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2021 Fall Conference

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October 3-5 Universal Orlando Resort

PLUS:

White Paper: EPA Emission Standards for Diesel Generators

White Paper: The Cold, Hard Facts on Diesel Fuel Gelling

EGSA Certified Technician Update

Basler Company Profile

Meet Your EGSA Vice Chair Thomas Black



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EVENTS CALENDAR

Conferences

EGSA 2021 Fall Conference

October 3-5, 2021; Loews Royal Pacific Resort at Universal Orlando Orlando, FL

EGSA's Annual Fall Conference features educational sessions on a broad range of issues impacting the On-Site Power Industry. More information is available at www.EGSA.org or by calling (561) 750-5575.

EGSA 2022 Spring Conference

March 6-8, 2022; Caesars Palace, Las Vegas, NV

EGSA's Annual Spring Conferences feature educational sessions on a broad range of issues impacting the On-Site Power Industry. More information is available at www.EGSA.org or by calling (561) 750-5575.

Virtual Committee Meetings

Marketing & Communications

September 8, 2021 • October 20, 2021 • December 8, 2021
January 19, 2022

More information is available at www.EGSA.org/Events or by calling (561) 750-5575.

Education & Certification

EGSA 2021 George Rowley Schools of On-Site Power Generation

For information, visit www.EGSA.org or call (561) 750-5575.

Basic School

October 18-21 - Las Vegas, NV

EGSA Load Banks School & Certification

November 2-4, 2021; Arizona Generator Technology (Glendale, AZ)

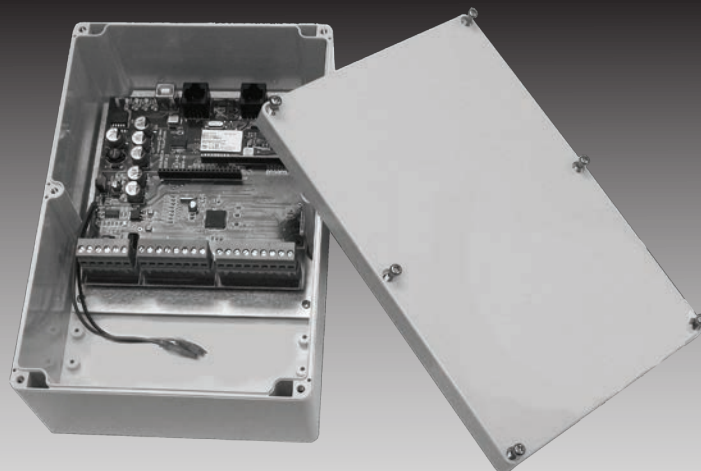
This 3-Day course will cover correct safety protocols, deciphering nameplate ratings of generators, different types of load tests, connections, testing requirements of the local authority having jurisdiction (AHJ), applying the appropriate loads for the test required, gathering/calculating/documenting load test parameters and results, site and environmental conditions, and potential problems/corrective actions. More information is available at www.EGSA.org or by calling (561) 750-5575.

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Kurtiss E. Summers (Kurt)
2020/2021
EGSA Board Chair
kurt.summers@
austingenerator.com

Message from the EGSA Chair

Greetings! As we move through these final weeks of summer, the focus shifts to our EGSA Fall Conference in October. If you have not yet registered, please do so today! You'll read more about the Conference and location amenities in CEO Mustafa's article in this issue. One Conference change I particularly like is the new educational tracks presented outside of regular Committee Meetings. This simple change by Mir is intended to address the need for broader member value on industry news and educational content.

In this issue you'll find Mir's article informative and inspiring. He will introduce two new programs at the Conference and lead discussions to get your feedback. Read his article to learn more. I encourage each of you to take the opportunity to engage in these discussions and learn how Mir's vision for EGSA will expand our membership significantly in the years to come and strengthen our influence within the Power Generation Industry.

Other interesting content you'll find in this Issue:

- EPA Emission Standards for Diesel Generators from Kohler
- The Cold, Hard Facts on Diesel Fuel Gelling, from Phillips & Temro
- An update on EGSA Certified Techs across the country and around the world
- Meet Your EGSA Director, Vice Chair Tom Black.
- Basler Company Profile

I'd like to thank our *Powerline* advertisers and our Fall Conference sponsors for their investment. Please take time to contact them and support your fellow EGSA Members by purchasing their products and services!

You should know that your Board of Directors and your CEO continue to work hard for you, our members. I am looking forward to our next phase of Strategic Planning which we'll conduct in our upcoming Board meeting. Each of the EGSA Officers and Directors is employed within the industry, bringing their unique perspective and industry knowledge to our discussions and decision making. It's this uniqueness that makes our work a success. Later this year we will be holding our officer elections for 2022. Thank you for taking your time to make your nominations.

In closing, with the Board's unified support, CEO Mustafa will have what he needs to be successful, including the hiring of new staff as our association management company completes their contract at the end of this year. As I've said before, our CEO embraces the challenge and is dedicated to help us deliver world-class value to current and future EGSA members.

Thank you for your continued support, see you in October!

Kurt Summers
Chairman of the Board ■



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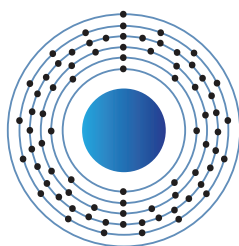


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Mir Mustafa, JD
EGSA CEO
m.mustafa@egsa.org

The Fall Conference & Beyond

It has been an exciting several months since I started as EGSA's CEO. The board and I have been hard at work on laying a new foundation for success for our association, our members, and our industry. We realize that EGSA is by and for the members, and we are dedicated to enhancing the value of membership and creating a brighter future for all.

Many of our members expressed some reservations about the location of our Fall Conference in Seattle. Even though conference locations are often secured years in advance, after extensive negotiations with the hotel we were able to cancel the conference and get back 100% of our deposits. We then shifted our attention to finding a new location. This was no easy feat given the compressed timeline, the shortage of conference locations due to the impact of COVID-19, and the need to account for the possibility of reimposed social distancing requirements.

I am happy to report that EGSA successfully secured an exciting new spot for the Fall Conference, the Loews Royal Pacific Resort at Universal Orlando from October 3 – 5, 2021. The hotel itself is like a tropical oasis and it is located steps away from all that the Universal Orlando Resort has to offer with its Universal Studios Florida, Islands of Adventure, and Volcano Bay Water parks. There's the Wizarding World of Harry Potter, including Diagon Alley and Hogsmeade, the Hagrid's Magical Creatures Motorbike Adventure and Escape from Gringotts rides. There's Marvel Superheroes, Transformers, King Kong, and numerous character experiences. There's Jurassic Park including the Jurassic World VelociCoaster and the Jurassic Park River Adventure, and there's the shops and restaurants at Universal CityWalk. If all of this isn't enough, the Walt Disney World Resort is only minutes away. I cannot wait to be there with all of you. I plan on bringing my family and I encourage you to do the same.

The conference itself will feature three separate networking opportunities to give attendees opportunities to network with their peers and customers, a golf tournament on the Links Course at the Grand Cypress Golf Club, Jack Nicklaus' tribute and homage to the famed Old Course at St. Andrews, Scotland, a Tactical Challenge at the Orlando Gun Club, and a Rum Tasting and Caribbean Lunch event. It will also feature two general sessions, including keynotes and open discussions, an expanded exhibitor showcase, three new educational tracks focused around the topics: Dealer & Distributor; Microgrids; and

Professional Development; and give members a glimpse of some of the changes in store at EGSA, including a new online learning management system and a new EGSA certified technical education program that will train and place qualified workers at our members' firms. Two of the biggest changes are the possible launch of local EGSA chapters and a new government affairs and advocacy program.

About local EGSA chapters, we know that we have areas throughout the United States and Canada with high concentrations of EGSA members. For example, at last count we had 16 members in New York, 27 in Pennsylvania, 20 in Georgia, 46 in Florida, 32 in Illinois, 26 in Wisconsin, 20 in Minnesota, 28 in Texas, 45 in California, 28 in Ontario, and many more spread throughout all 50 states. We see an opportunity to extend EGSA reach and increase member value through local chapters offering local educational and networking opportunities. We invite you to join us for a discussion and exploration of local chapters at the Fall Conference.

About government affairs and advocacy, everyday policymakers in Washington make decisions that impact the on-site power generation industry. Whether it's new standards for energy consumption or tax code changes that affect our bottom lines, federal policies have lasting impacts on our firms. At a time when Congress is debating major issues that touch upon our industry, from infrastructure and energy to health care and workplace safety, it's never been more important for the on-site power generation industry to speak with a unified voice. As the national organization representing the interests of on-site power generators, EGSA wants to ensure that you are at the table when important policy decisions are made. Please join us for a discussion and exploration at the Fall Conference of a new government affairs and advocacy program at EGSA and be among the first to hear about a new legislative fly-in event where we will host our members in Washington, DC and give them the opportunity to meet with their elected members of Congress to advocate for issues that matter most to our industry.

As you can see, we have many new things in the works at EGSA, and the Fall Conference is where you'll get your first chance to be part of the excitement. I hope to see you in Orlando!

Mir M. Mustafa, JD
EGSA CEO ■

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

Company Highlight: Excellence in Training & Education

At the end of July, EGSA held another Load Bank School & Certification program at Prime Power Services in Austell, GA. While I was there, I noticed a few new faces around Prime Power’s Roger C. Bisher Training Center. Three new apprentice technicians had recently graduated from the new Power UP! Project, an Apprenticeship Program consisting of an intensive training series that teaches the basics of emergency power systems and maintenance operations.

that could open up opportunities for long-term employment. Prime Power is a woman-owned company that is doing everything it can to help more women break into an industry dominated by men.

“At Prime Power we think it’s very important not only to grow our business but to serve our community and our Power Up initiative is how we’re achieving that.” – Addie Mathes, CEO of Prime Power Services



Power UP! Graduation
Ceremony



Partnering with WorkSource Cobb, Prime Power was awarded a grant from Atlanta Career-Rise to launch the first program in January 2021. Power UP! was created to give underserved job seekers — including people of color, women and veterans — access to high-demand skills training

The Power UP! Project includes classroom learning, mentoring, and hands-on training by Prime Power’s Training Officer, Tom Wein. However, the program also included sessions on soft skills, job searching, interview techniques and more that were taught by WorkSource Cobb’s Donna Robinson. These career building sessions set the participants up for success not only in the On-Site Power industry, but other businesses in the Atlanta area.

The first group of eight students to go through the program graduated in April of this year. However, the real success comes after they graduate. Three of the students were offered technician positions at Prime Power and 5 others interviewed with companies in industries ranging from transportation to solar technologies.

As we all know, the On-Site Power industry is in desperate need of new technicians. There are job openings all over the country and not enough people to fill these critical positions that keep our industry afloat. The Power UP! Project is a perfect example of thinking outside the box to fill these needs. By Partnering with their local workforce board, Prime Power was able to create a program that not only benefits their business, but also fills a need in their community. The program’s purpose was to increase economic mobility and reduce racial inequities through skilled trades training for minority and low-income populations.

Continued on page 12

EDUCATION

Continued from page 11

“We believe in the power of equitable education and think every person deserves an opportunity to unlock his or her potential. We hope the students who go through our apprenticeship program will have opportunities to pursue resilient career options they otherwise wouldn’t.” – Adam Mathes, President of Prime Power Services

“I am full of gratitude for the opportunity this program gave me. The on-going support through mentoring, class structure and instructor expertise motivated me to keep learning. I was provided every tool to become successful.” - Shajuanda Daniels, Power UP graduate.

The program has also created new opportunities for Veterans who have recently started looking for life outside the military. Landis Hooper, a Marine who just recently finished active duty was one of the three graduates who was offered a technician position at Prime Power. Hooper’s MOS in the Marine Corps had nothing to do with Power Generation, but on July 29th he received the keys to his service truck and is ready to get to work.

“Prime Power provides great opportunities for vets. It is important because it kind of carries that family veteran mind-set since there’s a lot of vets in the company” – Landis Hooper, Technician for Prime Power.

For more information about Prime Power Services and the Power Up Project, please visit www.primepower.com/powerup ■



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EGSA is ready to “Re Energize Your Business” at our Fall 2021 Conference in Orlando, FL, October 3-5. Our host hotel, the Loews Royal Pacific Resort at Universal Orlando, is truly a tropical paradise! Enjoy a South Seas getaway without sailing halfway around the globe. Feel the excitement of a time when adventurous travelers first island-hopped the South Pacific. The resort is located on the grounds of Universal Orlando, and all guests receive exclusive theme-park benefits, the thrills couldn't be any closer. Loews Royal Pacific Resort at Universal Orlando—where a tropical paradise meets an oasis of fun!

Conference App

You will have everything you need to know about the conference in the palm of your hands via our 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.

Sunday, October 3, 2021

Supplement your conference attendance with some extra knowledge. You can register for one class or all three. The classes will be held Sunday afternoon.

Microgrid 101: Combining Multiple Power Sources for Maximum Efficiency and Uptime

Speaker Tom Drake will introduce the topic of microgrids as well as discuss commonly used power generation technologies and the circumstances that make microgrids an ideal energy solution. This course will provide examples of successful microgrid projects from around the world, highlighting the unique attributes of each project. It will also identify best practices to consider when evaluating and planning a potential project.



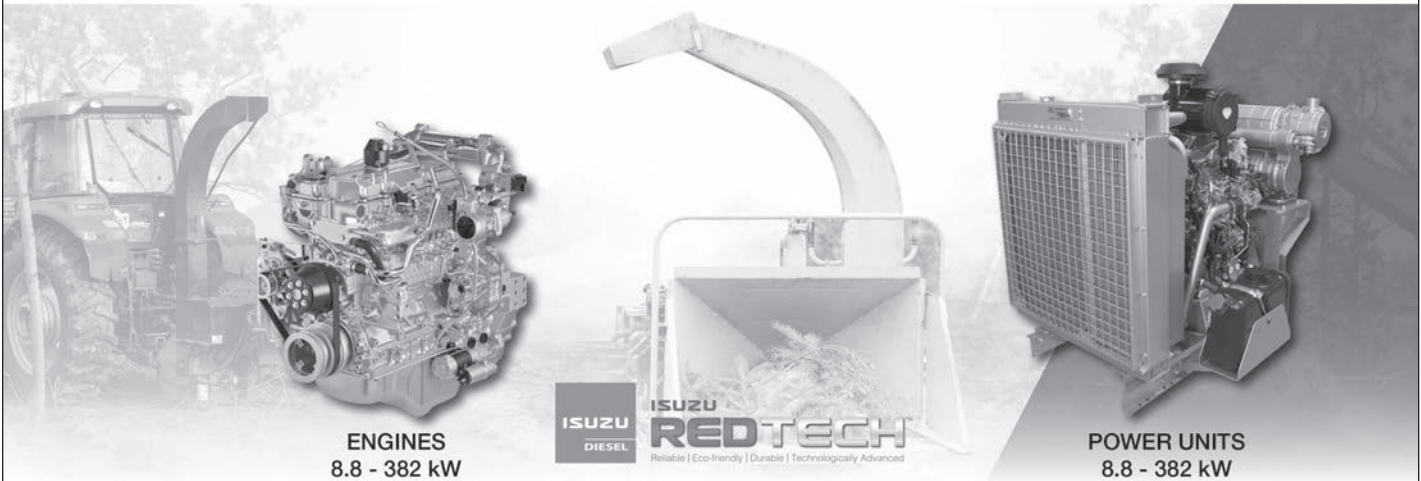
Attendees of this session will:

- Receive an overview of microgrids
- Understand common power generation technologies used in microgrids
- Discover examples of successful installations from around the world
- Identify best practices when evaluating and planning a potential microgrid project

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Microgrid 201: Integrating Renewables and Battery Storage Into Your Power Solutions

This presentation is designed to educate energy professionals regarding microgrid and distributed generation projects incorporating battery storage with multiple energy uses, including renewables. During this presentation, Speaker Tom Drake will discuss the unique benefits and challenges of incorporating battery storage solutions into a microgrid and provide real-world examples of successful projects, including lessons learned and best practices identified.

Attendees of this session will:

- Receive an introduction to energy storage solutions
- Understand common benefits and challenges of energy storage
- Discover examples of successful, real-world installations
- Identify lessons learned and best practices for successful energy storage

Microgrid 301: Tying Multiple Power Systems Together With Intelligent Controls

This presentation is designed to educate energy professionals regarding microgrid and distributed generation projects using intelligent control systems. During the presentation, speaker Tom Drake will discuss consideration factors commonly used to evaluate intelligent automation systems, including monitoring and power resource control capabilities and impact on system reliability and sustainability. This course will highlight the benefits of digital simulation capabilities, in which real-world applications are modeled and analyzed to determine the most economic deployment of energy-producing assets.

Attendees of this session will:

- Receive an introduction to intelligent automation systems
- Understand common consideration factors, including monitoring and power resource control capability and system impact on reliability and sustainability
- Discover the benefits of digital simulations to model real-world applications and determine optimal configuration of energy-producing assets

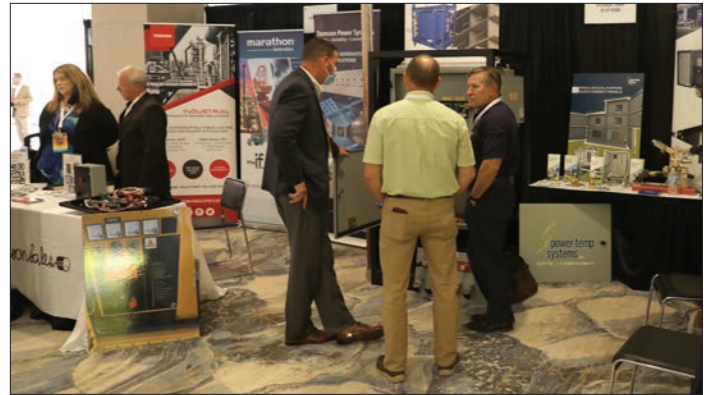
First Timer/ New Members Reception

On Sunday we will be welcoming our First Time Attendees and New Members at a reception in their honor. This invitation-only reception is hosted by the EGSA Board, past Presidents and Committee Chairs. It is the perfect opportunity to give the First Timers and New Members a presentation to help familiarize these attendees with EGSA and how they can become more involved with the association at the conference and beyond. Our hope is that these first timers and new members will become regular attendees at future events hosted by EGSA around the country.

Welcome Reception

With many attendees arriving on Sunday for the conference, the Welcome Reception is often the first chance for Members to become reacquainted with business colleagues and fellow EGSA Members. This event is a great way to kick off the three day event.

Monday, October 4, 2021



EGSA Fall Conference Trade Show

Monday morning kicks off, bright and early, at 7:00 a.m. with breakfast on the Fall Conference Trade Show floor. The Trade Show is a great opportunity for exhibitors to garner face time with conference attendees.

This Fall's trade show is once again expanded to accommodate growing interest in exhibiting at our EGSA Conferences. Please visit www.EGSA.org to learn more about reserving your 10' x 10' booth.

Monday Education Tracks

Monday's sessions will start with three education tracks between 8:00 and 10:00 a.m. These tracks will each be an hour long and will repeat after the first hour to allow attendees to attend the tracks that are of most interest to them.

Track 1: Distributor Dealer

Track 2: Microgrid Renewables & CHP

Track 3: Professional Development

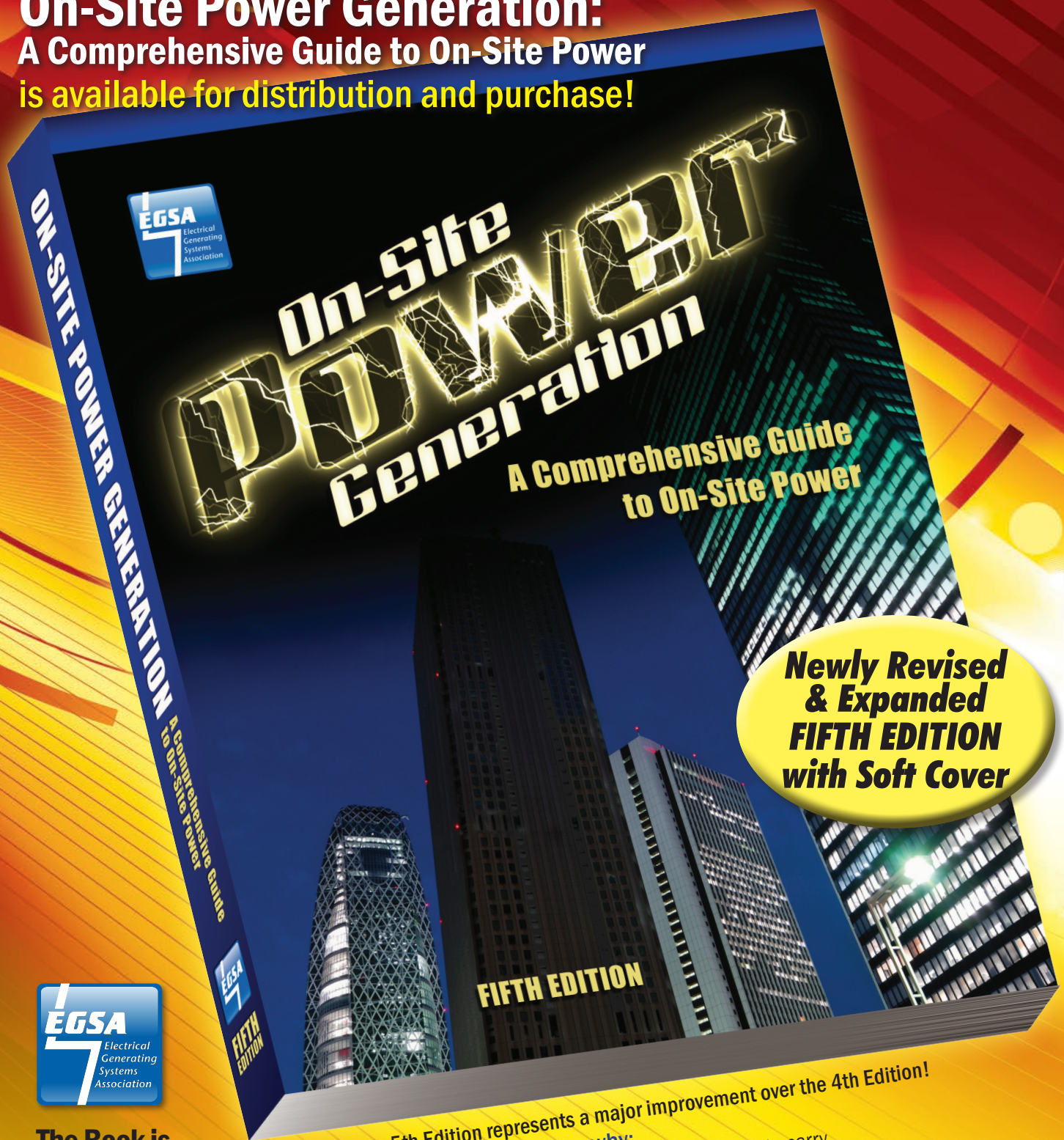
General Session

The Monday General Session will feature an update from EGSA Board Chair, Kurt Summers, followed by a celebrity speaker from the world of sports, entertainment, politics, or business. Past speakers have included, Pat Williams (Orlando Magic), John Ratzenberger (Cheers), and Bill Walton (Legendary basketball player & Sportscaster).

Welcome Lunch

The Welcome Lunch is an excellent way for participants to interact with fellow attendees. If this is your first EGSA event, please don't skip the lunch.

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Committee Meetings

Monday afternoon is where much of the association’s business gets done as EGSA’s Committees meet. EGSA Committees each have a role to play in how EGSA moves forward in various areas over time. They are composed of volunteer EGSA members who contribute their knowledge and time to forward the Association’s activities.

Attendees are encouraged to participate in at least one or more of the committee meetings at the conference. You can float from one committee meeting to another throughout the course of the afternoon. If you are interested in becoming more involved on a particular committee, the best course of action is to let the committee’s chairperson know of your interest.

Reception & Banquet

The Reception & Banquet is the ideal setting for enjoying delicious food and great conversation with fellow conference attendees. This event is often regarded as the highlight of each EGSA Fall Conference.

Tuesday, October 5, 2021

EGSA Fall Trade Show

Enjoy another hearty breakfast in the Fall Conference Trade Show on Tuesday morning.

Tuesday Education Tracks

Tuesday’s sessions will pick up where they left off on Monday, with three education tracks between 8:00 and 10:00 a.m. These tracks will each be an hour long and will repeat after the first hour to allow attendees to attend the tracks that are of most interest to them.

Track 1: Distributor Dealer

Track 2: Microgrid Renewables & CHP

Track 3: Professional Development

General Session

The Tuesday General Session will feature an update from EGSA CEO, Mir Mustafa, on some of the new and exciting changes coming to EGSA, followed by panel of industry experts discussing the state of the onsite power generation sector.

Tuesday Networking Activities

More than half of life is built on conditions that occurred because you were in the right place at the right time... and, in most cases, all you really did was bother to show up! The Annual EGSA Fall Conference fosters a great environment for networking. Each of our networking events is designed to create new business relationships and fortify existing connections in a relaxed, informal environment.

Grand Cypress Golf Tournament

The Old becomes The New at Grand Cypress Golf Club. Set in the midst of an open meadow, the Links Course (formerly New Course) is Jack Nicklaus’ tribute and homage to the famed Old Course at St. Andrews, Scotland. Transportation and a boxed lunch is included.

Tactical Challenge

The Orlando Gun Club is Central Florida’s premier indoor live fire shooting range. Their state of the art air conditioned facility offers the most enjoyable shooting experience available in Orlando. Transportation and a boxed lunch are included.

Loews Rum Tasting & Lunch

Enjoy lunch viewing the blue waterfalls cascade over lush grounds and in the distance, ease into island time and let go. After dining enjoy a custom a specialty rum education with tasting. Includes Taste of the Caribbean Buffet Lunch & Rum Education Event.

Closing Reception Spooktacular

Join us on Tuesday evening as we close out the Fall Conference! You can expect excellent food, company, and the highlights of our Tuesday networking events. This is the perfect opportunity to share memories from your conference experience and wish your fellow EGSA Members and new-found friends a fond farewell. ■



Register for the 2021 EGSA Fall Conference at:

www.egsa.org/fall

EPA Emission Standards for Diesel Generators

Introduction:

The U.S. Environmental Protection Agency (EPA) is responsible for implementing and enforcing federal regulations for pollutant emissions produced by on-highway and off-road engines.

The focus of the EPA is to reduce the six common pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, and lead. They do so by implementing a set of standards to reach increasingly stringent emissions levels in the United States.

This paper provides an overview of the three primary EPA regulations affecting generator set use in the United States.

EPA DIESEL ENGINE EMISSION TERMINOLOGY:

Certification Type

Certified Engine – new diesel engines introduced into commerce in the U. S. must be certified by the EPA for the intended use of the engine. Engine certifications are typically performed by the engine manufacturer. The process includes testing to ensure the engines meet the applicable regulations and continued testing to ensure they meet the regulations during their useful life. The EPA issues a Certificate of Conformity (CoC) to signify the engine has been tested and certified.

Compliant Engine – an engine that meets a given EPA regulation emission requirement but has not been certified by the EPA to meet those levels. Compliant solutions are often used to meet local requirements that have lower emissions requirements than the EPA federal regulation requirements.

Use Type

Emergency – defined by EPA subpart ZZZZ as meeting the following operating requirements:

Unlimited use for emergencies (e.g., power outage, fire, flood)

Emergency engines may operate for 100 hr/yr for maintenance/testing

50 hr/yr of the 100 hr/yr allocation can be used for:

- Nonemergency situations if no financial arrangement
- Local reliability as part of a financial arrangement with another entity if specific criteria met (existing RICE at area sources of HAP only)

Nonemergency – those engines that do not qualify as emergency use only.

Note: The EPA does not regulate a generator set and therefore does not recognize the generator rating as an indication of use. ISO-8528 ratings are often talked about in conjunction with required emissions compliance level. It does not violate any regulations to have an emergency use generator with a Prime or Continuous rating.

Location

Stationary – off-highway engine permanently mounted in a single location. Also, a movable non-road engine is classified as stationary if it stays in one location for more than 12 months.

Nonroad – engines used on nonhighway equipment meant to be movable; either by being propelled, such as a skidloader, or by transport, such as a mobile/towable generator.

Site Classification

The site classification pertains to the entire facility or contiguous complex where the engine is located. There are two different site classifications.

Major Source – any stationary source that emits 10 tons per year or more of any one hazardous air pollutant or 25 tons/year or more of any combination of hazardous air pollutants.

Area Sources – sources that are not major sources.

ISO-8528 Generator Ratings

Standby – a standby generator is typically specified for generators with stationary emergency engines.

Prime – a prime rating is typically specified for generators with stationary nonemergency engines or nonroad engines for mobile applications.

RICE NESHAP:

Terminology and Definition

Title 40, part 63, subpart ZZZZ (63.6580) of the Code of Federal Regulations (CFR) covers the National Emission Standards for Hazardous Air Pollutants (NESHAP) for reciprocating internal combustion engines (RICE).

The regulation applies to both existing and new engines. However, new engines required to meet New Source Performance Standards (NSPS), such as a combustion ignition (CI) engine, are compliant with RICE NESHAP, and no further requirements apply. Therefore, RICE NESHAP is a primary consideration of engines built prior to model year 2007.

It is the responsibility of the engine owner to review and comply with RICE NESHAP for an existing engine.

NESHAP Focus

The intent of the regulation is to reduce pollutants from non-regulated nonemergency use-type engines. Emergency engines are excluded.

The EPA has determined that carbon monoxide (CO) is the most effective indicator of the pollutants. Therefore, the regulation seeks a percent reduction of measured CO from the engine.

The applicability and compliance criteria are determined by site classification and size of the engine determined by horsepower rating. The table in Figure 1 below provides an overview of the percent of CO reduction required to bring an affected engine into compliance.

A combustion ignition engine would typically require a field added diesel oxidation catalyst (DOC) to become compliant.

Nonroad Diesel Engines

Title 40, part 1039, formerly 89, of the Code of Federal Regulations (CFR) covers the EPA emission standards for nonroad diesel engines. The standard is applicable to a wide range of construction, agricultural, and industrial equipment.

Diesel generators mounted on either a trailer or a skid meant for transport must abide by nonroad diesel emission regulations, not the stationary emissions discussed later in this paper. The standard classifies stationary engines by brake horsepower and use type.

Depending on the classification of the engine, it must be below or at levels of emissions for nitrogen oxides (NOx), particulate matter (PM), carbon monoxide (CO), and hydrocarbons (HC).

The standards for nonroad diesel engines were first introduced in 1994. Multiple iterations were made to enforce increasingly stringent regulations. This phased approach has taken

on an industry designation as Tiers. The initial Tiers 1-3, phased in by 2008, were met by advanced engine design to limit the creation of the pollutants. See Figure 2.

Figure 1

CO Reduction – NESHAP for Stationary Diesel (CI) Engines

Area Sources		
Nonemergency 300 < hp ≤ 500	49 ppmvd CO	70%
Nonemergency > 500 hp	23 ppmvd CO	70%
Major Sources		
Nonemergency 100 ≤ hp ≤ 300	230 ppmvd CO	
Nonemergency 300 < hp ≤ 500	49 ppmvd CO	70%
Nonemergency > 500 hp	23 ppmvd CO	70%

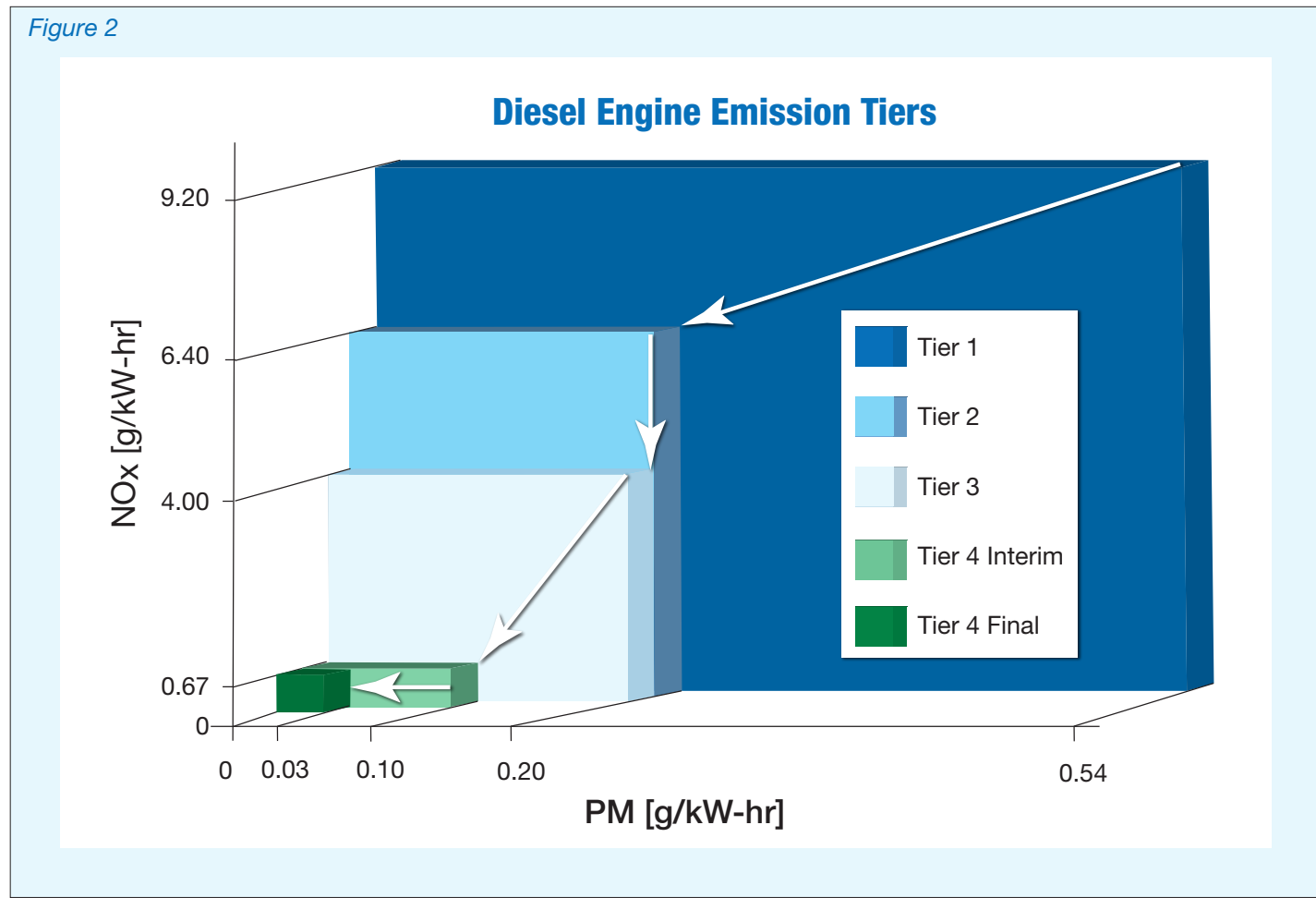


Figure 3 Phase-In Program for Nonroad Engines

Year	2008	2009	2010	2011	2012	2013	2014	2015
kW <8	0.40/7.5/8.0 (Table 1 1039.102 & Table 1 1039.101)							
8 ≤ kW ≤ 19	0.40/7.5/6.6 (Table 1 1039.102 & Table 1 1039.101)							
19 ≤ kW ≤ 37	0.30/7.5/5.5 (Table 2 1039.102)					0.03/4.5/5.5 (Table 2 1039.102 & Table 1 1039.101)		
37 ≤ kW ≤ 56	0.30/4.7/5.0 (Table 3 1039.102)					0.03/4.7/5.0 (Table 3 1039.102 & Table 1 1039.101)		
56 ≤ kW ≤ 75					0.02/4.7/5.0 (Table 4 1039.102)		0.02/0.40 + 0.19/5.0 (Table 4 1039.102 & Table 1 1039.101)	
75 ≤ kW ≤ 130					0.02/4.0/5.0 (Table 5 1039.102)		0.02/0.40 + 0.19/5.0 (Table 5 1039.102 & Table 1 1039.101)	
130 ≤ kW ≤ 560				0.02/4.0/3.5 (Table 6 1039.102)			0.02/0.40 + 0.19/3.5 (Table 6 1039.102 & Table 1 1039.101)	
560 ≤ kW ≤ 900				0.10/3.5 + 0.40/3.5 (Table 7 1039.102)				0.03/0.67 + 0.19/3.5 (Table 1 1039.101)
kW >900				0.10/0.67 + 0.40/3.5 (Table 7 1039.102)				

Chart Legend PM/NOx + NMHC/CO Tier 4i Tier 4

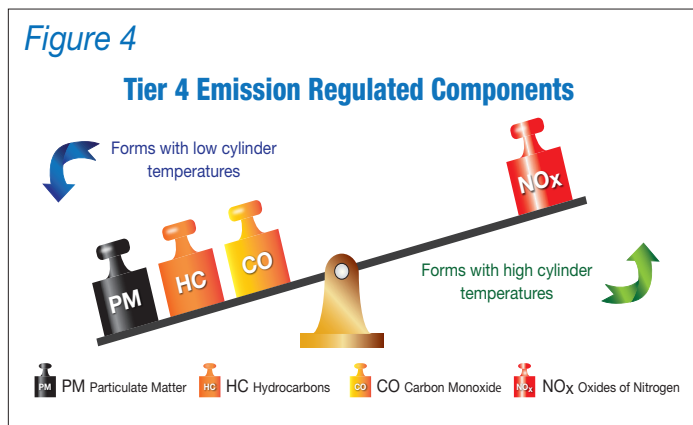
Tier 4 Regulations

The latest Tier 4 regulation was announced in 2004 with a phase-in period from 2008-2015 to allow engine and equipment manufacturers time to prepare products to meet the stringent requirements. See Figure 3.

Tier 4 regulations require the NOx and PM levels of diesel engines to be reduced upwards of 90 percent from previous Tiers. To achieve such levels exhaust aftertreatment systems are required.

The primary reason is NOx and PM formation has an inverse relationship. PM forms from partial combustion of diesel fuel in cooler parts of the cylinder. NOx is the result of high cylinder temperatures oxidizing some of the nitrogen from the air.

The trade-off, unfortunately, is an inverse relationship when it comes to in-cylinder engine management for performance and emissions. See Figure 4.



NSPS for CI Stationary Engines:

New Source Performance Standards

Title 40, part 60, subpart IIII of the Code of Federal Regulations (CFR) covers the New Source Performance Standards (NSPS) for stationary reciprocating internal combustion engines.

The emissions levels of the various categories are based off emission levels enforced for various types of mobile equipment; therefore, no new engines emission levels were instituted with the ruling. Much of the ruling is based on the content of title 40, part 89, that governs nonroad diesel engines.

The standards were first introduced in 2005 and phased in completely by 2015. The phase-in program for the stationary nonemergency engines can be seen in Figure 5.

By the end of 2014, the phase in was complete meaning all stationary nonemergency engines MY2015 or newer are required to be Tier 4-certified to be sold into or operated in the U.S. To meet Tier 4 levels, a diesel engine will typically require at least one form of exhaust aftertreatment.

Advanced engines, such as Kohler’s KD Series™, are able to reduce the formation of the majority of the pollutants in the cylinder and only leave NOx to be addressed with an aftertreatment device. Engines not capable of this will require the use of multiple aftertreatment devices.

For an explanation of diesel engine exhaust aftertreatment systems refer to Kohler Power Systems white paper: *Diesel Generator Emissions Technologies and Aftertreatment Devices*.

The NSPS regulation has special exemptions for emergency use engines; for instance, a standby generator only meant to operate during power outages or service and maintenance activities. The phase-in program for stationary emergency engines is shown in Figure 6.

Figure 5 Phase-In Program for Stationary Nonemergency Engines

ENGINE GENERATOR		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
kWm	kWe											
8 -<19	10-15		6.6/7.5/0.40									
19 -<37	15-20		5.5/7.5/0.30				5.5/4.7/0.03					
37 -<56	20-40		5.0/7.5/0.30					5.0/4.7/0.03				
56 -<75	40-60		5.0/4.7/0.40			5.0/2.3/0.02		5.0/0.19/0.40/0.02				
75 -<130	80-100	5.0/4.0/0.30				5.0/2.3/0.02		5.0/0.19/0.40/0.02				
130 -<560	125-450	3.5/4.0/0.20			3.5/2.0/0.02			3.5/0.19/0.40/0.02				
560 -<900	500-800	3.5/6.4/0.20				3.5/0.40/0.67/0.10			3.5/0.19/0.67/0.03			
>900	900-2000	3.5/6.4/0.20				3.5/0.40/0.67/0.10			3.5/0.19/0.67/0.03			
>2200	>=2000	11.4/1.3/9.2/0.54				3.5/0.40/0.67/0.10			3.5/0.19/0.67/0.03			

TIER 1 Effective
 TIER 2 Effective
 TIER 3 Effective

TIER 4 Interim Effective
 TIER 4 Effective

CO/NMHC+NOx/PM (g/kW-hr)
CO/NMHC/NOx/PM (g/kW-hr)

Figure 6 Phase-In Program for Stationary Emergency Engines

ENGINE GENERATOR		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
kWm	kWe											
8 -<19	10-15		6.6/7.5/0.40									
19 -<37	15-20		5.5/7.5/0.30									
37 -<56	20-40		5.0/4.7/0.40									
56 -<75	40-60		5.0/4.7/0.40									
75 -<130	80-100	5.0/4.0/0.30				3.5/4.0/0.20						
130 -<560	125-450	3.5/4.0/0.20										
560 -<900	500-800	3.5/6.4/0.20				3.5/6.4/0.20						
>900	900-2000	3.5/6.4/0.20										
>2200	>=2000	11.4/1.3/9.2/0.54				3.5/6.4/0.20						

TIER 1 Effective
 TIER 2 Effective
 TIER 3 Effective

TIER 4 Interim Effective
 TIER 4 Effective

CO/NMHC+NOx/PM (g/kW-hr)
CO/NMHC/NOx/PM (g/kW-hr)

The highest levels reached were selected to avoid the use of aftertreatment equipment due to the low runtime hours of emergency engines. The environmental and health impacts are negligible from these sources.

The stationary power generation market is primarily focused on providing backup power to a reliable utility grid. However, utilizing a diesel generator in a nonemergency application, such as peak shaving or curtailment, has many financial benefits.

When doing so, there are certain provisions to Tier 4 regulations that a specifying engineer or end customer needs to be aware of.

Inducement

The aftertreatment system is considered integral to a Tier 4 system. The EPA therefore dictates that a failure of the aftertreatment system constitutes a failure of the entire engine.

Instead of forcing an immediate shutdown, the engine enters inducement. The intent is to “induce” the operator to fix the issue with the aftertreatment system. If the failure is not corrected

in the allotted time, the engine power is limited until the issue is fixed. Examples of issues that may lead to inducement include poor DEF quality, sensor failures, or running out of DEF, etc.

Diesel Emission Fluid (DEF) Refill Interval

DEF must not run out before diesel fuel under normal operating conditions. Therefore, sizing of DEF storage must correlate to the amount of diesel fuel storage.

For a stationary generator this can require calculating the size of multiple tanks as day tanks are commonplace, especially for indoor installations.

Crankcase Ventilation

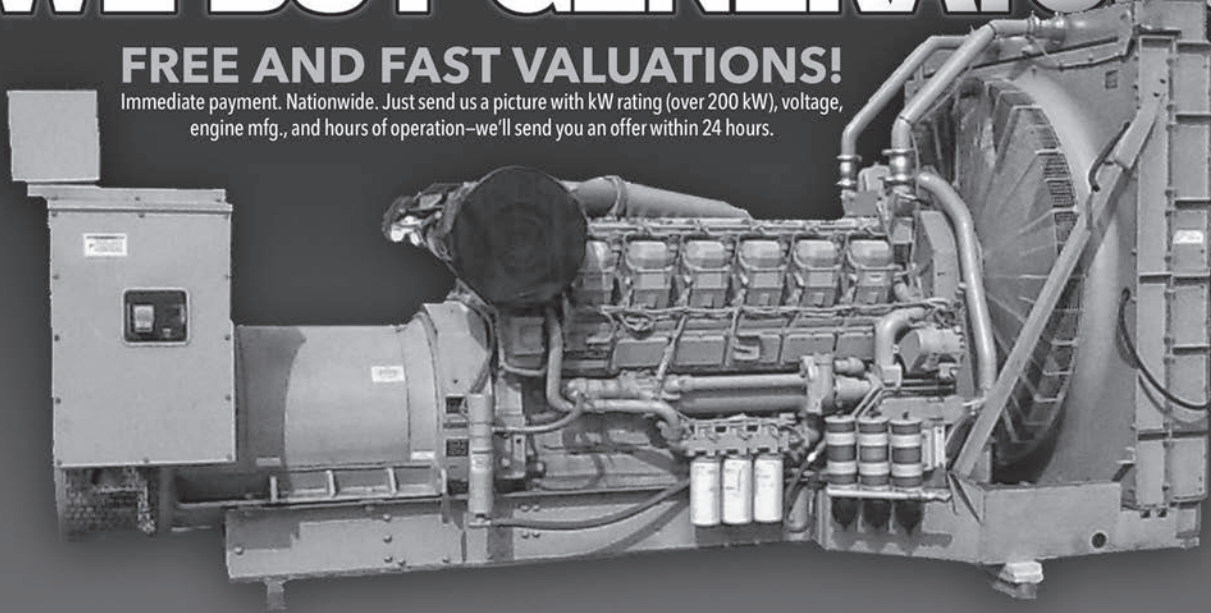
Tier 4 engines do not require the use of closed crankcase ventilation (CCV). However, the emissions from open crankcase systems are included in the total emissions of the engine

Therefore, most Tier 4 engines will include a CCV to reduce the overall emissions.

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Diesel Engine Emission Test Cycles:

Emissions Values Defined

Emission values are referred to as either meeting a Tier level (nominal values) or a Potential to Emit (PTE) (not to exceed or NTE) level.

The two classifications are both important but relate to two different reported values (nominal and not to exceed).

Nominal Values

According to EPA ISO-8178 Constant Speed D2 5 Mode Cycle, the emissions levels previously referenced throughout this white paper all are values related to the ISO-8178 Constant Speed Test Cycle.

Nominal data is captured in a test cell under controlled conditions (e.g., controlled environment test conditions). The testing is completed by taking a weighted average of the engine emissions at five steady state points.

The five modes weighted and averaged as shown in Figure 7. The weighted levels are then used to measure compliance against an EPA standard.

Figure 7

ISO-8173 Constant Speed D2 5 Mode Cycle					
Mode Number	1	2	3	4	5
Speed	Rated Speed				
Torque	100%	75%	50%	25%	10%
Weighting	5%	25%	30%	30%	10%

Not-To-Exceed Values

Not-to-exceed data adds a safety factor to the nominal data for field conditions that cannot be controlled in a lab (e.g., ambient, humidity, production engine tolerances, and field emission test methods).

It is important to work with regional requirements for permitting stationary engines to understand which emissions data (nominal or NTE/PTE) and which engine operating loads are requested for the permit data. If there will be stack testing requirements, the NTE data would be required.

Summary:

Understanding emission requirements is an important step to ensure the correct generator set is selected for an application.

This white paper covered federal emission standards for diesel engines powering generator sets in the U.S. In addition to these regulations, local or regional regulations that enforce limits more stringent than the federal standards may exist.

It remains the responsibility of the specifying engineer to understand both the federal and the local requirements.

A local Kohler representative is ready and willing help with questions and provide explanations. Each Kohler representative works with both federal and local regulations on a regular basis and is backed up by Kohler's factory emissions experts. ■

Additional Resources:

Internet links

EPA Emissions Standards: <https://www.epa.gov/emission-standards-reference-guide/epa-emission-standards-nonroad-engines-and-vehicles>

Electronic Code of Federal Regulations (eCFR) home: <https://www.ecfr.gov/cgi-bin/ECFR?page=browse>

CARB California Air Resources Board (CARB) Emergency Backup Generators <https://ww2.arb.ca.gov/our-work/programs/emergency-backup-generators>

South Coast AQMD Emergency Generator Fact Sheet: www.aqmd.gov/home/permits/emergency-generators



About the Author

Brad Meissner currently works as a Product Manager with responsibility for >700 KW diesel generators at Kohler Co.

Degreed in both mechanical engineering and engineering management, he has spent more than seven years in the power generation industry. His career started in engineering developing alternators, diesel fuel tanks, enclosures, and generator sets. For the last three years, he has worked as part of the product management team at Kohler Co. His specialties include codes and standards, diesel emissions, generator set packaging, and mechanical systems.

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Whitepaper was provided compliments of EGSA Member, Kohler Power.
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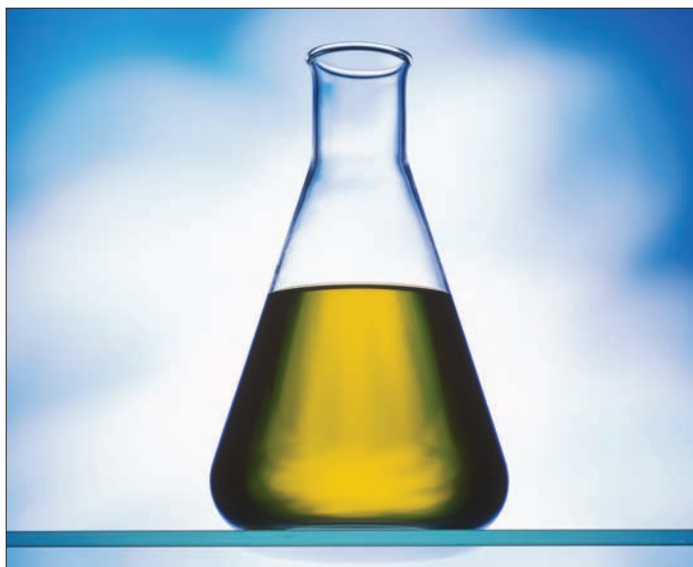
Please visit EGSA.org for additional details on the program.





The Cold, Hard Facts on Diesel Fuel Gelling

Diesel fuel gelling is a common problem that often impacts engine performance and results in downtime. Although it can occur year round, it is most prevalent in winter, with the effects of cold temperatures on #2 diesel. Diesel fuel gelling causes several performance related issues, including significant engine power loss, and difficulty starting or keeping the engine running. Sometimes blamed on the fuel filter, diesel fuel gelling plugs the filter, preventing fuel from flowing properly. This restricted flow may keep the engine from starting. Even if it does start, it might not stay running for long.



The Cause of Fuel Gelling

Gelling problems are typically caused by the effects of temperature on paraffin, a component of diesel fuel. Paraffin waxes are combustible, adding power when burned in the engine. However, when temperatures drop, diesel will start to solidify. The phases of fuel gelling include cloud point, pour point and cold filter plug point.

Cloud Point

Cloud point is the temperature at which paraffin begins to form cloudy wax crystals. When the fuel temperature reaches cloud point, the wax crystals begin to form. Typically, cloud point temperatures range from -18°F to 20°F (-28°C to 7°C). Depending on fuel quality, they can be as high as 40°F (4.4°C).

Cold-Filter Plug Point

The point where the filter plugs and operations cease is the cold-filter plug point filter plug point (CFPP). CFPP and cloud point depend on fuel grade, fuel quality and temperature. grade, fuel quality and temperature.



Due to viscosity, concerns are amplified by biofuel content. Produced using different oils, such as soybean, corn and animal fat, biofuels have an even higher gelling temperature, increasing the chance of filter clogging.

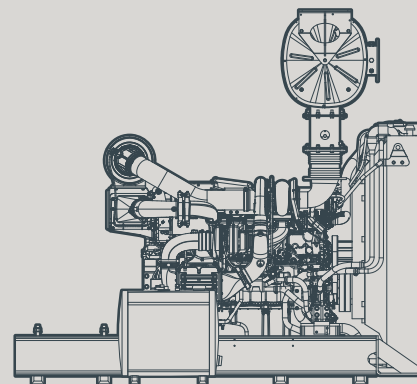


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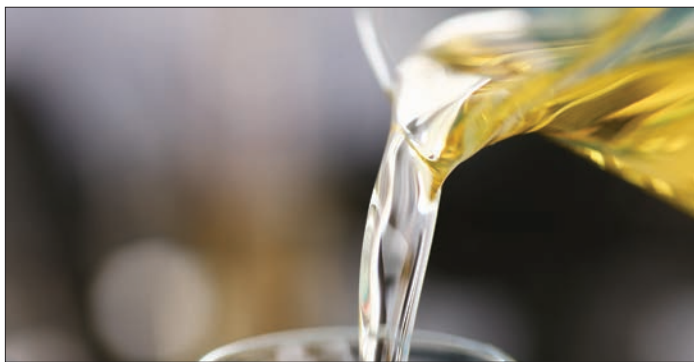
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Fuel Gelling Prevention and Solutions

Many states mandate when fuel stations switch to winterized diesel blends. However, the gel point of winterized blends varies widely. Using #1 diesel or a winterized diesel blend isn't fool-proof. There's high risk for encountering poor quality or unconditioned fuel. In extremely cold climates, many operators choose more reliable solutions to protect their vehicle or equipment.

For fuel to flow properly, the fuel temperature must be above the pour point. When fuel has gelled, pushing the vehicle or equipment into a garage for several hours may temporarily fix the gelling issue. Indoors, it takes eight to 10 hours or a full day to resolve a gelling problem. If temperatures remain cold or an interior space is unavailable, this is an inadequate solution, resulting in downtime.



Diesel Fuel Warmers

A more reliable choice, diesel fuel warmers are a dependable, low-maintenance solution that heats diesel fuel to safe operational temperatures. Fuel heating options include electric and engine coolant-based fuel warming. Multiple warmers can be used in conjunction in extremely cold climatic conditions. Phillips & Temro offers a range of in-tank and in-line fuel warming products. The right solution for a specific vehicle or stationary equipment depends on the fuel issues and the equipment operation.

Diesel Fuel Warmers

- Improve efficiency by providing trouble-free operation in cold-weather environments
- Reduce equipment downtime
- Improve engine operating efficiency by reducing fuel viscosity
- Reduce or eliminate fuel additive use
- Are available for original equipment manufacturer (OEM) and aftermarket installation

In-Tank Fuel Warming

- Delivers heat to the fuel in the tank and fuel drawn out of the tank
- Prevents fuel gelling in the tank when the engine operates for long periods under moderate to full engine load
- Improves fuel flow through hose and filter
- Stabilizes fuel temperature above the pour point



In-Line Fuel Warming

- Prevents gelling in the primary fuel filter
- Heats the fuel closer to the primary fuel filter
- Connects to the fuel line
- Does not require fuel tank modifications



Electric In-Line Heater — Hotline

- Provides warm fuel for engine start-up
- Operates on 12-or 24-volt power
- Requires no tank modification
- Replaces a section of fuel line
- Can be used in conjunction with other fuel warming devices

While diesel fuel gelling can be a problem impacting engine performance and downtime, the measures outlined in this whitepaper can significantly reduce and, in many cases, eliminate the problem posed by cold weather applications and environments. ■

Whitepaper was provided compliments of EGSA Member, Phillips & Temro.
Please visit phillipsandtemro.com for more information.

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The Association aggressively promotes contact with others in the industry and affords each Member an opportunity to make an impact on the industry through annual meetings and trade shows. EGSA also encourages the exchange of ideas and information for the mutual benefit of its Members, the industry and end-users of On-Site Power Generation Systems and serves as a source of information, education and training while actively promoting professionalism, communication and international cooperation.

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To provide an environment where on-site Power Generation industry experts unite and share knowledge to drive the industry to higher levels of service and performance.

Our Mission

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 our members and others serving on-site power consumers.

Goals

- Provide the on-site power community with education and industry enrichment
- Maintain financial viability to ensure a strong EGSA future
- Develop programs that promote long-term membership value
- Enhancing the existing networking platform

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Values and standards governing the operation of EGSA and our conduct or relationships with society at large, members, and other stakeholders.

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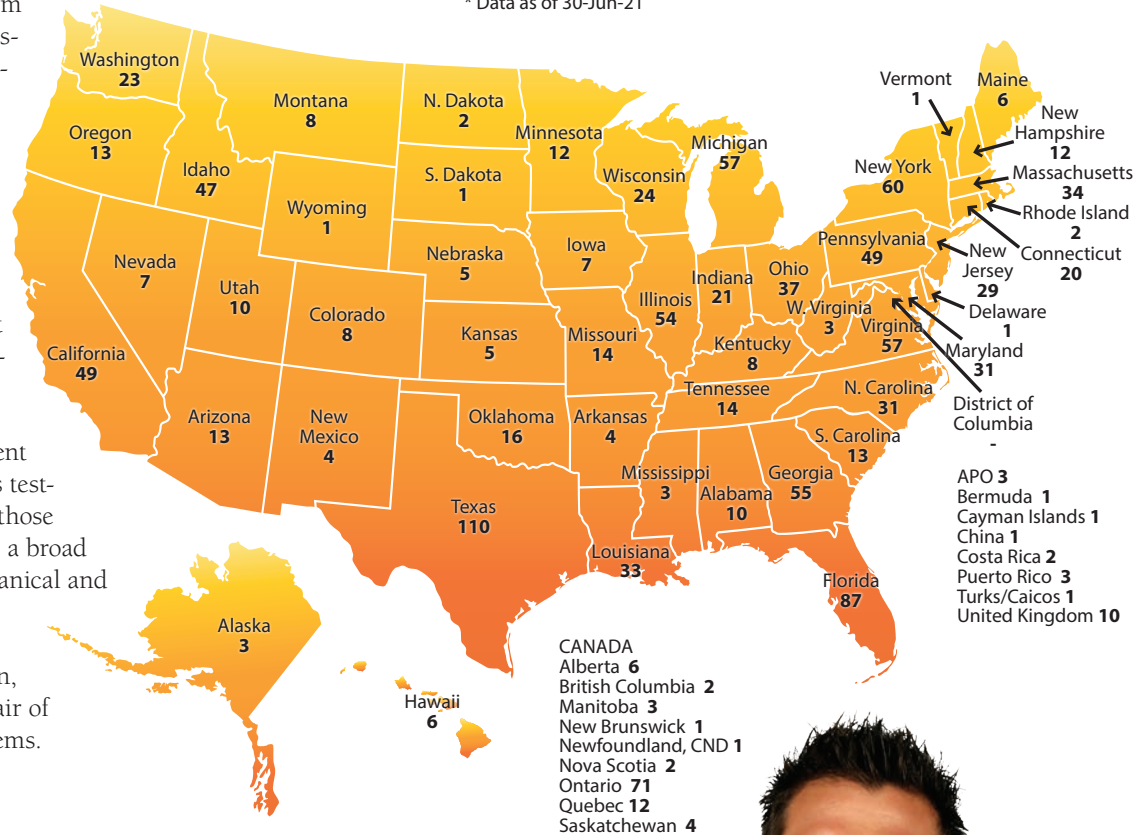
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As part of its commitment to advancing professionalism within the On-Site Power industry, EGSA has created the Electrical Generator Systems Technician Certification Program. Certification of personnel has become the hallmark of many industries in the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

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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).

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BASLER ELECTRIC COMPANY www.basler.com

Basler Electric designs and manufactures Automatic Voltage Regulators, Genset and Engine Controls, Protective Relay Systems, Excitation Systems, and Custom Transformers for the industrial, commercial, OEM, and utility markets.

Headquartered in Highland, Illinois since 1942, Basler has additional operations in Texas, Mexico, China, and Singapore, as well as a turnkey services organization based in Colorado. Basler's global presence allows for the identification of specific market needs and applications worldwide and provides customers with quality products and services.



Founded in 1942 and headquartered in Highland, IL, Basler Electric is a family-owned company operating on a global scale. With manufacturing and service facilities in Illinois, Texas, Colorado and Mexico along with sales and technical support centers in Singapore and Suzhou, China; Basler products operate in 145 countries and their quality is trusted worldwide. For nearly 80 years, Basler has continually been innovating and evolving, helping its customers generate, control and manage power more effectively.

Always Innovating

Generator Set Controls

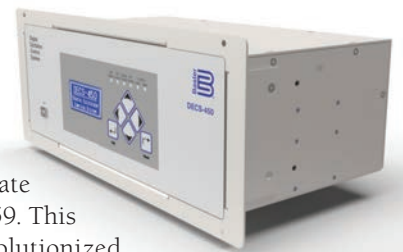
Basler introduced their first genset controller, the DGC-2000, in 1997. The DGC-2000 triggered many innovations for the adaptation of conventional analog controlled gensets by combining many subsystems into one controller. The DGC-2020ES followed several years later. The evolution of genset controllers continued and now includes



the DGC-2020HD, a highly-advanced, rugged genset controller designed for paralleling and complex load sharing schemes. The DGC-2020HD is a total system solution for generator set applications, with its compact package allowing users to save both space and money.

Voltage Regulators & Excitation Controls

Known for innovative power system solutions, Basler introduced the first ever solid-state voltage regulator, the SR-5, in 1959. This advancement in technology revolutionized the voltage regulator market. Innovations piled up throughout the years with Basler always looking to improve our customers' experience and lives with products that exceed their expectations. Basler's latest voltage regulator innovation is the DECS-450. Released in 2020, it is one of the most advanced controllers available and is engineered to meet a wide variety of applications with extremely high reliability.





Protective Relays

Basler introduced the first ever solid-state protective relay in 1969. More reliable and requiring less maintenance than its predecessors, this innovation completely transformed the protective relay market. Basler has a complete line of protective relays covering generator, transformer, bus and motor applications. The latest protective relay, the BE1-FLEX, is a completely new and groundbreaking platform, designed to be the most versatile and easy to use protective relay in the industry. The BE1-FLEX can be extensively customized upon order and can be easily reconfigured in the field with interchangeable circuit boards and easily modified software parameters. The large touchscreen control panel, with pinch and zoom capability, allows for monitoring and control of any aspect of the system. The future demands FLEX.

Always Evolving



World-Class Customer Support

While the goal is to provide innovative products that save customers time and money, Basler always has the goal of backward compatibility in mind. As new innovations are created, existing, reliable Basler product lines have to evolve over time. Basler looks at the existing products with the goal of making them as backward compatible as possible to make the transition to the new products simple and easy.

Basler also provides technical support indefinitely. As long as components are available, they will provide customers with repair services. Basler also offers in-depth training to ensure customers are satisfied with their ability to maintain their system.



Turnkey Services

Employing both Basler Electric OEM field services and its wholly-owned subsidiary E2 Power Systems, Basler is a leading full-service electrical engineering and field services provider in the power generation, power distribution and controls market, recognized for superior quality and satisfied clients. Basler and E2 engineers and technicians have broad systems and equipment knowledge, giving them the unique ability to provide excellent service for any project, no matter the size.

The EGSA Connection

An EGSA Member since 1967, Basler Electric has been an asset to the EGSA community. As one of our oldest members in EGSA's 56 year history, Basler has committed volunteer time and monies to further the Association as a whole.

With such a long history in the EGSA community, several Basler Electric employees have filled leadership roles, including being a part of our EGSA Board of Directors. In addition, Terry Gaines has been a Rowley School Instructor for both the Basic and Advanced schools since 1999. He currently teaches three modules including Automatic Voltage Regulators, Genset & Critical Power System Controls and Generator Systems Protection. In 2008, EGSA presented Terry with the James Wright Educator Award, one of only 9 recipients' to-date to be awarded this prestigious award.

Basler Electric also committed numerous resources and expertise for the EGSA reference book (both 4th and 5th Editions of On-Site Power Generation) with Michael Basler, Jason Biggs, Chris Chelmecki, Terry Gaines, Randy Hamilton, Gerald Johnson, Larry Perez and Richard Schaefer committing time to author Chapter 26 on Automatic Voltage Regulation.

Throughout the years, other Basler employees have received the prestigious EGSA Carpenter Award, such as Robert Roeke, in 1978 and Tom Hallis in 1982, with Robert also receiving the Timmler in 1982. ■

EGSA NEWS



Whether You Are Seeking New Talent or Looking for a New Career, We Make the Job Search Easier with the EGSA Job Bank!

This Process Allows Members to Control Their Listings

One of the great benefits that you enjoy as an EGSA Member is access to the Job Bank. Posted on the EGSA website and quarterly in each issue of *Powerline Magazine*, the EGSA job bank is an important venue for reaching out to qualified applicants within the on-site power community concerning available positions at your company. (Online & Print)

The EGSA Job Bank is managed exclusively online via our web site. We are giving you the power to directly manage your own job postings. Choose how long the ad should run, whether

the ad should run in *Powerline Magazine* and edit it whenever you need to. This streamlined process means you manage your listings.

To Post a Job:

- Log onto the job bank* at <https://www.egsa.org/Careers>
- Click on “Add New Job Opportunity.”
- Fill in the job information

For your job posting, you will see “delete” and “edit” buttons below the posting. Use these if you need to edit the posting at a later date. (Ads run online for 60 days unless edits are made to update the listing.)

To review all of the career opportunities that our Members have available, simply visit www.egsa.org and click on the Careers tab! Remember - Job Bank postings are one of the FREE benefits of EGSA Membership.

EGSA Membership can save you money on job placement advertisements; show this article to your HR Department if this service is not one you are currently utilizing!

For questions, call EGSA staff at 561-750-5575 or visit www.egsa.org/Careers.aspx for complete instructions! ■

**To create an EGSA login, please visit www.egsa.org and click “register” in the upper right-hand corner. The minimum information required is your name, company name, company email and the creation of a password. (The password must be 8 characters long, must contain letters and numbers and also include one uppercase letter)*

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Meet Your EGSA Vice Chair

Thomas Black

In each of the upcoming issues we will be sharing information on some of the volunteers who donate their time for the betterment of the Electrical Generating Systems Association and the industry as a whole. Without their hard work and dedication to EGSA, much of the efforts and directives simply wouldn't be possible.



EGSA Vice Chair - Thomas Black

After graduating college, I went to work for ASCO who had a sales office in metro Detroit. After seven years in Michigan, an opportunity opened for the District Sales Manager at the Midwest office in Minneapolis. In 1997 I left ASCO and started Alliance Energy Systems which became a Generac and Katolight dealer; Alliance was sold to DTE Energy in 2001. I started my own consulting company TRB Group in 2011 and then rejoined ASCO in 2014 as part of their National Accounts Team. My experience includes an extensive amount of traditional technology and renewables knowledge including engine generators, automatic transfer switches, paralleling switchgear, fuel cells, microgrids, distributed generation assets, landfill gas to energy and creating and executing power purchasing agreements with utilities and owners.

I have held positions in Sales, Sales Management and at Executive levels throughout my extensive career. I started my Board of Directors experience in 1997 and have been serving on Boards since. It has been a privilege to serve on the EGSA Board of Directors.

How/Why did you first become involved in EGSA?

My first EGSA meeting was in 1998. I was a member of the Katolight distributor council along with Bob Hafich of Emergency Systems and Javier Mazarredo of RB Grove. Both men were active members of EGSA and avidly expressed their mutual interest in my attendance at the next conference. That meeting sparked my participation and support of EGSA, now surpassing 20 years.

What leadership positions have you held within EGSA?

I spoke at many conferences, was Vice Chair of the Conference Planning Committee and wrote articles for both *Powerline* and *Diesel Progress* magazine.

What do you like to do in your free time?

In my spare time I enjoy traveling, playing golf, fishing, and spending quality time with my family.

What is one thing most EGSA Members probably do not know about you?

A life event most membership may not yet know is that I celebrated a new marriage in August of 2020 to Jennifer Abbo. ■



Top picture: Golfing in Northern Michigan with son, Thomas Jr.

Pictures two & three: 2019 Remote Canadian Fishing Adventure. Thomas Black, Chris Harding, Thomas Black Jr.

Bottom Picture: Marriage to Jennifer Abbo in August of 2020.



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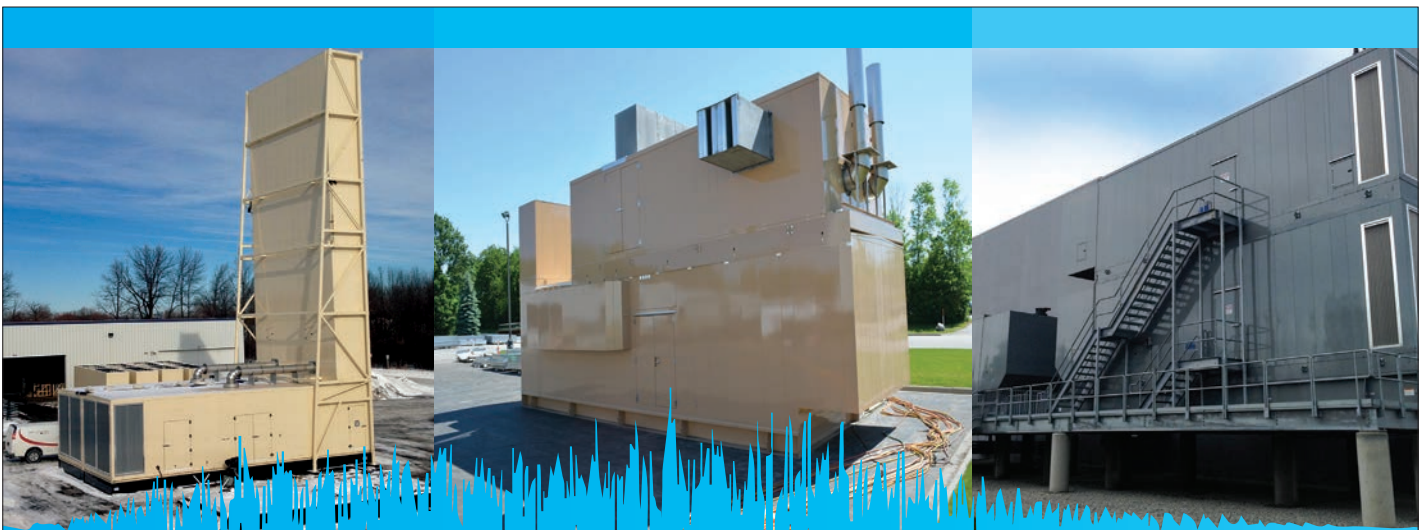
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Penn Power Group maintains a Drug Free Workplace and is an Equal Opportunity Employer. Applicants are considered for employment to race, color, religion, sex, age, disability, national origin, sexual orientation or any other basis prohibited by law. This employment including selection, job assignment, compensation, discipline, termination and access to benefits and training.



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Application for Membership

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.

EGSA MEMBER CLASSIFICATION & DUES SCHEDULE (Please complete form on next page)

FULL MEMBERSHIP		Annual Dues	Initiation	TOTAL DUE
These Full Memberships categories are for corporations and their memberships cover all employees of the company.				
MF Manufacturer Membership Any individual, sole proprietor, partnership or 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. 5. They are a wholly owned subsidiary of a firm that qualifies under rules one through four.		\$1,055	\$200	\$1,255
DD Distributor/Dealer Membership Any individual, sole proprietor, partnership or corporation actively engaged as a distributor or dealer for products listed under Manufacturer Membership may apply for Full Membership as a Distributor/Dealer. If an organization qualifies under Manufacturer Membership, it is not qualified under this section.		\$395	\$100	\$495
CI Contractor/Integrator Membership Any individual, sole proprietor, partnership or corporation actively engaged as a Contractor or Equipment Integrator of products listed under Manufacturer Membership, not bound by brand, geographic territory or contractually obligated as a Distributor/Dealer of a specific product. These firms typically purchase products from a Distributor/Dealer, Manufacturer or Retailer, adding value through installation, product knowledge, relationships, unique services, etc., and then re-sell the resulting product to an end-user.				
MR Manufacturer's Representative Membership Any individual, sole proprietor, partnership or corporation actively engaged in the representation of products listed under Manufacturer Membership may apply for Full Membership as a Manufacturer's Representative. If an organization qualifies under Manufacturer Membership, it is not qualified under this section.				
EM Energy Management Company Membership Any individual, sole proprietor, partnership or corporation engaged in energy management, including Energy Service Companies (ESCOs), Independent Power Producers (IPPs), Integrators, Aggregators, and other similar enterprises may apply for Full Membership as an Energy Management Company.		\$270	\$100	\$370
ASSOCIATE MEMBERSHIP		Annual Dues	Initiation	TOTAL DUE
EGSA has two Associate Member types, Associate Regular and Associate Full . Companies have the choice of joining as an Associate Regular Member or Associate Full Member. Individuals can join as an Associate Regular Member only.				
Associate Regular Membership (Select Appropriate Category Below)		\$270	\$100	\$370
Associate Full Membership Any individual, sole proprietor, academic institution, student, partnership or corporation meeting the requirements of Associate Regular Membership may apply for Full Membership at their option to enjoy the privileges of Full Membership, including the rights to vote and to serve on EGSA's Board of Directors. Initiation fees and annual dues will be assessed at the existing non-manufacturer Full Member rates. (Select Appropriate Category Below)		\$395	\$100	\$495
Associate Membership Categories				
Associate Regular Membership Categories	AA Trade Publication Membership Any trade publication dealing with the electrical generating systems industry or its suppliers may apply for Associate Membership—Trade Publications.	\$110	N/A	\$110
	AB Trade Association Membership Any trade association made up of individual or company members sharing a common interest in the electrical generating systems industry may apply for Associate Membership.			
	AC Engineer Membership Any consulting or specifying engineer may apply for Associate Membership—Engineer. Membership may either be held in the employer's name or individual's name under this classification. Individuals whose employer qualify as a Full Member, as described in the Full Membership section, do not qualify for this category.			
	AD End-User Membership Any individual employee of a company who owns or operates electrical generating equipment and/or related switchgear or components, whose responsibility to his employer includes planning, design, installation, supervision, or service of such equipment may apply for Associate Membership—User. Membership may either be held in the employer's name or individual's name under this classification. Individuals whose employer qualify as a Full Member, as described in the Full Membership section, do not qualify for this category.			
	AE Service Membership Any individual, organization or academic institution that offers services such as research, testing or repair to the electrical generating systems industry may apply for Associate Membership—Services. Membership may either be held in the individual's name or the organization's name under this classification. Individual companies whose employer or parent organization qualifies as a Full Member, as described in the Full Membership section, do not qualify for this category.			
	AG Educational Institution Membership Any postsecondary vocational-technical school or college offering on-site power generation-related instruction may apply for Associate Membership—Education Institution.			
	AI Individual Membership Any individual who was previously employed in the on-site power generation industry but is no longer actively employed in the industry.	\$65	N/A	\$65
	AM Military Membership Any individual who is currently enlisted, or who has been discharged, or has retired from the US or Canadian Military may apply for membership within this category. Proof of military engagement is required by either current Military ID card or honorable discharge documents.	Complimentary		\$0
	AR Retiree Membership Any individual who retires from a member company may apply for Associate Membership—Retired. This classification does not apply to any individual who is employed more than 20 hours per week.	Complimentary		\$0
	AF Student Membership Any individual currently enrolled at an academic institution may apply for Associate Membership—Student.			\$0

1. Contact Information

Company _____
 Address _____
 City _____ State/Province _____
 Zip/Postal Code _____ Country _____
 Phone _____ FAX _____
 Official Representative _____ Title _____
 Representative's E-Mail _____ Company's Web Address _____
 How did you hear about EGSA? Web site Powerline magazine Colleague POWER-GEN Other _____
 Why are you joining EGSA? Certification Program CEU Program Power Schools Buying Guide Listing Other _____

2. Member Classification

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

Full Memberships

- Manufacturer (MF)
- Distributor/Dealer (DD)
- Contractor/Integrator (CI)
- Manufacturer's Representative (MR)
- Energy Management Company (EM)

Associate Memberships

- Regular Associate Membership →
- Full Associate Membership →

(Select Appropriate Category)

- Trade Publication (AA)
- Trade Association (AB)
- Engineer (AC)
- End User (AD)
- Service (AE)
- Educational Institution (AG)
- Individual (AI)
- Military (AM)
- Retiree (AR)
- Student (AF)

3. Membership Dues

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

Membership Dues \$ _____
 Membership Plaque (optional)** \$ 85.00**
 On-Site Power Generation: A Comprehensive Guide to On-Site Power (optional)** \$ 216.00**
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 \$ _____

4. Payment Method

(Payable in US\$ drawn on U.S. bank, U.S. Money Order, or American Express)

Check # _____ Amount Due \$ _____
 Mastercard Visa American Express
 Card # _____ Exp. Date _____
 Signature: _____
 Print Name: _____

5. Products/Services

Please describe the nature of your business (50 words or less, NOT ALL CAPS). If you are a Manufacturer's Representative or Distributor/Dealer, please indicate which manufacturers you represent and/or distribute for; if you are a student, please provide the name and location of your school, your major and your anticipated graduation date:

Do you buy AND sell equipment? Yes No Do you manufacture packaged equipment? Yes No

6. 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 _____

Available Codes:

- | | | | | |
|------------------------------------|--|--|--|---------------------------------------|
| 01 --- Batteries/Battery Chargers | 07 --- Engine Starters/Starting Aids | 12 --- Governors | 18 --- Relays, Protective or Synchronizing | 22 --- Trailers, Generator Set |
| 02 --- Control/Annunciator Systems | 08 --- Filters, Lube Oil, Fuel or Air | 13 --- Heat Recovery Systems | 19 --- Silencers/Exhaust Systems/Noise Abatement | 23 --- Transformers |
| 29 --- Education | 28 --- Fuel Cells | 14 --- Instruments and controls, including meters, gauges, relays, contactors, or switches | 20 --- Solenoids | 24 --- Uninterruptible Power Supplies |
| 30 --- Emission Control Equipment | 03 --- Fuel Tanks and Fuel Storage Systems | 15 --- Load Banks | 21 --- Switchgear and Transfer Switches (Automatic or Manual), Bypass Isolation Switches, and/or Switchgear Panels | 25 --- Vibration Isolators |
| 04 --- Enclosures, Generator Set | 09 --- Generator Laminations | 16 --- Motor Generator Sets | 26 --- Voltage Regulators | 27 --- Wiring Devices or Receptacles |
| 05 --- Engines, Diesel or Gas | 10 --- Generator Sets | 17 --- Radiator/Heat Exchangers | | |
| 06 --- Engines, Gas Turbine | 11 --- Generators/Alternators | | | |

Enter codes here: (Limit 10 codes per category)

Products sold: _____
Products rented: _____
Products serviced: _____

7. Official Representative's Authorization

Signature _____ Date _____

NEW EGSA MEMBERS

MF=Manufacturer DD=Distributor/Dealer CI=Contractor/Integrator MR=Manufacturers Rep
EM=Energy Management Co. AA=Trade Publication AB=Trade Association AC=Engineer
AD=End-User AE=Service AG=Educational Institution AI=Individual AM=Military AR=Retiree AF=Student

American Technical Institute, Inc...... AG
Bayamon, PR
(787) 799-5060 amtec.edu

Emily Gomez, President
We are the first educational institution in Puerto Rico to offer education programs on Electric Generators since 2006. All classes are taught in Spanish.

EK Machine Co Inc...... MF
Fall River, WI
(920) 484-3700 ekmachine.com

Steven Slack, Vice President of Operations
Established in 1970, EK has grown over the last 50 years to become a premier manufacturing company in the US. EK has two product and service divisions: Complete Manufacturing - focusing on component production and Power Products - which focuses on design and manufacture of enclosures and fuel tanks for power generation.

Hunt, BryanAM
Holloman Air Force Base, NM

Kineko Energy LLC..... DD
San Juan, PR
(787) 667-6377 kinekopr.com

Hector Goiricelaya, VP Operations
Genmac Generators distributor for PR & Lesser Antilles. Sales, Service and Rental.

Motul USA, Inc...... MF
Cypress, CA
(657) 465-2464 motul.com/us/en

Kevin Smith
Motul is an engine oil and lubricant manufacturer with a full line of lubricants for power generation systems.

Precision Mechanical Power Services, Inc. CI
Bossier City, LA
(318) 746-8147 precision24.net

Chase Hamilton, Manager
Precision Mechanical Power Services, Inc. is an authorized dealer for Generac Power Systems, Kohler, Cummins and Blue Star and we provide the most comprehensive generator service and support available for all standby power products. We service all major brands of emergency power systems and provide complete generator maintenance services, repair services, testing, replacement parts and remote generator monitoring.

R.B. U'Ren Equipment Inc...... DD
Niagara Falls, NY
(716) 283-4466 RBUREN.COM

John Tiedemann, Sales & Service
Rental and sales. Rentals of generators from 2 kW to 1750 kW. All mobile units. Quiet generators. Sales and service of generators, also generator silencing service. Rentals of load banks, air compressors, light towers and related electrical and lighting equipment.

Shakopee Mdewakanton Sioux Community.. AD
Prior Lake, MN
(952) 403-5591 shakopeedakota.org

Scott Jokinen, Fleet Services Manager
Tribal Government

Superior Systems & Technologies MF
Merkel, TX
(325) 690-0248 superiorsystemstech.com

Monica Brown, Chief Operating Officer
We manufacture and supplier of diesel fuel tanks and enclosures for power generators.

Tactical Power Generation Services, LLPAE
Colorado Springs, CO
(719) 464-2256 tacticalpowerpro.com

Carlos Aneiro, Owner
Tactical Power Generation Services, LLP offers generator services, troubleshooting, repair, rental and preventive maintenance. We are military veterans with 10 years of experience maintaining, repairing, and servicing our great nation's military backup power systems. Our mission is to provide professional expeditionary maintenance and emergency generator repair services to anyone in need.

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Richmond, VA vcu.edu

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EGSA JOB BANK

North America

Electric Power Generation Field Service Technician

Carter Machinery
Location: Manassas VA

Duties include performing PM's, troubleshooting, and repairs of engine and electrical related systems. Inspections, PM's, and Repairs may require working hours in addition to the normal work schedule for emergency calls. Seeking candidates with relevant Electrical Power Generation (EPG)/electronics experience; a technical degree or military equipment experience is a plus.

To apply: <https://recruiting.ultipro.com/CAR1060CRTM/OpportunityCreate?opportunityId=8a1c09ea-309f-49a9-9fca-b09d8f2b6623>

Safety Training Specialist-Electric Power Generation

Carter Machinery Company
Location: Elkridge, MD

The Safety Training Specialist is responsible for organizing safety programs for EPG Technicians, conducting low/medium voltage safety classes and evaluating technician fitness to work on 13,000 volts safely. Seeking candidate with two years' experience in EPG or electrical maintenance. Experience in Environmental, Health & Safety or an instructional role preferred.

To apply:
<https://recruiting.ultipro.com/CAR1060CRTM/OpportunityCreate?opportunityId=60b14da5-05d0-4e6f-8b9c-be62f8c7c328>

Electric Power Generation Field Service Technician

Carter Machinery Company
Location: Elkridge, MD

Duties: troubleshooting and repairs of engine and electrical related systems, EPG start-up of generators, transfer switches, UPS, and switchgear systems. May require working additional hours for emergency calls. Seeking candidates with 3 years' minimum of relevant EPG /electronics experience; a technical degree or military equipment experience is a plus.

To apply:
<https://recruiting.ultipro.com/CAR1060CRTM/OpportunityCreate?opportunityId=a69bf11c-68c1-4248-a6c1-41f0f35df5d5>

Product Manager for Engine Control

ComAp, LLC
Location: Remote

ComAp LLC, The Heart of Smart Control, is looking for a Product Manager responsible for a product line with a portfolio of control systems for Industrial Applications like Pumps and Compressors. Responsibilities include maintaining profitability, staying ahead of the competition, and creating clear short/ long term product development plans.

To apply:
<https://comap-control.jobs.cz/>

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 www.EGSA.org/Careers.aspx.

Application Engineer - Power Generation

ComAp, LLC
Location: Remote

ComAp, The Heart of Smart Control, is looking for an experienced customer service driven Application Engineer to provide support to our sales efforts through customer visits, on-site assistance and remote communications. Keys to providing superior support will be effective problem solving, training, installation assistance, commissioning, and validating ComAp provided controls.

To apply:
For more details and to apply, please visit: <https://comap-control.jobs.cz/>

Generator Field Technician

PowerSecure, Inc.
Location: Various Locations

PowerSecure is growing! We are hiring Generator Field Technicians of varying skill levels in Bakersfield, Los Angeles, Little Rock, Dallas, Houston, Charlotte, Raleigh, Richmond VA and Washington DC. We offer competitive pay and benefits, training, overtime and opportunities for advancement.

Check us out here: <http://www.youtube.com/watch?v=Ugi3puNgEo4>

EGSA Certified Technicians Preferred

To apply:
View and apply to our open positions on the PowerSecure Careers webpage using the following link: <http://recruiting.paylocity.com/Recruiting/Jobs/All/76b687adf13f-46bb-96ef-2e8acb770818/PowerSecure-Inc> Or email questions to Careers@PowerSecure.com.

USA Midwest

Project Engineer - Power Generation

Altorfer Industries
Location: Addison, IL

The Project Engineer will be responsible for working with the Product Support team to provide solutions to customers on large power generation upgrade projects and repairs. This position will serve as a technical liaison between the sales team, service department and the customer to support new sales.

EGSA Certified Technicians Preferred

To apply:
<https://careers-altorfer.icims.com/jobs/3734/project-engineer---power-generation/job?mode=view&mobile=false&width=720&height=500&bga=true&needsRedirect=false&jan1offset=-360&jun1offset=-300>

Project Manager

Altorfer Power Systems
Location: Addison or Bartonville, IL

The primary function of the Project Manager is to coordinate all associated personnel, tasks and materials to ensure the successful delivery and start-up of an associated engine sale. Project Managers are required to manage several projects simultaneously during various stages of completion.

To apply:
<https://careers-altorfer.icims.com/jobs/3809/project-manager/job>

Outside Sales-Power

Buckeye Power Sales
Location: Romeoville, IL

Job purpose: This position is responsible for lead generation and sales of standby power systems, while providing excellent customer service and maximizing profits. Travel will be throughout the entire BPS AOR, concentration primarily on any A/B (current and conquest) accounts that are not currently being covered as needed and C/D accounts that are considered to have potential.

This position could serve as a training ground for an inexperienced individual so prior experience is not a must. Read the full posting on the EGSA website under the "Careers" tab.

To apply:
<https://recruiting.paylocity.com/recruiting/jobs/All/078cbae2-d8ab-468e-b218-324bc4cb5e7c/Buckeye-Power-Sales-Co-Inc>

Generator Technician

Buckeye Power Sales
Location: Romeoville, IL
SIGN ON BONUS!

Job purpose: Servicing customer generators, including troubleshooting, repairing, performing preventative maintenance and startups. Read the full posting on the EGSA website under the "Careers" tab.

To apply:
<https://recruiting.paylocity.com/recruiting/jobs/Apply/510084/Buckeye-Power-Sales-Co-Inc/Generator-Service-Technician---Sign-on-Bonus>

EGSA JOB BANK

Territory Sales Representative

Evapar, Inc.

Location: St. Louis, MO

EVAPAR, is currently seeking an experienced Territory Manager in our Power Systems (Generator) Division. We are the Industrial Distributor for Generac Power Systems, and the main duties of this position will be representing EVAPAR and the Generac product in line with our company values and mission in the St. Louis/Middle Missouri market area. Read the full posting on the EGSA website under the "Careers" tab.

To apply:

Send resume to Lorelei.Findley@evapar.com.

USA Northeast

Generator Service Technician

Kinsley Power Systems

Locations:

Albany, NY | Queens, NY | Bronx, NY | Hartford, CT

Kinsley Power Systems is growing and seeking Generator Technicians to add to our team! Kinsley Power Systems, a family-owned business, has been servicing all makes and models of power generation equipment for over 55 years. Kinsley offers competitive compensation, 401(k) with company match, vacation and holiday pay, and comprehensive benefits with a health savings plan.

Additionally, technicians receive company sponsored trainings and certifications (EGSA), a company vehicle & gas card, company provided uniforms, annual boot and uniform stipends, along with the ability to work alongside some of the top technicians in the industry.

** Military and recent trade school graduates are encouraged to apply!! **Read the full posting on the EGSA website under the "Careers" tab.

EGSA Certified Technicians Preferred

To apply:

www.kinsley-group.com/careers or submit your resume to the following Talent Acquisition Specialists: adisanti@kinsley-group.com or salberino@kinsley-group.com

Sales Engineer

Kinsley Power Systems

Location: New York City

Kinsley Power Systems is growing and seeking a Sales Engineer to add to our team! The Sales Engineer focuses on prospecting and closing commercial/ industrial power generation applications, including related equipment (transfer switches, switchgear, load banks, fuel tanks, etc.). Read the full posting on the EGSA website under the "Careers" tab.

EGSA Certified Technicians Preferred

To apply:

www.kinsley-group.com/careers Or submit your resume to the following Talent Acquisition Specialists: adisanti@kinsley-group.com or salberino@kinsley-group.com

Outside Sales Representative

Kinsley Power Systems

Location: Jersey City, NJ

Kinsley Power Systems is growing and seeking an Outside Sales Representative to add to our rental sales division. The Outside Sales Representative is responsible for prospecting and closing business for rental temporary generators and associated accessories (distribution, cables, transport, fueling) and related assets (light towers/message boards). Read the full posting on the EGSA website under the "Careers" tab.

EGSA Certified Technicians Preferred

To apply:

www.kinsley-group.com/careers Or submit your resume to the following Talent Acquisition Specialists: adisanti@kinsley-group.com or salberino@kinsley-group.com

Power Generator Technician

Modern Group Ltd

Locations:

Edison, NJ | Hasbrouck Heights, NJ
Allentown, PA | Reading, PA | York, PA

This position is responsible for emergency breakdown and warranty repairs to all makes of generators and accessories, switches and switchgear for existing and new customers, on-site customer relations, ordering parts through the parts department, completion of all associated reporting (our repair orders and time sheets are electronic and completed on a laptop). Maximize billable hours to outside labor; proper care and maintenance of Modern vehicle and tools; maintain schedule of customer commitments. Willingness to work overtime and night hours as required. Read the full posting on the EGSA website under the "Careers" tab.

EGSA Certified Technicians Preferred

To apply:

Contact Us at recruiting@moderngroup.com or apply on our career website: www.moderngroup.com/careers.

Sales Manager

Modern Group Ltd

Location: Bristol, PA

The Sales Manager will manage the Power Systems sales representatives along with developing and expanding relationships with customers and vendors. This position represents the Power Systems generator products and services offered by Modern Group and ensuring customer needs and expectations are met by the company. Read the full posting on the EGSA website under the "Careers" tab.

To apply:

Contact us at recruiting@moderngroup.com or apply online at www.moderngroup.com/careers

Manufacturer's Rep Seeking Principals

Leading Mid-South manufacturer's rep is seeking additional product lines. We have decades of experience in all aspects of the onsite power generation industry. We are interested in adding quality complementary manufacturers to our line of superior products serving the industry. Our record of outstanding success can help you achieve your sales and market share goals. Please respond if you have an area where you desire additional sales and market share.

Please respond to: J.Kellough@EGSA.org
(Reference PLMJ13JB-1)

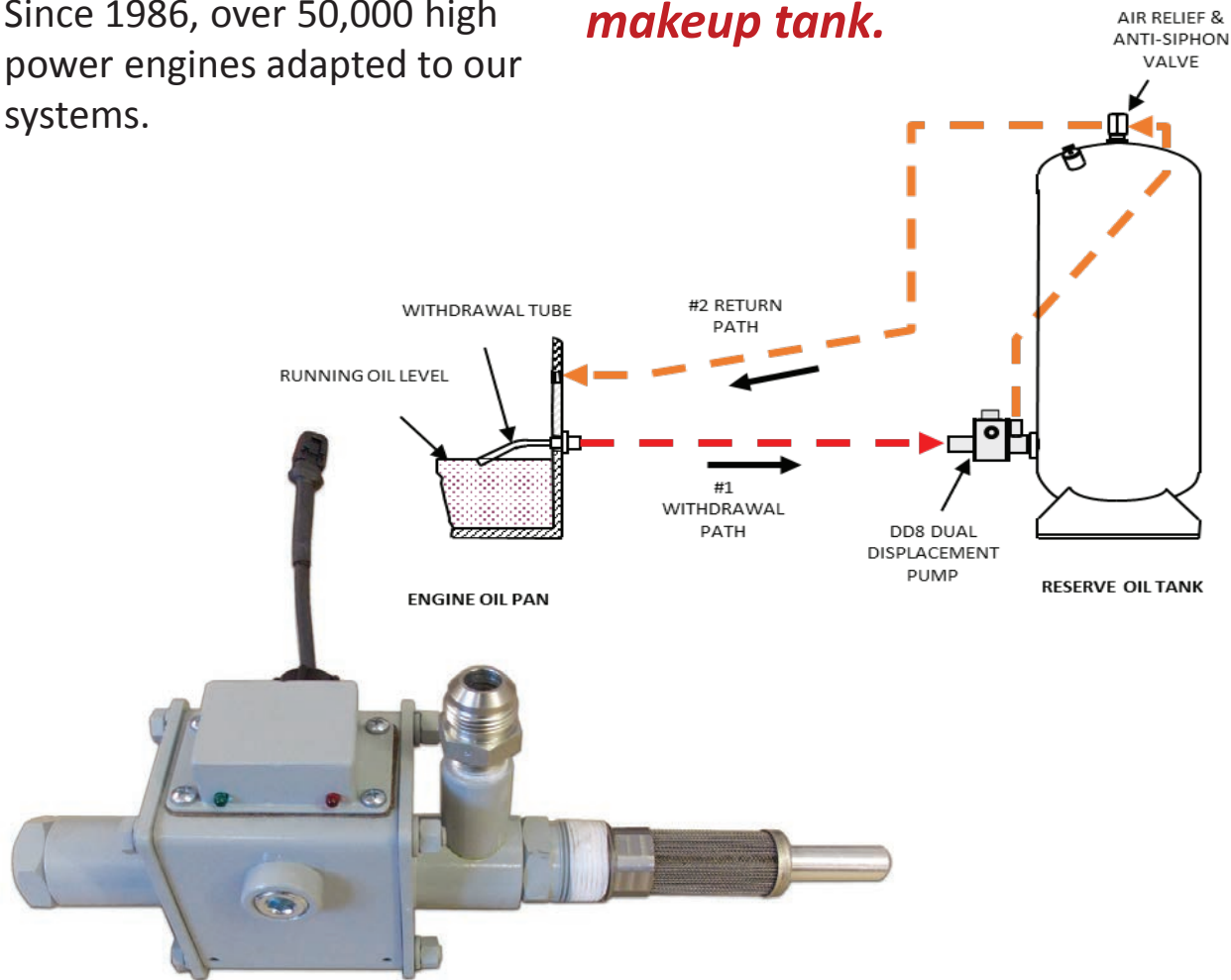
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