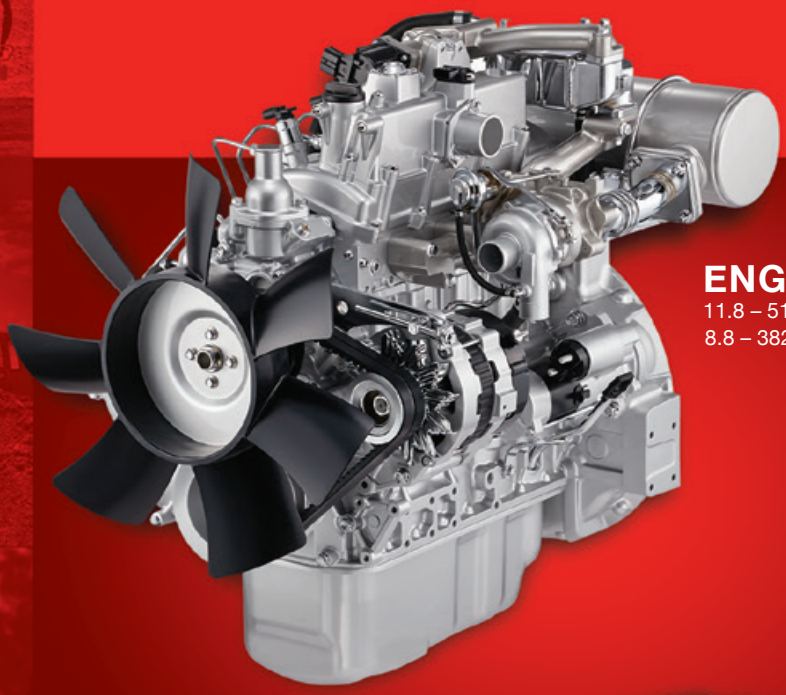

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11.8 – 512 HP
8.8 – 382 kW

POWER UNITS

11.8 – 260 HP
8.8 – 194 kW

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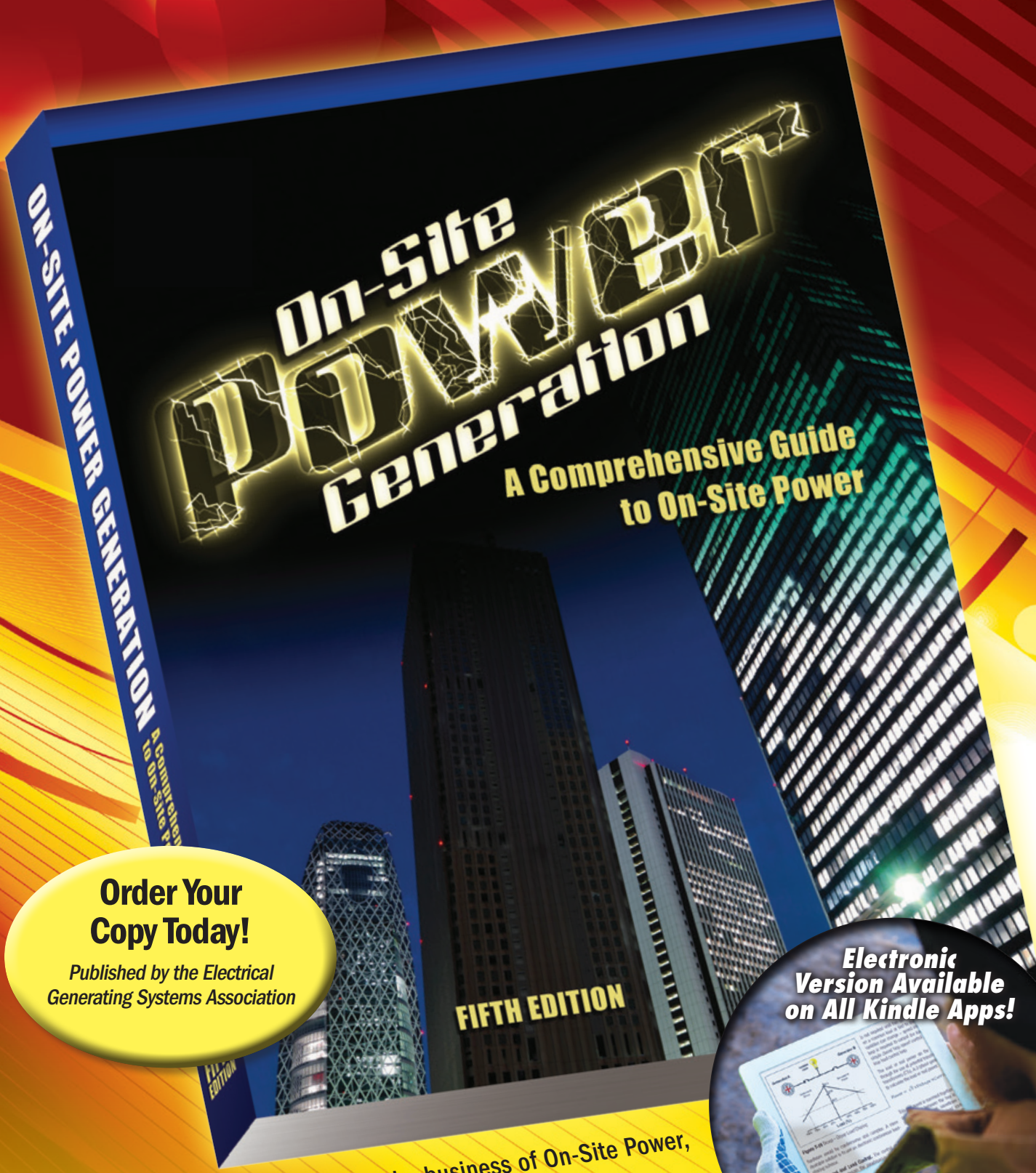

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