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2016 Fall Conference Preview

Stabilized Co-Generation

Prelubrication Systems For Genset Applications

Power Systems Research (PSR) Member Profile

The GOLDEN State of POWER

EGSA 2016 Fall Conference

Sacramento,CA · September 11-13

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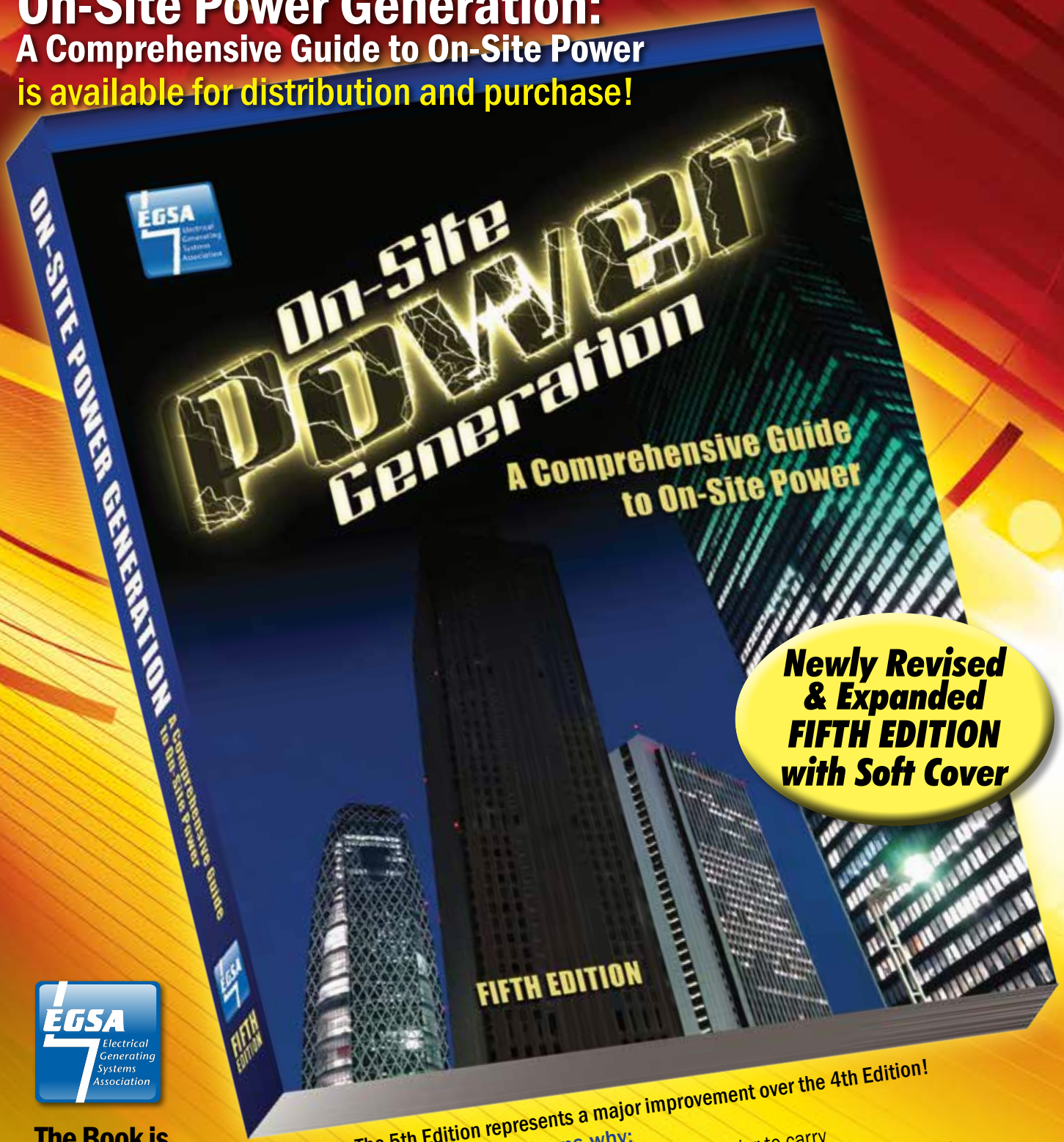

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EVENTS CALENDAR

Conferences

EGSA 2016 Fall Conference
September 11-13, 2016; Sacramento, CA

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/fall* or by calling (561) 750-5575.

EGSA 2017 Spring Conference
March 19-21, 2017; Kissimmee (Orlando), FL

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

Industry Trade Shows

POWER-GEN International 2016
December 13-15, 2016; Orlando, FL

The world's largest show for power generation, featuring the EGSA On-Site Power Pavilion. For exhibit information, contact Liz Bustamante at (561) 750-5575, ext 206 or via e-mail *l.bustamante@EGSA.org.*

The Battery Show Exhibition & Conference
September 13-15, 2016; Novi, MI

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Basic Schools

~~February 9-11 ..... Scottsdale, AZ~~
~~June 7-9 ..... Charlotte, NC~~
August 16-18 ..... Sterling, VA
December 12-14 ..... Orlando, FL*

*To be held concurrently with POWER-GEN International 2016

Advanced Schools

~~April 4-7 ..... Austin, TX~~
~~July 11-14 ..... New Orleans, LA~~
October 17-20 ..... Nashville (Brentwood), TN

ADVERTISERS INDEX

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Bob Hafich
2016 EGSA President
bob.hafich@
emergencysystems-inc.com

Prospecting for Gold

It seems like almost yesterday when Tom Richards from Katolight invited me to my first EGSA meeting. I can tell you this though…it also feels like a lifetime ago. It was a big deal to me then and still is today because I was first introduced to EGSA by one of THE founding fathers of Katolight (now MTU Onsite Energy), and a former EGSA President. Tom later continued to be one of my mentors in the on-site power generation industry.

It really meant so much to me to be invited by Tom, along with my brother Joe and Al Prosser (MTU Onsite Energy). My experiences with the organization since have continued to generate positive results for me, my brother Joe, our families, and our family business The Emergency Systems Service Company.

I think back to that first conference often. In fact, every time I would consider raising my hand to volunteer for something, every time I wrote a check for EGSA dues, books, educational classes or sponsorships, my mind would drift back to my first EGSA Conference… and that still happens today.

Why, you might ask?

While I have had other influential people in my life that steered me towards power generation as a career, like my father Joe and mother Lillian who were the reasons I ended up in power generation in the first place, being a member of EGSA gave me an opportunity to get to KNOW the industry I have dedicated my life's work to.

It gave me an opportunity to watch industry pros like Tom, who had accountability for his membership being successful. I observed Tom extending himself every time. He wasn't one to wait around for other people to "do the inviting". Tom extended himself every chance he got and EGSA is a much better organization for it. Because of members like Tom, EGSA is sliding into the home stretch of our 51st year as the only premier onsite power trade organization. We have remained vibrant, continued to grow, and stayed relevant. We have seen each other through the years, both good and bad.

So where is the lesson in all of this? It's about always having your pickaxe ready. Simply put, it is about mining for gold. If we each make every effort to own a piece of our progress (and in particular our membership roster), growing with good members will continue to happen. It truly is a matter of simply inviting someone to show up for one of our EGSA events so they can experience what a good fit we are.

Your Association has several annual opportunities to invite on-site power people to attend! Each year, we host 2 conferences in March and September respectively that inspire people to get to know their colleagues and gain insight into our ever-changing industry of on-site power. We also host our annual networking party, the EGSA Power Party which takes place on the opening night of POWER-GEN International in December of every year. These are great opportunities to put on your mining hat and set to work recruiting members for this great Association of ours! You are sure to leave a valuable impression that will linger for years to come.

Be like Tom! Prospect for gold and help grow our Association and our industry for the next 50 years to come. ■

Michael Pope
EGSA Director
of Education
m.pope@EGSA.org

Calling All Students!

Students are an integral part of EGSA, now making up approximately 20% of the overall membership. We expect that, as these students become qualified, they will become a part of the on-site power generation industry, contributing to its growth with new ideas and new technologies.

Many key people in our industry are approaching retirement so there are great opportunities for our student members to have a really interesting, satisfying and rewarding career in on-site power. These opportunities exist in all areas: research, design, applications, service, sales & marketing and with engine and generator set manufacturers, component suppliers, system integrators, distributors and dealers. There are about 800 member companies in EGSA and if you want to check the membership status of any company, just go to *egsa.org/membership/directory* search.

As a student, your membership in EGSA comes at no charge. Our hope is that during the next stage in your career, you will be employed by one of our member companies. All employees of our member companies are eligible for the full benefits of membership, including cost savings and member pricing for our educational programs such as the Rowley Schools, webinars and EGSA Technician Certification. Additional member benefits, from our EGSA Job Bank to our conferences and events, are also offered.

Students are automatically enrolled into a personal subscription to Powerline (so we hope you are reading this issue!) and as an EGSA Member, you are also entitled to member prices for all our services. One product, particularly valuable to anyone in this industry and anyone ready to start a career in this industry, is the so called "bible" of power generation, our 5th edition reference book: *On-Site Power Generation: A Comprehensive Guide to On-Site Power.*

This is the best resource you could own for learning about the theory of operation of all the major and sub-components that comprise a generator system. From the fuel system to the exhaust system, from the starting battery to the distribution of electrical power – and everything in between, if you need to increase your knowledge and understanding of any component or system on a genset, you will find this resource invaluable throughout your career.

EGSA is largely about education. We strive to help individual members achieve their goals of self-improvement, leading to the success of their employer. Many business owners and leaders among our membership started their careers as technicians in power generation and were able to advance through the ranks. If you are planning on entering on-site power as a service engineer, mechanic or technician, I would urge you continue your education and achieve EGSA Certified Technician status.

Without three years of field experience required for Journeyman, you may take the Apprentice level test, but do invest in the study guide first to help you get correct answers for a minimum of 68 out of the 100 questions. The test may be taken at a proctor site near you. Certification at the Apprentice Level shows a potential employer that you have a good understanding of the theory and principles of power generation equipment and will set you above other, un-certified, job applicants. Full details, of course, can be found on *egsa.org.*

We are pleased that you joined EGSA and we hope that as your career takes off you will remain involved with us as part of a member company. We really need folks like you!

Incidentally, at press time, we were in the process of selecting the 2016 recipients of the David I. Coren Scholarship Award. Each of these awards will contribute $2,500 to the recipient's on-site power educational costs. As I mentioned earlier, EGSA is committed to educational programs for our members – including our student members.

Comments or questions? Send me an email: *m.pope@egsa.org.* ■

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Codes & Standards Update

Herb Whittall
EGSA Technical Advisor
HWhittall@comcast.net

On June 9th and 10th, the Electrical Committee of NFPA 99 "Health Care Facilities" met in Dallas, TX for the second revision meeting of the 2018 edition cycle. There were very few actual comments submitted. In fact, half of the comments were kick-backs from the Correlating Committee regarding items covered in the first meeting. This was interesting since Chapter 6, in its entirety, had been revised to reduce the numbering system used without changing any of the content. That task was a huge undertaking and as with anything that big, there were some mistakes made which were corrected for the 2018 Edition. All in all, I think we did a very good job and hopefully (the 2018) new edition will be easier to understand.

The other topic of conversation, which included a presentation, concerned Chapter 7 "Information Technology and Communication Systems." This chapter was also changed a lot in our first meeting last August. The problem with this chapter is that technology is changing so fast, I am not sure a 3-year cycle, which NFPA follows, will keep up with the very quickly changing technologies and how they are affecting healthcare facilities. The subject discussed was nursing station communications and how they interface with other communications systems. Apparently, all these new systems are using large amounts of electricity and healthcare facilities are looking to add additional standby power to keep up with their requirements. This should be good for EGSA Members!

Herb Daugherty participated in the IEEE Industrial and Commercial Power Systems Conference May 1st – 5th in Detroit, MI. This Group is part of the Industrial Application Society, which is working on rewriting the IEEE Color Books in a new format. The new format will consist of a "Base" book: "Recommended Practice for the Engineering of Industrial and Commercial Power Systems" and a series of "Dot Standards". Herb is Co-Chair of Dot standard 3005.2 "Recommended Practice for the Application of Generator Systems for use in Emergency and Standby Systems." He is also a member of the group writing Base Book (3000) Chapter 3 "Power System Generation and Delivery Equipment." He was appointed (during this meeting) to the Secretary of the Emergency and Standby subcommittee. As with any of us working on Standards, Herb is open to anyone willing to help him on this IEEE work.

Herb and others are also trying to make sure the rewrite of IEEE 1547 Standards do not contain any language that could be of detriment to EGSA members. They need all the EGSA bodies they can get to attend IEEE 1547 meetings. Contact Herb if you can be of assistance.

The two requests from EGSA to UL concerning UL 2200 that were submitted in response to the request from Steve Sappington's (Caterpillar, Inc.) EGSA UL-2200 Subcommittee and approved by the EGSA Board are reported by UL to be "in Process." The item concerning "valve timing" has a reference number: PR25514. The item concerning Enclosures has reference number: PR25512. For more information concerning these items, refer back to my May/June article in *Powerline Magazine*.

ISO has announced that two standards are open for balloting. The balloting will close on October 5th, so if you have any comments on how I should vote, please contact me as soon as possible. The two Standards are: IS8528-7 – *Reciprocating Internal Combustion Engine Driven Alternating Current Generator Sets- Part 7 Technical Declarations for Specification and Design* and *IS8528-9-Reciprocating Internal Combustion Engine Driven Alternating Current Generator Sets – Part 9 Measurement and Evaluation of Mechanical Vibrations.*

The NECA (National Electrical Contractors Assn.) has closed balloting on making their newest document an ANSI standard. The Title is NECA 416-201 "Recommended Practice for installing Stored Energy Systems". Their recommended practices are fairly basic. I was one of those voting.

Steve Sappington notified me of the new requirement for a Manufacturer Declaration of Conformity/Importer Declaration of Conformity required by the Gulf Cooperation Council (GCC) around the Persian Gulf. Members include Saudi Arabia, UAE, Kuwait, Bahrain, Qatar, Oman and Yemen. The Declaration shall state that the equipment will meet the safety and electromagnetic compatibility requirements as set out in Articles (4) and (6) and Annex (1). The declaration is to be in both English and Arabic.

As always, codes & standards are a big part of our sphere of influence! On behalf of EGSA, if there is any information or details you'd like to discuss, I am available. Feel free to attend the next Codes & Standards Committee meeting during the EGSA Fall Conference in Sacramento this September. Please send your questions and comments to *hwhittall@comcast.net*.■

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EGSA
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EGSA 2016 Fall Conference
Sacramento,CA · September 11-13

Golden Gate, Gold Rush, Golden State Warriors….the State of California is beckoning all EGSA Members for the **"Golden State of Power"** from September 11-13th in Sacramento this fall at the Hyatt Regency Sacramento.

When was the last time you visited the California State Capital? In our recollection, EGSA has never been there as a group and we are getting ready to go prospecting! So, break out your pitchforks and pans, because this one is going to be worth our weight in gold.

From historic sites to the urban landscape, there will be plenty to do and see in this area. For extra info, don't miss Herb & Nancy Whittall contribution on this subject in the EGSA News section on page 29 of this issue.

Let's talk about our speaker slate in Sacramento!

Gearing up for the elections has been a daily job for many of us this last year. As our Nation inches closer to Super Tuesday, EGSA is turning our attention to a political insider with his finger on the pulse!

Our keynote speaker on Monday, Mike Murphy, is one of the Republican Party's most successful political media consultants, having handled strategy and advertising for more than 26 successful gubernatorial and Senatorial campaigns. Mike frequently writes a column for *TIME* Magazine, as well as providing regular commentary on the Meet the Press roundtable.

Now What? America's Political Future

What a difference eight years makes. In 2008, the electorate rallied behind President Obama and his deafening call for change. In 2010, voters went the other way, rallying behind the Tea Party and giving the GOP a majority in Congress. In 2012 the electorate spoke again—giving President Obama a second term but he continued to face a divided Congress and a Republican party locked in a crisis of redefinition.

A sought-after and experienced political strategist, Murphy brings his trademark humor to help our audience understand the current state of party politics in America. In this highly entertaining and informative presentation, Murphy shares the current news out of Washington, the horse race for the White House in 2016 and what it all means for our collective future.

Murphy was born in Detroit, MI and attended the Edmund Walsh School of Foreign Service at Georgetown University. He is a non-resident fellow at Harvard University's JFK School's Belfer Center for Science and International Affairs, and is a Fellow at the University of Chicago's Institute of Politics.

Directly following our insightful elections expert, Edmund Campion of APR Energy will present **Microgrid 102: Temporary Distributed Grid Power.**

Edmund Campion is an industry veteran in the field of temporary distributed grid power. He began his career in the field during the late 80s, where he worked to provide temporary power for large stadium concerts and live television shows.

As technology demands increase, the North American grid continues to age and become obsolete and because natural disasters and weather events are coming more frequently and in more alarming intensity, temporary power grids are becoming ever-increasingly utilized when the power in a particular application has to stay on.

During this presentation, Edmund will discuss large-scale, fast tracked, fully turnkey projects that he has been a part of during his tenure with APR Energy. We will examine the technology; review what occurs during a scheduled outage with insufficient reserve margins, what happens when a transmission line fails and why generators are such an integral component to a microgrid.

To round out our Monday General Session, we will hear from fellow member Joe Zirnhelt, C.O.O. & Strategist of EGSA Member firm, Power Systems Research, with a great industry-specific presentation called **Investor Mindset – Why Invest in Power Generation Related Companies.**

With over 20 years in power generation, Joe's experience spans across several technologies, starting with a tour as an officer in the United States Navy and a graduate of the naval nuclear propulsion program. After his naval service, Joe joined Alstom Power and was involved with gas turbine combined cycle plant commissioning and warranty management services.

During this presentation, our fall conference attendees will have a chance to step back, put on their investor caps and examine what aspects of the reciprocating engine-based power generation industry would be compelling to an outside investor.

We will begin with looking at the size and scope of the market in terms of total megawatts and revenue per year – examining the market today, as well as 5 years out. We will evaluate the strengths, weaknesses, opportunities and threats to the industry, as well as the key drivers moving business forward on an annual basis including the effects of high impact drivers, such as power outages and severe weather events.

Attitude is Everything

Regardless of our job titles and personal background, we are each in the position to influence other people's attitudes and behaviors EveryDay. To lead off Tuesday morning, we are hosting one of the original Broad Street Bullies. That's right, two-time Stanley Cup Champion, Bill Clement is a critically acclaimed speaker, broadcaster, actor, entrepreneur and author and his presentation is titled, **EveryDay Leadership.**

Following his successful career on the ice, Clement plunged into financial ruin in his first venture into the real world. With no job, income or career training, Clement has built personal success stories in multiple arenas after his NHL success with the Philadelphia Flyers (Broad Street Bullies), Washington Capitals, and the Calgary Flames. We hope you will enjoy hearing his personal story!

Advanced Control Value for Distributed Generation Projects

Sally Jacquemin, Siemens Microgrid Business Manager will explain how advanced software controls are adding significant value by optimizing complex distributed generation solutions in coordination with energy loads and local utility pricing programs.

Ms. Jacquemin has built and led a world-class team to successfully address customer needs in the emerging decentralized energy and utility markets. She manages the entire Microgrid solution portfolio, identifies gaps and directly influences global product development.

Any project with decentralized energy generation whether CHP, gas, diesel, renewable or battery should consider including an advanced optimization software solution.

Has Your Company Bridged the Gap Between Human Values and Ethics – and Why Does It Matter?

To close out a golden speaker slate in the fall, EGSA will host Chuck Gallagher of Ethics Resource Group, who will discuss human values and ethics and why they matter in the workplace. Except Chuck doesn't exactly present a "business as usual" type of presentation…in fact, Chuck Gallagher learned a lesson about ethics, choices and consequences the hard way – he will share his experience as a cautionary tale.

You may have seen Chuck on television, or heard him on CNN, CBS or NPR radio programs. His focus is business, but his passion is empowering others.

Join Chuck as we examine what causes an otherwise intelligent person – a person who knows the difference between right and wrong – to make a choice that will negatively impact themselves and their organization. You'll find out in this fascinating presentation on human values and ethics.

Networking in the Golden State

Our networking opportunities are coming together, but we do have a bit of bad news….EGSA will not be able to host a fall Fishing Tournament in Sacramento this year. That being said, we are offering some great formal networking opportunities that don't require you to tell any fish tales or get fishy either! ■

EGSA Fall Golf Tournament*

Teal Bend Golf Course – An Oasis in the Heart of the Capitol

Although located only a few minutes from downtown Sacramento, Teal Bend Golf Course feels like it's a world away. Named for the Teal Ducks that inhabit the area, the course offers a beautiful natural setting, and wildlife is often spotted by players.

Over 7,000 yards from the longest tees, this championship course is a par-72, spread out over 250 acres of lush, rolling terrain. The native areas that line many of the holes give the course an immediate established feel. The undulating greens are the real signature of the golf course. They offer a smooth, consistent surface from hole 1 through 18 year-round.

Special thanks to several of our members for keeping our tournament eventful - Phoenix Products, Girtz Industries, Diesel Radiator, Clay & Bailey Mfg., and The Newell Company, Inc.

Golden State Gearhead Tour*

Our EGSA Gearheads love to see technology and when we are in Sacramento, we're going back to the 1800s. You can expect enough time for a leisurely lunch before boarding a motor coach to the Folsom Powerhouse, the first in the country to transmit 3 phase, 60 cycle AC, 22 miles to the City of Sacramento.

This facility was in operation from 1895 until 1952, when it closed due to the construction of the current Folsom Dam. The State Park guides are so glad we are coming that they are providing the tours on their day off!

See the equipment, how it functioned and learn more about the history of the Folsom Powerhouse. It was designated a State Historic Park in 1958, a National Historic Landmark in

Extra Curricular Activities Not a Big Draw for You? How About Honing Your On-Site Power Skills with an Educational Offering (or two) from EGSA?

When we surveyed the membership last year, several active members came forward and expressed an interest in EGSA offering educational substance and value during the Conferences! This Spring, we had 13 members take us up on the deal! Here's what you can look forward to in the Fall.

Sunday, we will offer our Rowley School **Sizing to Service** class with Brian Ponstein (MTU Onsite Energy) teaching the course as he did in the Spring. On Tuesday, during the same timing as our formalized networking opportunities, Jim McDonald of PowerSecure International, Inc. will be teaching the Rowley School **Emissions** class. A summary of each class is available on our Fall Conference website. The cost of each course is $149.00 to register. Make sure that you take us up on this opportunity to learn more about our industry.

The bottom line is that all this great information won't mean anything if you don't act! Our micro-site for the Fall is up and running. Take advantage of Early Bird savings of up to $105 per person if you make your plans before Thursday, August 18th. There is no time like the present and we hope you can make it!

1981, a National Historic Mechanical Engineering Landmark in 1976, and a National Civil Engineering Historic Landmark in 1975.

Special thanks to CD & Power, for their EGSA Gearhead transportation sponsorship.

Sac Brew Bike Tour*

The Sac Brew Bike tour lets you experience the local brew-pub scene in a whole new way. Sac Brew Bike is a 100% pedal powered, 15-passenger cycle that tours downtown Sacramento. Their mission is to provide you the ultimate brew and bite experience by partnering with some of Sacramento's best local tasting establishments. Our tour will include a stop for lunch and a stop for beer tasting at one of Sacramento's favorite breweries.

Don't feel like pedaling? No problem! There are several non-pedaling seats on each bike so you can kick back and relax or get in a good workout – the choice is yours!

Special thanks to Taylor Power Systems for their sponsorship of our third activity.

Fishing: *There will be no fishing tournament in Sacramento, due to the distance of viable fishing outlets. We hope our EGSA anglers will join us at one of our other excellent networking activities!*

Schedule-at-a-Glance

SUNDAY, September 11

12:00-6:00 p.m.	Registration Desk Open
12:00-6:00 p.m.	Exhibitor Showcase Set-up
1:00-4:00 p.m.	**Sizing to Service Class***
5:00-6:00 p.m.	First-Time Attendees/ New Members Reception (*By Invitation Only.*)
6:00-7:30 p.m.	Welcome Reception

MONDAY, September 12

7:00-11:45 a.m.	Registration Desk Open
7:00-7:30 a.m.	Exhibitor Showcase Set-Up
7:30-8:30 a.m.	Exhibitor Showcase/Breakfast
8:30-8:45 a.m.	President's Opening Remarks
8:45-9:45 a.m.	Opening Keynote **Now What? America's Political Future**
9:45-10:15 a.m.	Exhibitor Showcase/Break
10:15-11:00 a.m.	**Microgrid 102: Temporary Distributed Grid Power**
11:00-11:45 a.m.	**Investor Mindset: Why Invest in Power Generation?**
12:00-1:00 p.m.	Welcome Lunch
1:00-5:00 p.m.	Committee Meetings
6:30-10:00 p.m.	Awards Reception & Banquet

TUESDAY, September 13

7:30 a.m.-12:00 p.m.	Registration Desk Open
7:30-8:30 a.m.	Exhibitor Showcase/Breakfast
8:30-9:15 a.m.	**EveryDay Leadership**
9:15-9:45 a.m.	Meeting of EGSA Members
9:45-10:15 a.m.	Exhibitor Showcase/Break
10:15-11:00 a.m.	**Advanced Control Value for Distributed Generation Projects**
11:00 - 11:45 a.m.	**Has Your Company Bridged the Gap Between Human Values and Ethics – and Why Does It Matter?**

Optional Networking Events*

12:30-3:30 p.m.	Sac Brew Bike Tour*
1:00-5:00 p.m.	EGSA Golf Tournament: Teal Bend Golf Club*
1:30-4:00 p.m.	Golden State Gearhead Tour*

1:30-4:30 p.m.	**Engine Emissions Class***
7:00-8:30 p.m.	Closing Reception

Register Today!

egsa.org/fall

** Networking Events and Classes are not included in Conference Registration fee. You must pre-register and pay an additional fee to participate.*

Stabilized Co-Generation

By: K.A. "Bud" Leavell, Regional Manager, Piller USA Inc., Arlington, Texas

Recent technological advances in natural gas production have reduced the price of natural gas dramatically, and along with coming EPA regulations, and growing grid instability, is likely to spur an increase in demand for natural gas fired co-generation systems.

These systems have been around for some time now, but have been limited to applications where they can remain connected to the grid, even in times of instability on the grid, and only provide a constant level of power known as the "Base Load". Among the reasons for focusing on the Base Load is the fact that the transient response of these generators to step and block loads is poor, and in order to get the greatest efficiency out of the plant, it needs to be running at or near its top capacity.

It is becoming more and more important to expand the application of these systems beyond the Base Load and start servicing the total load. In order to do that, there first must be a practical means of compensating for the poor transient response of these systems. The effective application of Newton's First Law of Motion to highly reliable Rotary Uninterruptible Power Systems such as the Piller UniBlock-T+™ with PowerBridge™ kinetic energy store, promises to provide the stability and power quality required to overcome this challenge.

This paper explores how these systems function, how to deploy them into either a grid connected or island environment, and even shows from real deployed systems how well they perform.

The Problem

Historically, the North American electric power grid has been remarkably stable and reliable save for a few unusual yet catastrophic, loss of load events. These events led to the development of improved technologies, as well as operational standards and procedures which further stabilized the grid. This grid stability has contributed to a lack of demand for development of alternative power sources even when the cost of alternative fuels was favorable.

That appears to be changing now. A robust economy is driving demand for electric energy in the industrial sector. The wide deployment of residential air conditioning is stressing the grid in some locations[4] during hot afternoons, and the effects of deregulation in some areas is resulting in vulnerabilities to a lack of generation supply. This situation is further exacerbated by ever more stringent environmental regulations which are likely to force the shutdown of existing generation plants ahead of schedule.

The result can be a loss of frequency and voltage stability with the increased risk of vulnerability to distribution equipment failures. In 2012 a study was done for the Congressional Research Service[2] of weather related power outages (localized loss of load events). This study covers the years 1982 through 2011 and geographically covers the entire US. Although it does not detail any increase in severe weather, it does show clearly an exponential increase in the frequency of these localized power outages. It seems likely that these events are related to the growth in demand for electricity and the stress that demand is placing on the distribution grid.

In 2005, a study was done by the Lawrence Livermore Labs of power quality issues, which compares voltage as a percentage of the nominal supply, against the duration of the events[6]. The authors of the study concluded that the economic costs could vary between $22 Billion to $134 Billion annually depending on how the losses are estimated. One other very interesting discovery they made was that the economic losses were less related to the duration of the outages than to how often they occurred.

Possible Solutions

Among the possible solutions to this problem are the expansion of renewable energy sources such as solar and wind. Unfortunately there are still challenges to be met in both of these technologies before they become economically feasible. In order to make solar or wind a viable solution, we first must develop an appropriate energy storage solution.

Other solutions being implemented or considered include Demand Reduction programs, Energy Efficiency Rebate programs, and Emergency Distributed Generation programs. The 2012 Congressional Research Service Study[2] suggests strongly that cogeneration is a very viable solution for Industrial and Commercial entities if implemented on a site by site basis.

The Good News

The cost and availability of natural gas is at an optimum level and appears likely to stay that way for some time to come. It is our cleanest fossil fuel, we have a robust distribution system for it and the future supply is assured. The revolution in exploration known as "fracking" has opened up the possibilities in the U.S. for an increase in industrial activity as the price of energy decreases. Today, according to the American Petroleum Institute the United States is the world's leading producer of natural gas[8]. And the known reserves of natural gas are more than sufficient to sustain a continued growth in both demand and supply. This fact along with the application of existing off the shelf technologies promises a solution to grid instability on a site specific basis.

Natural gas fired generating equipment comes in a variety of forms with tried and true, reliable and sustainable technologies to fit a wide array of applications. This technology is available, proven and cost effective. Among the popular technologies available for these applications are Fuel Cells, Micro-Turbines with capacities of up to 1 Mega Watt, Gas Turbines from 1.0 to 38 Mega Watts, and reciprocating engine generators with capacities from less than 200 kilo Watts to in excess of 10 Mega Watts. Combined with other currently available technologies such as Piller's UniBlock-T+™ Rotary Uninterruptible Power Supply (RUPS), with the PowerBridge™ bi-directional kinetic energy store (flywheel), in a well-engineered system, a total solu-

tion can be implemented to cover most any kind of industrial or commercial application.

Even more good news! These technologies easily lend themselves to capturing waste heat from the process which may amount to more than 70% of the thermal energy consumed to generate electricity. By putting this waste heat to work in industrial processes, generating more electricity from the waste heat or creating chilled water, total system efficiencies will skyrocket and production costs decrease dramatically [(3)]. In addition, generating electricity locally at a specific site will reduce carbon footprint and water evaporation at the local utility power generating station. Not only does the industrial activity benefit from reduced costs and increased profitability, but the local community saves as well.

The Challenge

Of course no application will be without challenges. Industrial applications will mean that we must consider that there are potentially a lot of mechanical loads to serve, variations in the amount of power required over time, as well as how the selected power generation equipment responds to these loads.

Mechanical Loads.

Mechanical loads are common in industrial applications and bring three significant problems to the cogeneration world.

1. Power Factor is always a concern with localized generation. When connected to the utility, Power Factor is primarily a financial issue as penalties are often imposed for poor power factor. In a localized generation plant, power factor is most often compensated by oversizing the generator. This reduces plant efficiency and increases capital first costs.

Figure 1 shows a graph of the electrical power produced on a 480V 3 Phase 1200kW service with unity power factor.[1] Unity power factor means that the voltage and current waveforms are in phase. There are two vertical axes on this chart. The primary on the left shows voltage and current, while the secondary vertical axis on the right shows power in kW. The green waveform is current in amps and the blue is voltage in volts. The red waveform is the power in kilo-Watts.

The power waveform is at twice the frequency of the voltage and current, and where the voltage and current both vary above and below zero, the power waveform is always positive. This situation is known as a resistive load, and 100% of the power is known as real or applied power. It is what actually does the work. All of this real power is flowing in one direction, from the generator to the load. Unity power factor is the most efficient application of voltage and current.

Notice that the peak current required to supply 1200kW average power is just over 2000 amps.

Examining a more realistic scenario, we see from Figure 2 an example of a typical mechanical load with a power factor of 0.8. Now, due to the effects of the inductive components of the electric motors in this example, the current lags the voltage by about 37°. Since the load is going to demand the same real power to do the work,

[1] This is an oversimplified illustration for the purpose of demonstrating the effect of power factor.

it will be necessary for the generator to increase the available current from a peak of about 2000 Amps to more than 2400 Amps. This of course is assuming the generator is capable of this increase in current.[2] This increased current flow requires that the diameter of the copper conductors distributing the power be increased and losses are increased because of this increased current.

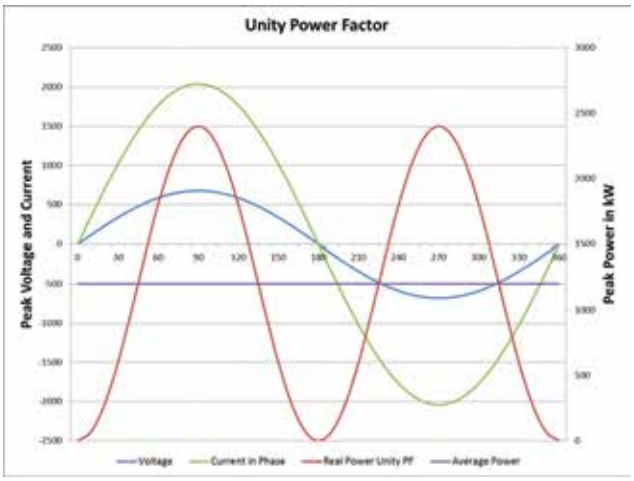

Figure 1. Solar and Temperature Data

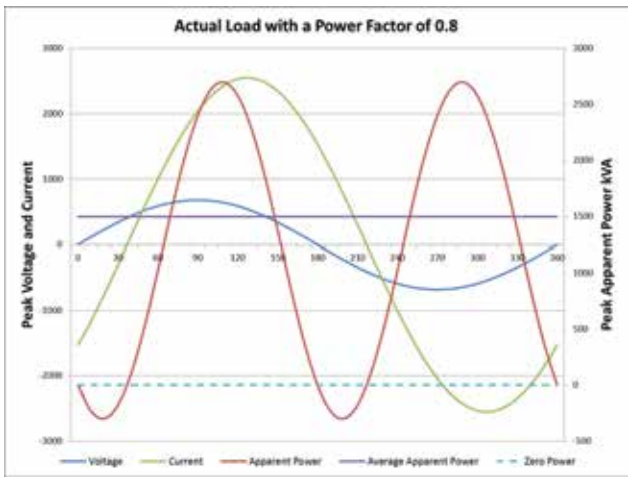

Figure 2.

Now we have introduced two new forms of power. They are reactive power known as VAR (volt amperes-reactive), and apparent power known as VA (volt amperes).

Now back to Figure 2. Not only have we increased the losses due to the increased current, but notice that the power waveform extends below zero. Now power is moving in both directions, from the generator to the load, and from the load back to the generator.

The generator must be sized to adequately supply both the applied or real power and the reactive power, plus the copper distribution must be sized to meet both of these demands. These factors can increase the capital costs dramatically.

One last issue with power factor from the generator side; many facilities have added capacitor banks to the load to compensate for and correct lagging power factor. These capacitor banks compensate by adding a leading power factor component to offset the lagging component of the mechanical loads. Since these loads often are switched in and out, it is not uncommon for the load to appear as a leading power factor to the generator from time to time, and most generators do not handle leading power factor well.[3]

2. Step loads are a natural consequence of turning on machinery. A step load is defined as either a sudden demand for more power, or a just as sudden end of demand for power. Figure 3 illustrates a step load of 650kW both suddenly applied and just as suddenly removed. This is seen on the thick line. The thin line illustrates the measured response of a 1.8MWatt Micro-Turbine plant to these load changes. It takes more than 6 seconds for the power plant to even begin to respond and then the ramp up and ramp down rates are rather slow. Some generators will be slower than this, and others will be faster, but all natural gas fired generator plants will exhibit a similarly shaped curve.

3. Surge currents happen anytime most mechanical loads are initially started. We need to find a means of feeding those motor starting currents without placing a demand on the generator, as these motor starting currents can easily exceed the dynamic response of the generator.

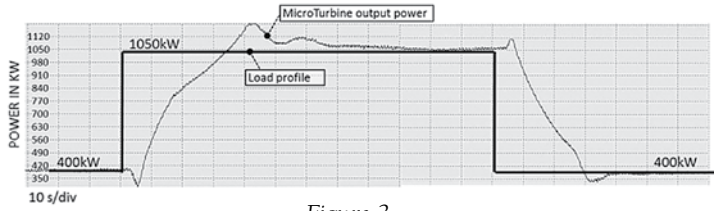

Figure 3.

Beyond the Base Load

This poor dynamic response to sudden changes in load is one of the reasons that these systems have been limited to serving the base load. Figure 4 plots a composite graph of the annual power requirements at a food processing plant. As you can see, the base load represented by the green line seems to be about 400kW while the peak load is just over 1200kW. That is a considerable swing, and limiting our generating capacity to just 400kW not only makes it more difficult to justify the capital expenditure for cogeneration equipment, but it also renders the plant inoperable during periods of grid instability. In order to insulate the plant from the grid instability, we will have to solve the problem of poor dynamic response, and assume the entire load with our natural gas fired generator.

[2] Most natural gas fired generators are rated for a lagging power factor of 0.80.

[3] Some generators are rated for a leading power factor of as low as 0.95. That is still very little tolerance.

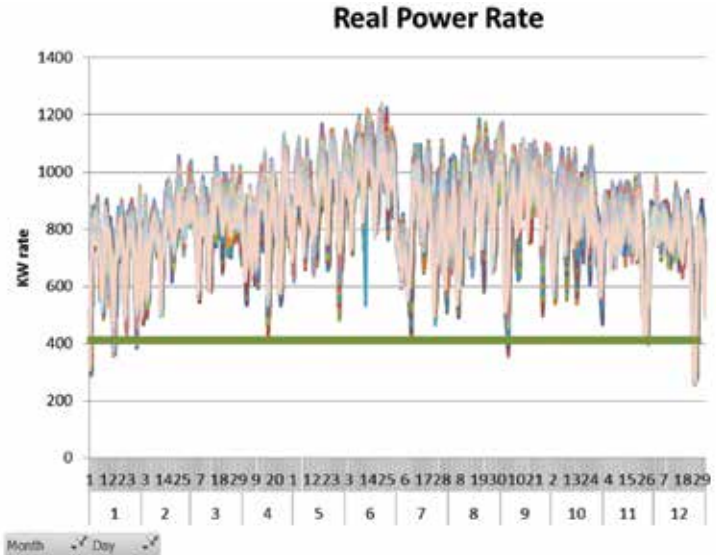

Figure 4. Base load vs. peak loads.

Fault Currents

Fault currents are sudden massive current demands caused by a short circuit either at the utility grid or in the load, and often greatly exceed the generator's ability to supply them for long enough to blow the fuse or open the circuit breaker. So the generator will in many cases disconnect from the load to protect itself, causing a power failure.

Island vs Grid Connected

It is mostly impractical to be completely isolated from the utility grid. These generator plants are usually capable of operating in either grid connected mode or in what is termed island mode (completely independent of the grid). Some of them however change configurations when they transition from Grid Connected to Island mode and back resulting in a temporary loss of power to the load during the transition. Recall that the Lawrence Livermore Labs study[6] concluded that the economic losses were not so much related to the duration of the outage but to the frequency of the outages. In this case the frequency of outages has doubled as there is a power outage at loss of utility and again as the utility returns and the generator must drop the load again and reconfigure. Managing this changing environment represents a significant challenge for many cogeneration plants.

Utility Interconnect

Most utilities have stringent interface safety requirements for any generator that is going to be connected to their grid. This is to ensure that human life is not at risk of electrocution by a generator that is still producing power when the utility is down, and to ensure that utility distribution equipment ratings are not surpassed by sudden fault currents coming from the generator in response to a short circuit in the utility's grid. So it will be necessary to consider how the cogeneration plant is interfaced to the utility grid.

The Answer

Stabilized cogeneration brings together natural gas fired power plants with a Piller UniBlock-T+™ Rotary Uninterruptible Power Supply (RUPS) and PowerBridge™ Bidirectional Kinetic Energy Store between the utility's grid and the loads and cogeneration plant which we will now term a "micro-grid". Figure 5 shows a sketch of where these components sit.

What is a Rotary UPS (RUPS)

What makes the UPS a Rotary UPS is having a synchronous machine directly connected to the load rather than having power electronics directly connected to the load. In the case of stabilization, it will be important to have the ability to very quickly, and frequently move power both out of and into a short term energy store. Batteries are generally not suited to such a dynamic environment, so a PowerBridge™ (bidirectional kinetic energy store), will be the primary source and sink for power in stabilizing the micro-grid. A synchronous machine is required for this function because of its special properties.

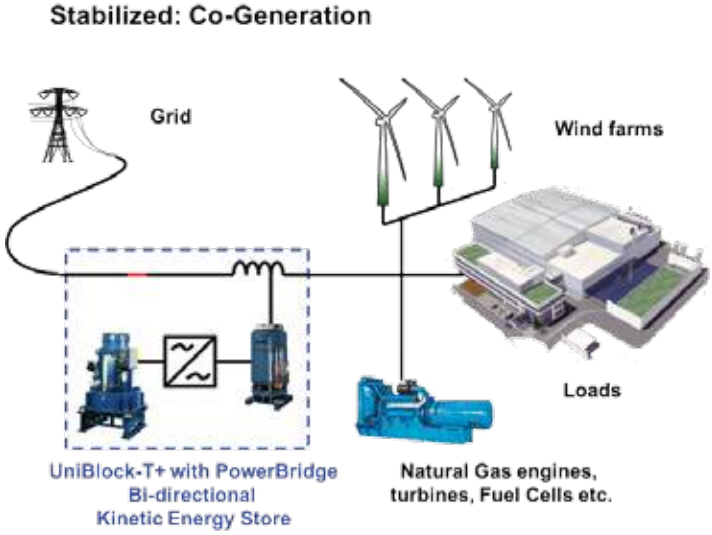

Figure 5.

Special Properties of a Synchronous Machine[9].

1. A synchronous machine can act as a generator or a motor (or both simultaneously), depending on the configuration and mode of operation. When operating as a generator, it produces a pure voltage sinewave, not a simulated sinewave. It is harmonic free.
2. A synchronous machine can be used to correct power factor. By controlling the excitation of the machine, you can control its production of or absorption of reactive power.
3. A synchronous machine can provide overload or surge currents well beyond its nominal capacity for a short time. This can be used to feed mechanical load starting currents and very high fault currents.
4. A synchronous machine provides a stable frequency and voltage reference in the absence of the utility.

5. A synchronous machine with a damper winding will absorb harmonic currents from the load reducing the need for harmonic mitigation in the micro-grid.

RUPS Requirements to Stabilize the Micro-Grid.[5]

Now that we have defined what a Rotary UPS is, what must the RUPS provide in order to stabilize this natural gas fired co-generation plant (micro-grid)?

1. The ability to act as a source and a sink for power, both at the same speed, in order to power balance the micro-grid.
2. Active regulation of the source/sink charge level. We need to ensure that there is an adequate level of energy stored to fully supplement the power requirements of the largest step load, while maintaining enough storage space to hold all of the surplus energy resulting from the removal of the largest step load.
3. Active voltage regulation and power conditioning for the micro-grid.
4. Provide a source and a sink for reactive power at the load.
5. Provide a source for surge currents incurred during faults or when starting mechanical loads.
6. Active management of the interface to the utility's grid and any transitions from grid connected mode to island mode and back again.
7. Control of the power output of all generators in the micro-grid. This may also include back-up diesel generators for times when the load exceeds the capacity of the cogeneration plant.

How Does It Work?

There are 5 major components of this stabilizing Rotary UPS (RUPS).[3,5]

1. First and foremost is a synchronous machine capable of operating as both a motor and a generator simultaneously. This UniBlock™ Motor/Generator is the heart of the system. This is a single machine with a common rotor, common field winding on the rotor (plus a squirrel cage for a damper winding), and then two separate windings together on the stator. One of these windings will act as a motor while the other acts as a generator and they can switch functionality instantly upon change of operating mode.
2. A dual function isolation and coupling choke is employed to connect to the utility, to the micro-grid and to the UniBlock™ Motor/Generator in a 'T' configuration.

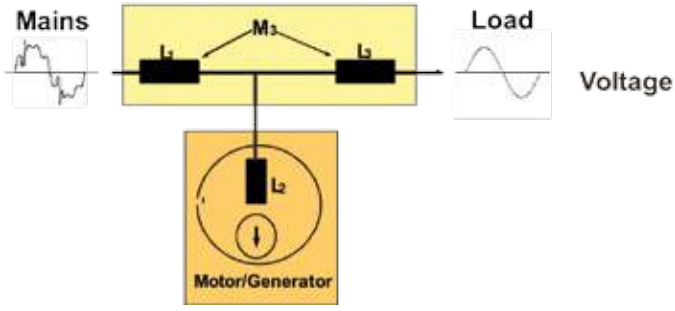

Figure 6.

Figure 6 shows how this choke is connected. This choke has two separate impedances, a high impedance isolation choke (L1), and a low impedance coupling choke (L3). The Isolation Choke is used to restrict the movement of current back into the grid to about 2 times the nominal current capacity of the UniBlock™. The

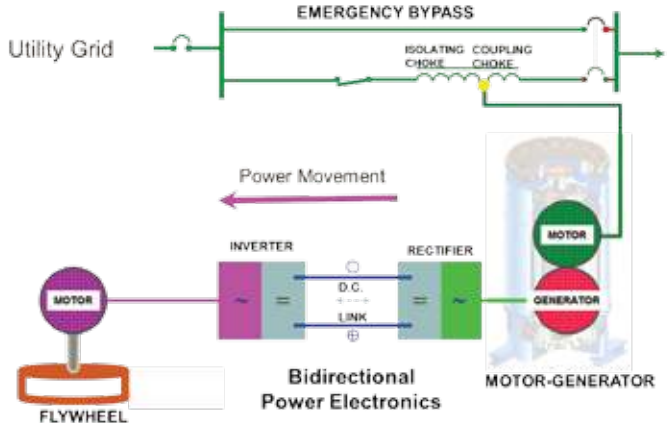

Figure 7.

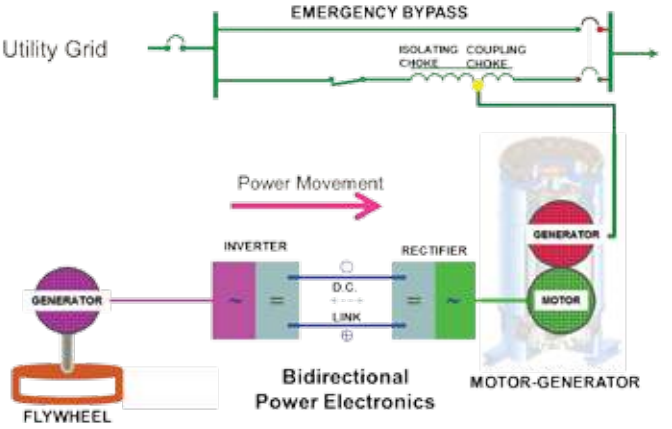

Figure 8.

coupling choke is used to couple the UniBlock™ to the load. Reactive power from the UniBlock™ interacts with the choke to regulate the voltage at the load. This interaction can be employed by the RUPS by varying the excitation of the UniBlock™.

3. A PowerBridge™ bidirectional kinetic energy store is used for the source and sink of real power to balance the micro-grid. This PowerBridge™ flywheel has a synchronous machine to act as either a motor for charging the energy store, or as a generator for discharging the energy store.

4. Bidirectional power electronics are used to electrically couple the PowerBridge™ to the UniBlock™. Figures 7 and 8 illustrate the operation of the bidirectional power electronics with the PowerBridge™ according to mode of operation. The UniBlock™ acts as both a motor and a generator simultaneously. As seen in figure 7, the top stator winding is acting as a motor driven by a small amount of power from either the utility or the micro-grid. This slight parasitic action provides the motive force for the second stator winding which is acting as a generator. This provides power to the bidirectional electronics, providing frequency controlled power to the synchronous machine in the PowerBridge™, to charge the flywheel. The level of charge in the flywheel is controlled by the RPM of the flywheel. An optimum charge is calculated to insure that there is adequate energy stored in the flywheel to meet the requirements of the greatest step load, and still have adequate storage space to store the worst case step unload.

   Figure 8 shows what happens when a step load is suddenly applied. Now, the synchronous machine in the PowerBridge™ becomes a generator, providing power toward the bidirectional power electronics which in turn provide frequency controlled (60Hz) power to the second winding of the UniBlock™ which is now functioning as a motor. The primary winding which was before functioning as a motor is now a generator providing power to the micro-grid, until the generator has caught up with the load. At that time the functions will reverse again and re-charge the flywheel.

5. Piller's integrating controls bring the utility interface, all generators in the micro-grid and the RUPS into a single coherent system.

Figure 9 shows a simplified one-line diagram of a stabilized micro-grid. In this example, two micro-turbines are paralleled to provide up to 1.8MW of real power to the load. A diesel back-up generator is supplied to provide both a black-start[4] capability, and to supplement the local generating capacity if required during times that the utility is absent and the load exceeds the capacity of the natural gas fired generating equipment.

The UBT+ Stabilizer provides power conditioning to the load (voltage regulation and frequency monitoring and control), and maintains a voltage and frequency reference during times when the utility is absent. Because of where it is situated, the generating equipment never has to reconfigure from grid-connected to island mode. The generators always see themselves as grid connected. No matter how bad the utility power gets, or how often it fails completely, the load is never dropped.

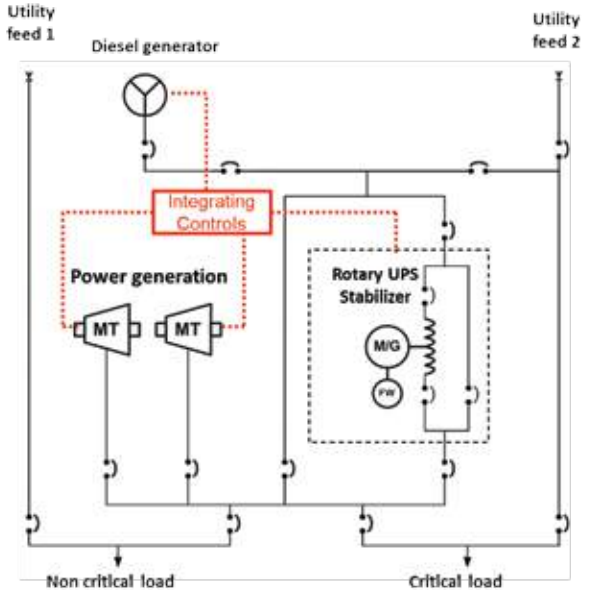

Figure 9.

[4] Black-start is the ability to start the system from a completely de-energized state to fully operational without the presence of the utility.

The UBT+ Stabilizer also provides all of the necessary interface capability for the grid connection. It is capable of determining when the utility is useable or out of tolerance, when there is a fault on the utility side and when to disconnect from the utility. The UBT+ Stabilizer can also provide a mechanism to prevent any power from flowing from the micro-grid back out onto the utility in the event of a utility fault, and it is the path by which power is imported from or exported to the grid.

Sizing the System

One particular application calls for the ability to operate without the utility, to use the utility to supplement the power requirement of the load when one of the micro-turbines is down for service, to export back to the utility up to 100% of the generating capacity and to have a black-start capability. Finally, the design must stabilize the micro-grid in the face of a step-load or step-unload of 650kW.

With these considerations in mind, an 1800kW UniBlock-T+™ is required to meet the import and export needs. The PowerBridge™ capacity and programing will require a little more planning.

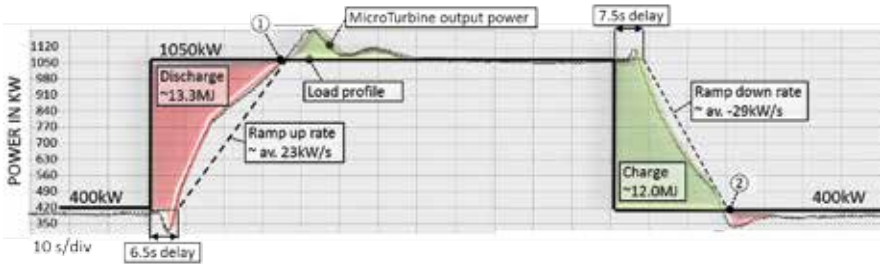

Figure 10.

Figure 10 illustrates the changing load and the generating plant response as previously seen in Figure 3. But now we have calculated the approximate amount of energy that the plant will need to power balance the micro-grid. This is done by calculating the area of the triangle formed by the intersection of the lines showing the change in the load and the response of the generators[3].

The step load deficit is calculated to be 13.3 Mega Joules (13.3 Mega Watt seconds), while the power surplus is calculated to be 12.0 MJoules.

The deficit of power is shown in red, and the surplus of power is shown in green (Figure 10). The red area power will be supplied by the PowerBridge™, while the green area power will be absorbed by the PowerBridge™.

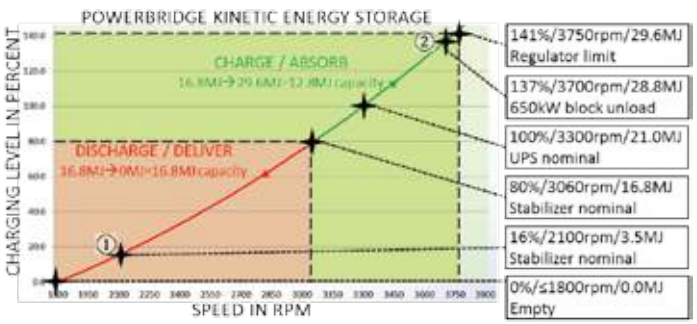

Figure 11.

In order to meet the demand of approximately 13.3 Mega Joules of energy required to supply the power deficit and still have storage space to absorb a surplus of power from the step un-load of approximately 12.0 Mega Joules, we choose a 21 Mega Joule PowerBridge™ which we will deliberately over-charge to as much as 141% of its nominal full charge value.

The volume of energy stored in the PowerBridge™ is a function of the speed of the flywheel in RPM. The bi-directional power electronics provide the control for setting the speed of the flywheel. At a full charge of 21MJ, this flywheel will turn at 3300 RPM and it will be fully discharged at 1800 RPM. At 3750 RPM this flywheel will store 29.6MJ and a new nominal speed is set for 3060 RPM at a stored energy level of 16.8MJ. This is the value which will be maintained and to which the flywheel will be recharged once it is discharged.

Comparing Figures 10 and 11, note the red and green areas and to points 1 & 2. Point 1 on Figure 10 is the point in time when the stabilizer is no longer required to supply power for this step-load and point 2 is the point in time when the stabilizer is no longer required to absorb the step-unload. As you can see from Figure 11, there is a buffer zone of power remaining in the PowerBridge™ after point 1 is reached and there is still some space above point 2. The goal is to find a nominal speed for the flywheel which will meet the requirements of the step-loads and step-unloads. On systems with larger step loads and or slower responding generators, an additional PowerBridge™ can be connected in parallel to double the flywheel capacity and the UniBlock-T+™ too can be paralleled to extend their capacity.

The Result

Figure 12 shows a live test on a similar system with a 1.8MW Micro-Turbine cogeneration plant. It simulates a step-unload of 950kW from a full load of 1800kW, then a 950kW step-load, both while grid connected. Next it simulates a loss of utility, followed by the same step-unload and step-load tests both in island mode. The result is a voltage variation of not more than 1% of nominal and a frequency variation of not more than ½% of nominal and those variations are very short in duration.

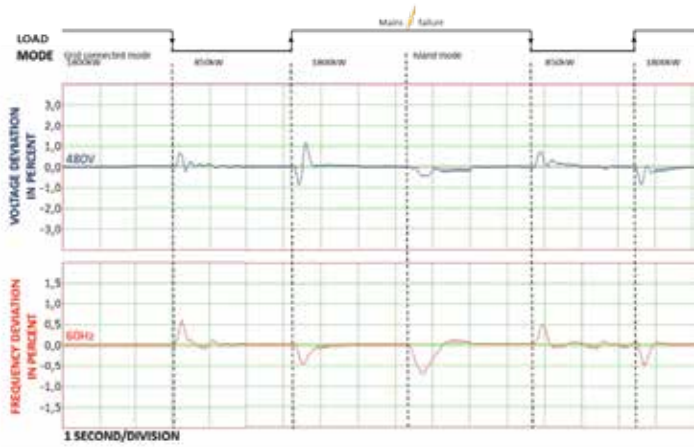

Figure 12.

Summary

The integration of a Piller UniBlock-T+™ Rotary UPS with a PowerBridge™ Bidirectional Kinetic Energy Store with commonly available Natural Gas Power Plants holds the promise of surviving the ever increasing grid instability, at least on a site by site basis.

While these are "Engineered" systems, the basic building blocks are essentially off-the-shelf technologies. They bring about the ability to custom tailor a system to meet the specific needs of any given site. These systems may be configured from generating plants as small as 200kW to multi-MW and anywhere from 480Volts to Medium Voltage systems. The Rotary UPS components may be as small as 500kW to 40MW, and all of the components in these systems have very long operational life expectancies and very high reliability histories.

Among the benefits realized by these systems[3,5]:

- Enables local generation of 100% of the site's power requirement with or without connection to the utility (freedom from base-load limitation)
- Stable voltage and frequency in the face of step-loads
- Seamless transition from grid-connected to island mode and back again with no loss of load
- Reduced carbon footprint and water evaporation
- Enables controlled power import from and export back to the utility
- Simplifies the interconnection of a cogeneration plant to the utility grid
- Provides safe fault clearing capacity in all modes of operation
- Reduced operating and lifecycle costs ■

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About the Author

Originally trained as an Electronics Engineer, Bud enjoyed a successful career in the Computer and Telecommunications Industries serving in such capacities as Software Engineer, Applications Engineer, and various executive sales positions. In 2003, Bud made a career transition to the energy industry. During this time, Bud developed expertise in the nuances of applying non-traditional energy sources to everyday applications including Combined Cooling, Heat and Power. Recently, Bud has been combining what he learned from the CCHP applications with his previous knowledge of electronics and electrical power systems to expand the practical scope of Co-Generation plants into industrial applications.

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Perfect for staff new to the industry or someone who needs a refresher course, our Basic School is appropriate for anyone who needs a foundation in generator technology (sales, marketing, parts, service, even administrative staff). With our Advanced School, expect our highly skilled and knowledgeable instructors to go into great detail on subjects like parelleling, speed, load control, generator protection and voltage regulation and more. Need more information? Visit our website to see what offerings we have for this calendar year!

Continuing Education Unit (CEU) Program

After attending one of our On-Site Power School classes, demonstrate what you have learned with Continuing Education Units! CEUs are awarded after you attend one of our schools.

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 now offer 2 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 *(certification valid for 5 years)*

Our Journeyman exam assures an employer that this technician meets or exceeds 3 years of practical field experience. It tests in 61 individual areas of expertise and was upgraded in 2014 to reflect current technology.

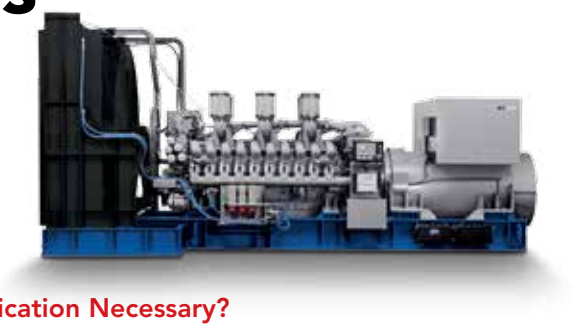
Membership in EGSA guarantees that for under $200, generator technicians can achieve the industry standard. The benefits are immeasurable! Visit our website for additional detail on the program.

egsa.org

Electrical Generating Systems Association
(561) 750-5575 • e-mail@EGSA.org • EGSA.org

Prelubrication Systems For Genset Applications

To Maintain Optimum Performance, Some Engines May Require a Prelubrication System



By: Brian Ponstein, Regional Sales Engineer MTU Onsite Energy

During normal engine operation, the oil pump supplies oil to all engine components to keep them properly lubricated. Once the engine shuts down, the majority of the oil drains back to the oil pan, leaving a thin layer of oil on all the engine components. When the engine starts, it takes a period of time before oil from the oil pump will get to all moving parts. Factors such as long periods without running or long cranking times can cause this layer to be depleted, thus resulting in metal-to-metal contact.

To reduce potential engine wear, prelubrication pumps are sometimes used to prime the oil system before the engine starts. Most engines are built and designed without the need of a prelubrication system, meaning the wear resulting during this startup phase is calculated into the normal wear and the life of the unit. In special cases, where customers may wish to consider prelubrication of an engine, there are several key items to consider.

Types of Systems

There are two main types of prelubrication systems used in the genset market: before start and interval. Prelube before start is the most common and easiest way to prelubricate the oil system. Before the engine starts, typically one of two conditions must be met: a given oil pressure achieved at a specified point, or the prelubrication pump has run for X seconds. Once one of these conditions is met, the generator set controller will engage the starters, and the unit begins to start.

The interval prelube system is designed to come on at a set interval of X hours or days and is typically set to run for a given period of time, such as 30 seconds. These systems are used in applications where a delayed start is not an option, or in special applications. The benefit of the interval prelube drastically drops off after the prelube pump stops. This is because once the pump stops, the oil fairly quickly drains back to the oil pan, leaving only a thin layer of oil on the components—as if it had never been prelubricated. There are special applications, outside of the standard genset application, that need an interval prelubrication system. When these applications arise, it is important to work closely with the genset manufacturer.

Due to the requirements of NFPA 110 often not allowing for a before start option, and the decreased benefits of an interval prelube pump, many genset manufacturers will run the prelubrication pump during the crank cycle to decrease the amount of time the engine is running without oil.

Is Prelubrication Necessary?

The actual benefit of using a prelubrication system for emergency standby power applications is minimal. In the standby market, a unit will often be replaced long before it needs to be rebuilt. With that in mind, it is important to ask what is the benefit in the long run if the unit is going to be replaced before it wears out? Does the added cost of the prelubrication system benefit the end user?

While some engines may need a prelubrication system to maintain optimum performance, this does not apply across the board. Some generator set engines have been developed so that a prelubrication system is not required to maintain optimum performance. For example, every generator set unit built and tested at the MTU Onsite Energy factory is run up to full load without using a prelubrication system meeting the NFPA 110 type 10 requirements. MTU Onsite Energy has designed their maintenance intervals and schedules without the use of a prelubrication system and is available for comparison. This means a prelubrication system is not needed with MTU products to maintain the optimum performance of the generator set.

Conclusion

To determine if a prelubrication system is needed, the customer and distributor must work together and weigh the options to meet the demands of the specific application. ■

About the Author

Brian Ponstein - In his role as a Regional Sales Engineer at MTU Onsite Energy, Brian is responsible for analyzing market needs and requirements in North America and working with engineering to provide solutions for MTU Onsite Energy's customers. His background consists of extensive customer-focused engineering experience, as well as intercultural experience in Europe and North America, including stints in Germany for MTU in both engineering and sales.

Ponstein is an active member of EGSA and serves as an Instructor for the EGSA Rowley School, where he teaches classes regularly. He has also assisted in the editing of chapters within the 5th Edition EGSA reference book.

Ponstein earned his Bachelor of Science in Engineering at Ferris State University, where he will also soon complete a Master of Business Administration degree.

EGSA NEWS

EGSA Pauses to Remember Leo LeBlanc, our 2003 EGSA President
Active Member - 1992-2009

It is with great sadness that we report our retired colleague, Leo LeBlanc, passed away on July 6, 2016. There are only a handful of people in the halls of EGSA Fame (51 years and counting) that have been an EGSA Board Member twice in their lifetime and Leo LeBlanc was one of them. He is also the only member to ever win the EGSA William Timmler Award twice (1997 and 2007), which is quite the feat considering the award recognizes committee excellence and exemplary work on behalf of EGSA Committees. Leo was that impactful when it came to EGSA Committees.

Leo served EGSA well. He was an active EGSA School Instructor for many years and was awarded the Leroy Carpenter Award in 1999 for his service to on-site power and EGSA. When we interviewed him last year for our 50th anniversary (January/February 2015 issue), Leo had this to say about his service to EGSA, which spoke volumes about his active involvement, leadership and spirit of volunteerism from 1992 until 2009.

Leo LeBlanc: *"Well, I would say that my more impactful stories are related to EGSA Committees, because that was one area I really enjoyed. It makes me very proud of several things during my membership and leading up to my year as EGSA President.*

I am proud of the work that I did with George Rowley on the EGSA Technician Certification Program.

Being an EGSA School Instructor was such a great job! You have students ranging from those who don't know a Kilowatt from a Megawatt and it's your job to first find out what everyone's background/level of expertise in Power Generation, so that you in turn, could teach to that level.

I also tremendously enjoyed working with the Distributor Dealer Council. I realized back then that the DDs needed a voice on the Board and within the organization, and so soliciting people like John Kelly (EGSA President 2011), Vaughn Beasley (EGSA President 2014), Dale Slemp (EGSA President 2006) and Hafich boys (Bob is EGSA's 2016 President) to get energized about that Committee was really memorable. We went from meetings that had just 4 or 5 people to grow exponentially over time. We even had our own DD reception at one time!

I was involved in the Conventions Planning and Membership Committees at different times during my membership too. I also have to say that Jalane Kellough was such a guiding force. She recognized what I was trying to do and was so helpful when I was President. I look back on the years and in hindsight, we got a lot done. We have also come a long way too. When I was President, we had close to 300 Members and now look…in our 50th year Ed (Murphy) tells me we are approaching a thousand."

During my year as President, we also rolled out the David I. Coren Scholarship Program. All of these mountains we climbed, if that isn't motivating and impactful to the younger reader you mentioned, I don't know what to tell you."

"While I have enjoyed many memorable relationships and friendships, without a doubt, Leo LeBlanc is my personal most influential EGSA Member. I was really impressed with him from the very beginning of my membership. He was involved in all aspects of EGSA Membership, between his Committee involvement and his years on the EGSA Board and the Executive Committee. I also feel like Leo was the key link to energizing the Distributor Dealer community to really get involved in EGSA, and connect them to the industry at-large. Leo saw the potential for EGSA if the DDs got more active and, along with Dale Slemp (EGSA President 2006, Industrial Power Systems), did something about it. Leo's efforts were Herculean on behalf of the DD Community. A mentor and a friend, he really solidified my involvement in EGSA and he will be greatly missed. I am grateful for the time spent with Leo in Jacksonville last year, at our 50th Spring Conference."

John Kelly, Jr. (EGSA President 2011, Kelly Generator and Equipment, Inc.).

Leo spent the majority of his career in Power Generation, working for several of our members like Nixon Power Services before embarking on his own business venture in on-site power recruiting. He is survived by his family, Michelle and Ed Murphy (Power Search, Inc.) and their children Conor and Erin, along with Michelle's sister, Laurie Thompson and her two sons Alex and Nicholas. In lieu of flowers, the Murphy family would ask that donations be made in Leo's name with the EGSA David I. Coren Scholarship Program, instituted the year Leo was President of EGSA. For additional details, please contact Jalane Kellough, Executive Director.

EGSA captured a wonderful interview with Leo during the Spring Conference last year. Please visit our EGSA YouTube channel or use this link to view it: ***https://youtu.be/CYcBpOeIzFk.*** ■

California, Here We Come…Welcome to Sacramento!

By: Herb & Nancy Whittall

When our EGSA Fall Conference rolls into town, we will be lodging at the Hyatt Regency Downtown, just opposite of Capitol Park, not far from the Capitol building. Nancy and I had a few suggestions for those of you asking, "So what's there to do in Sacramento?"

Here's what we suggest:

You should plan to arrive Saturday so you can spend Sunday at Old Town Sacramento which is approximately 10 blocks from the Hyatt. There is a 45-minute train ride on the Central Pacific Railroad that you can you can take from Old Town that only runs on weekends. For more info go to *www.csrmf.org* or call 916-383-9280.

In Old Town, there are several museums, the most famous being the California State Railroad Museum. For more info go to *www.californiastaterailroadmuseum.org.*

Take time to explore the Sacramento History Museum, it's just next door to the railroad museum. Also, fairly close are the Wells Fargo Pony Express Museum and the California State Military Museum as well.

If you like to go underground, it seems Old Sacramento used to be at river level. Old Sacramento dates to 1848, but after a devastating flood in 1860, the area was raised to its present level. You can tour the underground sidewalks and what is left of the buildings too! For more info go to *www.sachistorymuseum.org* for tour schedules and tickets.

When dining in Old Sacramento, Nancy and I recommend either Fat City Bar & Café at 1001 Front Street or Ten 22 at 1022 Second Street.

Sacramento also has other interesting places to visit. There is the Leland Stanford Mansion *www.stanfordmansion.org*, which is owned by the founder of Stanford University at 800 N Street, The Crocker Art Museum *www.crocker-museum.org* at 216 "O" Street or the Sutter Fort State Park *www.sutterfort.org* at 2701 "L" Street.

Finally, if you are interested in air races, you should extend your stay because the world famous Reno Air races are being held from Sept 14 to Sept 18 in Reno, NV (a 3-hour car ride from Sacramento over Donner Pass on I-80). To get tickets go to *airrace.org/event/.* The Blue Angels will be there Sept 17 and 18.

See you this September.
Herb & Nancy Whittall

Application for Membership

ELECTRICAL GENERATING SYSTEMS ASSOCIATION

1650 South Dixie Highway, Suite 400, Boca Raton, FL 33432 • 561-750-5575 • FAX 561-395-8557
E-Mail: *e-mail@EGSA.org* • Website: *www.EGSA.org*

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 (Choose appropriate membership below and enter amount in box #3 on reverse)

FULL MEMBERSHIP		Annual Dues	Initialtion Fee	TOTAL DUE
❑	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.	$870	$200	**$1,070**
❑	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.	$310	$100	**$410**
❑	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.	$210	$100	**$310**

ASSOCIATE MEMBERSHIP		Annual Dues	Initialtion Fee	TOTAL DUE
❑	**Associate Regular Membership** *(Select Appropriate Category Below)*	$210	$100	**$310**
❑	**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)*	$310	$100	**$410**

PLEASE SELECT ASSOCIATE MEMBERSHIP CATEGORY

Associate Membership Categories - Select One					
❑	AA	**Trade Publication Membership** Any trade publication dealing with the electrical generating systems industry or its suppliers may apply for Associate Membership–Trade Publications.			
❑	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.			
❑	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.	$50	N/A	**$50**
❑	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.	*Complimentary*		**$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 Catagory)

- ❑ Trade Publication (AA)
- ❑ Trade Association (AB)
- ❑ Engineer (AC)
- ❑ End User (AD)
- ❑ Service (AE)
- ❑ Educational Institution (AG)
- ❑ 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)**	$ 55.00**
On-Site Power Reference Book (optional)**	$ 140.00 **
Florida Residents: Add 6% Sales Tax to ** items	$_____
*** Shipping and handling is included for Continental US Residents.*	
Non-Continental US Residents 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

Available Codes:

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

Enter codes here: (Limit 10 codes per category)

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

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 _____

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 AM=Military AR=Retiree AF=Student

America's Best Service, Inc. CI
Crofton, MD
Eric Jones, Vice President
Electrical Contractor - Install, repair and service generators.

ASK-KAY Electrical Contractors Inc. dba Flash Electric. CI
Smyrna, GA
Fred Purcell, Generator Specialist / Manager
Sales, service and installation of Generac, Cummins & Kohler generators for residential & commercial back up power.

Baker Manufacturing . . . . . MF
Evansville, WI
Tom Skaleski, Director of Sales - Haight Pump
Haight Pump manufactures cast iron pumps ranging in flow from 1 gpm to 240 gpm. We specialize in manufacturing custom products to meet unique customer application requirements and have the ability to engineer, cast, machine, assemble and test all at one location.

Vincent Berry . . . . . AM
Raleigh, NC

Bibico Electric Inc. . . . . . DD
Burlington, ON Canada
Djordje Cupac, Application Specialist
Bibico Electric is a distributor of custom and standard MV/LV power distribution equipment, lighting, enclosures/boxes, control/automation and much more.

CEN-SERV LTD. . . . . . AE
Carapichaima, Trinidad and Tobago
Valmiki Mahabir, Manager
Generator rental, service and repair/parts. Automatic transfer switch sales & services. Diesel fuel tank installation and rental. Load bank testing and rental.

Columbia County Fleet Services . . . . . AD
Appling, GA
Jesse Enfinger, Heavy Equipment Technician
We are a local government municipality fleet shop in Georgia. The generator maintenance for the local government will be under our department's area of responsibility soon.

Anthony W. Fisher, Jr. . . . . . AM
Greensburg, PA

Joshua Griswold. . . . . . AM
Atlanta, NY

Bruce Kite. . . . . . AM
Birmingham, AL

Moises Levy . . . . . AF
Boca Raton, FL
Electrical Engineering student at Florida Atlantic University. Graduating December 2018.

LT Electric & Lighting dba LT Generators . . . CI
Van Nuys, CA
Jessica Waite
We install and supply standby residential and commercial generators.

Northeast Generator Dealer Association . AB
Canton, CT
Jay Martin, President
The Northeast Generator Dealer Association currently has 18 members. The purpose of our organization is to enhance the professionalism of our members by providing an opportunity to network with like-minded dealers and manufacturers. We improve the practices of our members through the sharing of knowledge.

REDD Team by Sapa . . . . . MF
Delhi, LA
Thomas Landry, Marketing Manager
Redd Team by Sapa is a leading national manufacturer of high quality aluminum access products such as crossover stairs, generator access products, ADA wheelchair ramps, aluminum pedestrian bridges, aluminum walkways, aluminum gangways, aluminum stairs (OSHA and general code), universal stair systems, aluminum stair towers and more.

Scania USA, Inc. . . . . . MF
San Antonio, TX
James Prewoznik, Sales Representative
We offer components to generator manufacturers.

TD Industries CI
Fort Worth, TX
Chris Smith, Electrical Estimator
TD Industries is an installer and service provider for standby generators. TD Industries is also a Kohler dealer.

TDX Global LLC CI
Durham, NC
Tomia Taylor, Director
TCX provides operation and maintenance services on power generation and distribution equipment on government contracts around the world.

Training Rehabilitation & Development Institute . . . . . AD
San Antonio, TX
Tim Bourgeois, Director of Operations
TRDI is a contractor responsible Base Operations Support of Fort Riley, KS. This entails providing all maintenance and repair of more than 87 commercial generators ranging from 20 kW - 1250 kW, 76 rotary screw compressors ranging from 10 hp - 50 hp, 139 overhead cranes ranging from 1 ton - 30 tons.

WEG Electric Corp. . . . . . MF
Duluth, GA
Brandon Locklear, Business Development Manager - Alternators
Founded in 1961, WEG has grown into a global solutions provider of industrial electrical technologies. WEG continually invests in state-of-the-art manufacturing facilities and processes, and the development of new and improved industrial electrical solutions. WEG offers a diverse and integrated product line that includes motors, drives, controls, transformers, and generators.

Barbara Dick, PSR VP and Phone Room Supervisor, works with a caller on a recent telephone survey.

POWER SYSTEMS RESEARCH (PSR)

Another in Our Series of EGSA Member Company Profiles

Power Systems Research headquartered in St. Paul, MN, has additional locations throughout the globe

POWER SYSTEMS RESEARCH (PSR) ***www.powersys.com***

Power Systems Research (PSR)—established in 1976 - is the leading source of data, analysis and forecasting on global engine production and related applications. One of its databases, OE Link™, includes numbers down to model level for OEMs in key market segments, such as Power Generation. PSR's global research network includes nine offices and stretches across 200 countries and four continents.

This is the story of a 40-year-old company that carried on and succeeded following the sudden and tragic death of its Founder and President last year. Early in 2015, George Zirnhelt, the dynamic and creative Founder and President of Power Systems Research (PSR), passed away from injuries sustained in an accident while vacationing in Mexico.

The PSR global team rebounded from this loss, immediately implementing a crisis operations plan and a management transition program that were both already put in place. Instead of losing ground, the company finished 2015 strong, by following through on several strategic tasks that George had initiated and implemented to position the company for future growth and expansion. Already in Q1, 2016 revenue was the best in more than a decade – a sign that the company is moving forward despite tragic loss.

PSR is an internationally-recognized leader in the collection, analysis and forecasting of production information for engines and equipment used in power generation and many other applications.

Its global reach spreads from the firm's headquarters in Minnesota to offices in Detroit and Brussels, from Beijing to Tokyo, India and Brazil. PSR's representatives gather key data from more than 200 countries for its portfolio of world-class clients.

"George's death was a tragedy for our family, our company and many of the close contacts he held in our industry," says Joe Zirnhelt, COO at PSR, and a member of the company's executive committee. "But he had prepared the company to move ahead successfully without him, and we've been able to do that. It shows how valuable emergency action and transition plans can be. Without them, we certainly would not be in the position we are today."

Recovering from Tragedy

How does a company keep its global network functioning smoothly and continue to successfully serve its client base built up over 40 years in the time of tragedy?

The story is a classic example of the way a company can react and succeed if they are prepared to move quickly when disaster strikes.

First, the PSR Management Team, working around the world, immediately connected through regular conference calls to address important issues, answer questions and deal with client needs.

Second, the company launched its crisis communications plan and told employees, clients, important suppliers and news media, about the change in leadership, what it meant and where the company was headed.

Third, within the first week, the management team quickly began implementing the long-term transition plan put in place by Zirnhelt. This included expanding the board to include an outside director and re-evaluating the direct and functional reporting

PSR Around the Globe with office locations in Minneapolis, MN; Ann Arbor, MI; Brussels; Beijing; Toyko; Pune; India; Sao Paulo; Brazil; Moscow and Riyadh.

responsibilities that would suit the company best moving forward.

"Within days, we were able to adjust to the new reality and begin to successfully operate in a new way because of George's previous planning," says Dennis Huibregtse, PSR C.E.O.

40 Years of Innovation

In 1976, a young mechanical engineer living in the small town of Grantsburg, WI began collecting information on engine production. Twenty-nine-year-old George Zirnhelt, working in his basement, organized this information in a database he called EnginLink™.

Today, EnginLink™ is the only all-inclusive source of global engine production, forecast and specification data down to the model level of detail. This resource is regularly used by manufacturers producing 92% of the world's engine horsepower. It is used extensively by leading engine manufacturers, OEMs, component suppliers, associations, agencies, regulators, financial analysts and more.

In 1981, PSR began operations in Japan, and in 1985, it moved to its present location in Eagan, MN. That was a big year for the company: it launched two more databases—OE Link™ and PartsLink™—and converted all of its database publications to diskettes for use on personal computers.

Dennis Huibregtse, left, and George Zirhnelt, PSR founder, chat during the early days of the company

PSR sponsors STEM projects at two high schools in the St. Paul, MN area. Looking at an award-winning car built for the Shell EcoMarathon are (left to right) Joe Zirnhelt, Chris Fisher and Marilyn Tarbet. The car was built by students at St. Thomas Academy and was entered into international competition in London in July 2015.

PSR now was communicating with its clients in the digital realm.

Today, PSR clients can access data 24/7 from anywhere in the world. Subscribers define the scope of data they need, and pay for only what they use. Forty years of development have made PSR's 5 global databases deep and broad, and easy to use.

OE Link™ is the single source of global O.E.M. equipment production and related forecast data. The comprehensive database provides global annual production and forecast volumes of O.E.M. equipment across all engine-powered market segments, including power generation. Information is presented so that subscribers can filter it in many ways to produce customized reports.

Details in OE Link™ enable subscribers to drill down from a global view of equipment production to the most granular levels that include O.E.M. model level details. OE Link™ provides an unparalleled level of detail for competitor analysis.

PSR clients use OE Link™ to increase market share, measure performance, monitor growth trends, identify emerging technologies and gain competitive intelligence.

Custom Research Services

Custom research services always have been offered by PSR, and George Zirnhelt, himself, completed more than 1,000 project management assignments for the company.

Realizing that personal telephone interviews could be more effective than direct mail surveys, PSR acquired a call center operation in 1992, adding an important in-house calling capability to the PSR list of services. PSR holds a unique industry position by operating within the engine-powered research space and having its own in-house call center that retains many years of researching industry specific issues.

"Having these skilled researchers in the same office is a tremendous advantage," says Michael Aistrup, Senior Analyst, who develops and manages many of PSR's survey-based projects.

During its 40 years, PSR has stayed true to its DNA of innovation, and has continually improved its global operations and brought out new products to enhance client value. Last year, PSR stepped up by following through on initiatives to launch new subsidiary companies based in Beijing, China and Pune, India.

Tracking Power Generation

One of the key industries tracked by PSR is power generation. Besides coverage of power generation equipment in the OE Link™ database, PSR also maintains two ongoing syndicated surveys, PowerTracker North America™ and PowerTracker International™. These syndicated surveys regularly track the progress of the end-user markets by reaching out to dealers and end-users of generator sets to monitor trends and developments within the industry. The surveys provide a nice complement to the production database and allow for a more complete picture of the production and sales pipeline.

Another New Product

In 2016, the company is expanding its offerings from data to technical information with the launch of PSR Labs™, a new benchmarking service. It's aimed at companies that need assistance in physically measuring and evaluating products, theirs as well as their competitor's.

The benchmarking services are performed at the company's in-house lab under the direction of Tad Achterberg, a 30-year veteran."These benchmarking services are an extension of the type of engine data that PSR has been providing for 40 years," says Achterberg. "The only difference is that we're collecting the data from hardware, not from spreadsheets."

PSR clients continue to renew their subscriptions because the data and analysis meets their needs in a convenient and economical way. "I appreciate all the years PSR has given us great data, and you've been (excellent) to work with," says one PSR client. That pretty well summarizes the PSR story and its 40-year record of growth.

In Memoriam

George Zirnhelt

1945 – 2015

Founder, President, C.E.O.
Power Systems Research

George Zirnhelt, founder, president and C.E.O. of Power Systems Research (PSR), launched the company in 1976. He earned a bachelor's degree in mechanical engineering and an MBA from the University of Minnesota.

While working at the battery company, Gould, Inc., Zirnhelt earned several patents. Eventually, he became majority owner, President and C.E.O. of an O.E.M. that built wheel loaders, forklifts and related equipment which was sold around the world. After selling this company, he launched Power Systems Research. (PSR)

The EGSA Connection

Since the fall of 2005, Joe Zirnhelt (C.O.O.) has been an active participant in EGSA business. From his time as a Committee Officer for the Market Trends Committee (currently serving as Vice Chair) to his great work on the Market Pulse Survey these past two years, Joe has contributed greatly.

You can also look forward to Joe presenting some of PSR's research during our Sacramento event this fall, as he is one of our 6 presenters at the EGSA 51st Annual Fall Conference. His presentation is entitled, ***Investor Mindset – Why Invest in Power Generation Related Companies?***

Not only has PSR donated Joe's time for the betterment of the industry, but they have also offset our conference costs and kept member pricing low by always participating in EGSA's sponsorship program. We are grateful to them for a fabulous collection of reusable water bottles over the years!

Finally, if you ever wish to spend formalized networking time with the PSR folks, they never miss an EGSA Gearhead opportunity, so feel free to join them on the tours! ■

EGSA JOB BANK

Canada

Specialty Sales Representative-Pump

Hertz Equipment Rental Corporation

Location: Edmonton, AB

The Hertz Equipment Rental Corporation's Specialty Rental team in Edmonton, AB, Canada is hiring a Sales Representative for our Specialty Pump Services to support Western Canada!

Job Summary : Specialty Sales Representatives drive revenue within their designated territory by developing business relationships and providing customer focused solutions to our customers toughest Pump, Power and Climate Control challenges in various industries . Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://caenjobs-hertz.icims.com/

Specialty Sales Representative-Pump

Hertz Equipment Rental Corporation

Location: Etobicoke, ON

The Hertz Equipment Rental Corporation's Specialty Rental team in Toronto is hiring a Pump Sales Representative to support Ontario!

Job Summary: Specialty Sales Representatives drive revenue within their designated territory by developing business relationships and providing customer focused solutions to our customers toughest Pump, Power and Climate Control challenges in various industries. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://caenjobs-hertz.icims.com/

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.*

Field Service Mechanic-Pump, Power and Climate Control

Hertz Equipment Rental Corporation

Location: Etobicoke, ON

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. Since 1965, we have provided rental equipment and services for projects and applications all over the world. The purpose of the Field Service Mechanic position is to utilize the expertise of the candidate to support the needs of the branch in a professional and safe manner, with a focus on generators.

To apply: Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

USA Central

Generator Technician

Emergency Power Service

Location: Kountze, TX 77625

Emergency Power Service is seeking experienced Field Service Technicians. Qualified applicants should have both gas and diesel experience as well as transfer switch experience and load bank testing. Must have clear driving record and clean criminal background history.

EGSA Certified Technicians Preferred.

To apply: jb17@wtd.net

USA Mid-Atlantic

Generator Service and Maintenance Technicians

Cooper Electric Power Systems

Location: Northern NJ, Northeastern PA and NYC

We are seeking preferably a 1st or possibly a 2nd Class, Service Technician to join our TEAM. We are searching for a career-oriented individual with superior customer service and organizational skills. Duties will include troubleshooting, repair and preventative maintenance of industrial engines, generators and switchgear. We require 5 years recent GENERATOR experience as maintenance and service mechanic.

EGSA Certified Technicians Preferred.

To apply: Send your resume to: geri.weinberg@sonepar-us.com. Check out our website- http://bit.ly/1XlVVG7

Application Deadline: 2016-08-01

Specialty Sales Representative-Pump,Power and Climate Control

Hertz Equipment Rental Corporation

Location: Philadelphia, PA

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. Specialty Sales Representatives drive revenue within their designated territory by developing business relationships and providing customer focused solutions to our customers toughest Pump, Power and Climate Control challenges in various industries. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://careers-hertzequip.icims.com

EGSA JOB BANK

Field Service Mechanic-Pump, Power and Climate Control

Hertz Equipment Rental Corporation

Location: Frederick, MD

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The purpose of the Field Service Mechanic position is to utilize his/her mechanical expertise to support the needs of the branch in a professional, safe and timely manner at various job sites. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://careers-hertzequip.icims.com/

Sales & Operations Trainee

Hertz Equipment Rental Corporation

Location: Frederick, MD

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The Sales & Operations Trainee position is designed to develop the candidate's knowledge and ability to identify and resolve our customers' needs, coordinate the activities of all personnel within the branch, maintain competitive data, maintain inventory control and provide the reporting and tracking of all daily business activities. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://namericanhub-hertz.icims.com/

Rental & Service Sales Representatives

Kelly Generator & Equipment, Inc., and Kelly Generator & Equipment of PA & WV, Inc.

Location: Owings, Maryland

Identify, pursue, grow and close new and existing client base for RENTAL of mobile generator sets as well as renting load banks, light towers. Develop relationships with EE and GC's., home builders, industrial/commercial end users, event and rental houses. Service business including maintenance agreements for generators, KGE extended warranties, Omnimetrix.

To apply: resumes to dkelly@kge.com or online at www.kge.com

USA Midwest

Generator Technician (Field and Shop) - Experience Required

Central Power Systems and Services, Inc.

Location: St. Louis, MO

We are hiring Generator Technicians at our new St. Louis, MO facility that are motivated, trustworthy and can work independently in an autonomous & productive environment. Apply Online: www.cpower.com/careers

To apply: http://jobs.ourcareerpages.com/job/142778?source=ccp&jobFeedCode=CentralPowerSystemsServices&returnURL=http://cpower.com

Generator Technician (Field and Shop)

Central Power Systems and Services, Inc.

Location: Liberal, KS, USA

We are hiring Generator Technicians at our Liberal, KS facility that are motivated, trustworthy and can work independently in an autonomous & productive environment. Apply Online: www.cpower.com/careers

EGSA Certified Technicians Preferred.

To apply: http://jobs.ourcareerpages.com/job/142794?source=ccp&jobFeedCode=CentralPowerSystemsServices&returnURL=http://cpower.com

Mechanic C

Hertz Equipment Rental Corporation

Location: Oklahoma City, OK

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The successful candidate must possess a basic understanding of the following: Construction and Industrial Fleet; Mechanical knowledge; Fuel Systems; Electrical Systems; Hydraulic Systems. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://usjobs-hertz.icims.com/jobs/108845/mechanic-c/job?hub=20

Specialty Sales Representative-Pump, Power and Climate Control

Hertz Equipment Rental Corporation

Location: Naperville, IL

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. Specialty Sales Representatives drive revenue within their designated territory by developing business relationships and providing customer focused solutions to our customers toughest Pump, Power and Climate Control challenges in various industries. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://careers-hertzequip.icims.com/jobs/105143/sales-representative---pump%2c-power%2c-and-climate-control/job

Electrical Line Technician Lead Instructor

Midwest Skills Development Center

Location: Marquette 'Upper Peninsula' Michigan

Certificate Program awarded through Northern Michigan University. The lead instructor will provide hands-on and classroom instruction in electrical power transmission and distribution topics and assist students with meeting the requirements for obtaining a CDL. This two semester 31-credit hour certificate program is offered during NMU’s Fall and Spring academic semesters.

To apply: lobrien@marquette.org

USA Northeast

Specialty Sales Representative-Pump,Power and Climate Control

Hertz Equipment Rental Corporation

Location: Boston, MA

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. Specialty Sales Representatives drive revenue within their designated territory by developing business relationships and providing customer focused solutions to our customers toughest Pump, Power and Climate Control challenges in various industries. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://careers-hertzequip.icims.com/jobs/107503/sales-representative---pump%2c-power-and-climate-control/job

Aftermarket Sales - USA North East

Kinsley Power Systems

Location: Northeast

Kinsley Power Systems is seeking an Aftermarket Sales Manager. The position is responsible for developing, growing and managing the Company's emergency power generator service sales business throughout a given geographic territory. He/she will serve as an ambassador to the Company's service department by selling service agreements, extended warranties and other service products to new customers while maintaining and expanding relationships with existing customers. The sales process includes, but is not limited to prospecting, cold calling, probing, qualifying, presentation & proposal generation and closing Accounts. The position is a hybrid of outside sales, technical sales, account management and customer service.

To apply: lbarnes@Kinsley-group.com

EGSA JOB BANK

Generator Technician

Power Performance Industries

Location: Yonkers NY

Power Performance Industries,the leading Westchester NY based power generation company, is looking for qualified power generator technicians. Must have knowledge and at least three (3) years experience with generator set equipment for service, repair and maintenance for both gas and diesel generators, including ATS & controls. We offer excellent benefit package: ie: salary, medical, dental, 401K, as well as excellent on-going training. Be part of our exciting and growing company. Visit our website www.ppipowersystems.com. Must have clean and valid drivers license

To apply: send resume to melissa@ttipower.com

USA Southeast

Experienced Generator Technician

E&W Electrical, LLC

Location: Raleigh/Durham/Hillsborough NC

Established company with over 25 years in providing complete power solutions, focusing on energy management solutions, seeking experienced generator technician to service our residential and commercial customers. This is a hands-on service job, however the candidate can move into various positions of design or management depending on commitment and motivation level. Detailed computer knowledge preferred.

To apply: http://www.ncgenerators.com/employment/

Mechanic B

Hertz Equipment Rental Corporation

Location: Baton Rouge, LA

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The purpose of the Mechanic B position is to utilize his/her mechanical expertise to support the needs of the branch in a professional, safe and timely manner. An individual in this position will work to keep all equipment in top running condition through an effective preventative maintenance program. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://usjobs-hertz.icims.com/jobs/114807/mechanic-b/job?hub=20

Specialty Sales Representative-Pump,Power and Climate Control

Hertz Equipment Rental Corporation

Location: Mobile, AL

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. Specialty Sales Representatives drive revenue within their designated territory by developing business relationships and providing customer focused solutions to our customers toughest Pump, Power and Climate Control challenges in various industries. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://careers-hertzequip.icims.com

Service Technician A - Specialty

Hertz Equipment Rental Corporation

Location: Baton Rouge, LA

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. We are currently seeking an experienced Generator/Pump Mechanic to diagnose and repair generator/pump equipment at our Baton Rouge, LA branch. Responsibilities include: Set up/break down/maintenance/repair of generators/pumps/compressors at customer job sites. HVAC knowledge required. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://usjobs-hertz.icims.com/jobs/111709/service-tech-a--specialty/job?hub=20

Mechanic A

Hertz Equipment Rental Corporation

Location: Lakeland, FL

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The purpose of the Mechanic A position is to utilize his/her mechanical expertise to support the needs of the branch in a professional, safe and timely manner. An individual in this position will work to keep all equipment in top running condition through an effective preventative maintenance program. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://usjobs-hertz.icims.com/jobs/112767/mechanic-a/job?hub=20

EGSA JOB BANK

Mechanic C

Hertz Equipment Rental Corporation

Location: Lakeland, FL

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The purpose of the Mechanic C position in is to utilize the mechanical expertise of the candidate to support the needs of the branch in a professional, safe and timely manner. An individual in this position will work to keep all equipment in peak running condition through an effective preventative maintenance program. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply:
https://usjobs-hertz.icims.com/jobs/111320/mechanic-c/job?hub=20

Sales & Operations Trainee

Hertz Equipment Rental Corporation

Location: Cutler Bay, FL

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The Sales & Operations Trainee position is designed to develop the candidate's knowledge and ability to identify and resolve our customers' needs, coordinate the activities of all personnel within the branch, maintain competitive data, maintain inventory control and provide the reporting and tracking of all daily business activities. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply:
https://usjobs-hertz.icims.com/jobs/114826/sales-and-operations-trainee/job?hub=20

Hertz Equipment Rental Corporation

Location: Charlotte, NC

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The purpose of the Tractor Trailer Driver position is to transport, deliver and retrieve assorted construction and heavy equipment and to support the needs of the branch in a professional, safe and timely manner. Class A CDL is preferred. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply: https://usjobs-hertz.icims.com/jobs/113403/tractor-trailer-driver/job?hub=20

Truck Driver

Hertz Equipment Rental Corporation

Location: East Point, GA

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. We are seeking a Truck Driver based out of our East Point, Georgia branch. As part of our team, you will pick up and deliver equipment to/from customer job sites. Additionally, you will assist in the set up and break down of select projects at customer sites. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply:
https://usjobs-hertz.icims.com/jobs/104744/truck-driver/job?hub=20

Branch Manager

Hertz Equipment Rental Corporation

Location: Clute, TX

Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The Branch Manager leads in the management and direction of the branch to ensure positive revenue generation, providing the highest standard of customer service and continued excellence in productivity. The Branch Manager identifies areas of improving its competitive position as well as maximizing the profitability of the work location. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.

To apply:
https://usjobs-hertz.icims.com/jobs/114246/branch-manager/job?hub=20

EGSA JOB BANK

Hertz Equipment Rental Corporation
Location: Las Vegas, NV
Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The Sales & Operations Trainee position is designed to develop the candidate's knowledge and ability to identify and resolve our customers' needs, coordinate the activities of all personnel within the branch, maintain competitive data, maintain inventory control and provide the reporting and tracking of all daily business activities. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.
To apply: https://usjobs-hertz.icims.com/jobs/110091/sales-%26-operations-trainee/job?hub=20

Generator Mechanic C

Hertz Equipment Rental Corporation
Location: Deer Park, TX
Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The Generator Mechanic C position is to utilize the mechanical expertise of the candidate to support the needs of the branch in a professional and safe manner. An individual in this position will work to keep all generators / heavy equipment in peak running condition through an effective preventative maintenance program. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.
To apply: https://usjobs-hertz.icims.com/jobs/113249/mechanic-c--generator/job?hub=20

Sales & Operations Trainee

Hertz Equipment Rental Corporation
Location: Deer Park, TX
Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The Sales & Operations Trainee position is designed to develop the candidate's knowledge and ability to identify and resolve our customers' needs, coordinate the activities of all personnel within the branch, maintain competitive data, maintain inventory control and provide the reporting and tracking of all daily business activities. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.
To apply: https://usjobs-hertz.icims.com/jobs/114230/sales-%26-operations-trainee/job?hub=20

Sales Representative

Kentech, Inc.
Location: Houston, TX
Kentech, Inc. is currently seeking an outside sales support for the power division. This position involves outside sales of power generations equipment and requires a thorough knowledge of the power generation industry and how it operates.
To apply: employment@kentechpower.com
Application Deadline: 2016-08-30

USA West

Sales & Operations Trainee

Hertz Equipment Rental Corporation
Location: Burbank, CA
Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. The Sales & Operations Trainee position is designed to develop the candidate's knowledge and ability to identify and resolve our customers' needs, coordinate the activities of all personnel within the branch, maintain competitive data, maintain inventory control and provide the reporting and tracking of all daily business activities. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.
To apply: https://usjobs-hertz.icims.com/jobs/112831/sales-%26-operations-trainee/job?hub=20

Dispatcher

Hertz Equipment Rental Corporation
Location: Burbank, CA
Hertz Equipment Rental Corporation (HERC) is an industry leader specializing in construction and industrial equipment rental. We are currently seeking a talented Dispatcher for our Entertainment Services branch in Burbank, CA. This position is directly involved in identifying customer needs, coordinating activities of delivery drivers, maintaining competitive data, inventory control and daily business reporting. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.
To apply: https://usjobs-hertz.icims.com/jobs/112832/dispatcher/job?hub=20

Specialty Sales Representative-Pump,Power and Climate Control

Hertz Equipment Rental Corporation
Location: Fife, WA
Specialty Services includes rentals within Hertz Equipment offering Large Pumps, Generators, Temperature Control Equipment, Heaters, and Desiccant Dehumidifiers to contractors. Hertz Specialty Services offers solution based selling for projects in a fast paced environment, providing customer focused solution based services. We are seeking a skilled Territory Sales Representative to join our Specialty Services Sales team out of our Fife, Washington branch. Please submit your resume to herc.careers@hertz.com or call 844.209.0849 for additional information.
To apply: https://usjobs-hertz.icims.com/

Generator Technician - Field (Maintenance and Repair)

LT Generators
Location: Van Nuys, CA 91411
We are hiring an experienced Generator Technician. Qualified individuals should have at least 5 years in residential and commercial experience. You must have a clean driving record and your own basic tools for this position. Wages & Salary: This is a Full-Time Hourly Position. We offer Medical, Dental, Vision, and 401k.
To apply: Email Resumes to: jessica@ltgenerators.com

Electrician/Certified Journeyman

LT Generators
Location: Van Nuys, CA 91411
We are hiring an experienced Electrician/Certified Journeyman with a minimum of 7 years in residential & commercial experience. You must have a clean driving record and your own basic tools for this position. Experience in running a crew a plus! WAGE & BENEFITS: Full-time hourly position. We offer Medical, Dental, Vision, 401k.
To apply: Email Resumes to: Jessica@ltgenerators.com

EGSA Industry News Guidelines

We welcome you to submit press releases for consideration for inclusion in the Industry News section of *Powerline* Magazine. However, due to the fact that *Powerline* is the voice of an organization consisting of more than 800 Member companies, we maintain a strict editorial policy that prohibits any endorsement of a particular company or product. As a result, **we do not accept product-specific or service-specific releases for publication.**

Please email your press releases to *PR@EGSA.org.*

Russelectric Appoints Dorian Alexandrescu as President/CEO

John Russell, Chairman of the Board of Russelectric Inc., recently announced the appointment of Dorian Alexandrescu as the company's new President and CEO. Mr. Alexandrescu has over 20 years of extensive management experience across industry segments ranging from electrical equipment, energy management, and clean energy to automotive, industrial automation, packaging, and consumer goods. Most recently, he served as President and CEO of RESA Power Solutions, a market leader in life extension products and services for electric power transmission, distribution, and circuit protection equipment.

Prior to that, he was Vice President and General Manager of Eaton Corporation/Power Distribution Operations' Latin America and Caribbean Division. Alexandrescu has an International Baccalaureate in Electromechanical Engineering, the equivalent of an MS in Theoretical Physics and Technology Applications from the University of Bucharest, and is a graduate of the Executive Development Program of Dartmouth College's Amos Tuck Business School.

Mr. Alexandrescu takes over for George Whittaker, who is retiring after 48 years of service. Whittaker succeeded Raymond G. Russell, Russelectric's founder and owner. Chairman John Russell commented, "We want to thank George for his wise stewardship. We also want to welcome Dorian, who is committed to running and growing the company in the spirit my father — independently-owned, innovative, and uncompromising on quality."

Founded in 1955, Russelectric Inc. designs and manufactures integrated emergency and standby power control systems for mission critical facilities. Manufactured at facilities in Hingham, Massachusetts, and Broken Arrow, Oklahoma, the company's sophisticated power control systems, transfer switches, and bypass/isolation switches are widely used in advanced data centers, banks, hospitals, and other vital installations.

For more information, contact John A. Meuleman, Vice President, Sales & Marketing, Russelectric, South Shore Park, Hingham, MA 02043-4387, TEL: (781) 749-6000, FAX: (781) 749-4205, *www.russelectric.com*, e-mail: *info@russelectric.com.* ■

Morgan Solar Board Appoints Mike Andrade as CEO

Morgan Solar Inc. has announced that its Board of Directors has appointed Mike Andrade as Chief Executive Officer and member of the Board of Directors.

"As we launch the Sun Simba 4 solar panel, increase our sales activities and ramp up production capacity, I can think of no one better to lead Morgan Solar," said John Paul Morgan, founder and Chief Technology Officer. "Mike has deep experience in competitive global markets, including solar. He has a proven track record of leading growth oriented transformations, which is very much where we are with Morgan Solar". Andrade has 30 years of experience in the technology industry, most recently as President of Diversified Markets at Celestica.

"I have seen first-hand the challenge of balancing the high costs and capital required to increase solar efficiency with the dramatically decreasing market pricing," said Andrade. "Morgan Solar has among the best potential to offer both low production cost and high conversion efficiency. It also has the added bonus of a unique and aesthetically pleasing design that could open up new applications for solar technology.

"Ultimately, it gets down to whether you can manufacture with the cost, quality and delivery schedule to compete. In my experience, the most successful products are those whose design applies proven technologies to a new market and which relies on reasonably industry-standard building blocks. This enables them to leverage the innovation and proven reliability from established technologies and to scale quickly with high quality. I call this approach 'T-innovation' and Morgan's product is one of the best examples of it in the solar industry."

"Most importantly, I feel that Morgan Solar is an important company, especially for Canada. Its success helps with some of the key challenges we face today: addressing climate change; developing a globally competitive clean-tech ecosystem; and creating advanced manufacturing jobs in support of that mission. I have been fortunate to have the experiences I have had, and I would like to give back and try to make the world a better place for my children in terms of the environment they will live in and the economy that they will enter into. Morgan Solar is the right vehicle for me to do that."

Andrade takes the helm from Asif Ansari, who has transitioned into his new role as Executive Advisor to the Board & Management, where he will increase his focus on strategic business development.

Please visit ***morgansolar.com*** for more information. ■

When it comes to the breadth and depth of surge protection products, ASCO's got you covered.

Innovative solutions for monitoring, measuring, recording and management of power.

When it comes to surge protection solutions, don't settle for any port in the storm. Trust ASCO, a company with a long history of proven, reliable, innovative products to safeguard any commercial facility.

- **Powerful Portfolio** – With the addition of Emerson Network Power and Advanced Protection Technology (APT) solutions, ASCO has a wide product line for power, signal, or data line applications
- **Load Options** – ASCO provides low and medium voltage solutions to meet a variety of load requirements
- **Stream of Innovation** – No other company has introduced more technology breakthroughs. Our latest is the new ASCO Active Surge Monitor (ASM) for remote power quality monitoring and intelligent data collection
- **Analytics and Reports** – Our new high-speed power meter allows you to be proactive and provides comprehensive real-time data so you can anticipate a potential problem and prevent it

When you're looking for surge protection solutions that can weather any storm, ASCO is clearly the answer.

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