



NEWSLETTER

Midwest Cogeneration Association, Inc.

September 2007

Vol. 22, No.1

The Galvin Electricity Initiative “Perfecting the Quality of Electric Energy Service”

- Approximately two-thirds of the fuel burned to generate electricity in the U.S. is lost in the generation and delivery process
- There has been virtually no improvement in efficiency in the electric power industry since the 1960s
- As a result of the system’s inefficiencies, generation of electric power produces more pollution than any other single industry in the United States
- Power failures / interruptions in the electricity supply are costing American consumers an estimated \$150 billion a year.

Electricity is the lifeblood of our economy. But according to the Galvin Electricity Initiative, our twentieth-century analog network is unable to meet the needs of twenty-first-century consumers and the digital revolution – and is thus in need of renewal. The Galvin Electricity Initiative was started in March of 2005 to catalyze that renewal.

The goal of the Initiative is to create a Perfect Power System that will not fail the consumer. The system calls for a major technological update to our existing generation, distribution and transmission systems as well as the building and interconnecting of smart micro-grids enabled by digital controls and distributed generation facilities throughout the country. The Initiative is currently designing Perfect Power System prototypes for several locations around the country.

The founder and inspiration behind this Initiative is Robert W. Galvin, retired CEO and Chairman, Motorola, Inc. It was under Mr. Galvin’s 30 years of leadership that quality and a willingness to challenge conventional wisdom flourished as key components of the company’s corporate vision. Based on the same quality principles that were standard practice at Motorola, Mr. Galvin’s vision of perfecting our electricity service is coming to life under the guidance of Kurt E. Yeager, Executive Director of the Galvin Electricity Initiative. Mr. Yeager is a long time spokesman for the electric power industry. As the former President and CEO of the Electric Power Research Institute (EPRI), he transformed the organization from a non-profit think tank to a family of companies that lead research and development efforts for the electric power industry in the U.S. and in 40 other countries.

Of particular interest to our readers and to MCA members is the path to perfect power being pursued by the Initiative. In the Perfect Power System, a number of elements must be present and work together as an integrated whole whose performance and value is greater than its parts. These elements include:

- Smart Technology (digital communication & digital control)
- Distributed Generation and Storage
- Cogeneration and Combined Heat & Power
- Smart Meters
- Smart Appliances / End-Use Devices
- Consumer Control / A New Marketplace for Power”

If you would like to know more about this initiative and the role cogeneration is playing in this and other future electric grid efforts, make sure to attend the

MCA Annual Energy Conference
Clean, Green & Efficient
the future of
Distributed Energy
Wednesday, October 24th at McDonalds University, Oak Brook, Illinois

MEMBER NEWS

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WELCOME NEW MEMBERS

The following members recently joined the MCA. Please make sure to welcome them to our organization when you see them at our next event.

William Tokash
Thomas O'Brien
Bobette Puckett
Lawrence L. Guzy

Michael Revello
Jason Richards
David Verner
Fred Riva

MCA ANNUAL GOLF OUTING

On August 23rd, 2007, the 11th Annual MCA Golf Outing was held at Arrowhead Golf Course in Wheaton, IL. The originally scheduled date of July 26 was met with rain and lightening forcing a rain-date. Thank you to all who made the trip out to Arrowhead in July just to schedule an additional day off in August. Apologies to those who could not make the second date. Thirty-three golfers played an 18 hole scramble with most groups finishing before a damaging storm rolled through the area. We were all enjoying Arrowheads new bar facilities while winds were pulling trees out of the ground all over DuPage County.

This years outing was blessed with a record number of sponsors including: Middough (Architecture/Engineering/Management), Patten Power Systems (Cat Engines and Service), H. Ertel, Inc. (Silencers, Radiators, etc.), NiSource Energy Technologies (Small On Site Power Generation), Charles Equipment (Dresser/Waukesha and Katolight Sales and Service), Enercon Engineering (Switchgear), Vaporphase - A Division of Kickham Boiler (Heat Recovery Equipment), AMS Mechanical (Piping, Electrical and HVAC), Inland Power Group (Jenbacher, Detroit Diesel, Allison Sales and Service), Alpha Industrial Power (Batteries and Chargers). These sponsors provided a generous awards table that every golfer benefited from. Thank you to all the sponsors for your generosity! Ps - Sorry, most of the sponsor signs blew away in the storm.

Special mentions go to Bob Conway, Andrew Barrowmen, Cal Byrd and Dave Vanbibb who managed a score of 6 under par before being chased off the course by rain on hole 17. Additionally, we would like to thank Arrowhead Golf Course for excellent course conditions, excellent service and attention to every need and detail. Thank you to Tom Riemer, MCA President, who helped with the outing and awards presentation and to Dharam Punwani for last minute help with the awards table. See you all next year.

ANNUAL ENERGY CONFERENCE

Register Today!

Wednesday, October 24, 2007

**Midwest Cogeneration Association's
Annual Energy Conference
McDonald's University, Oak Brook, Illinois**

Clean, Green, & Efficient the future of Distributed Energy

Join other energy professionals and energy users to learn about the most important developments and solutions to the hottest issues in this rapidly evolving field. Prominent leaders and experts in the energy and environmental industry will provide information and insights on such current topics as:

- The Design of Future Electric Grids
- Electric Interconnect Standards in the Midwest States
- Calculating the Carbon Footprint of your Facility
- CHP in Ethanol & Bio-diesel Plants
- Industrial Heat Recovery
- Bio-Waste to Energy
- Natural Gas Prices, Cogeneration & Blended fuels

Attendees of this conference will receive a PDH certificate for eight credit hours.

**Registration Fees: \$195 – Non MCA Members (includes membership through 2007)
\$150 – MCA Members**

Register using the form found on page 5.

ANNUAL ENERGY CONFERENCE

Exhibit Space Available at MCA Annual Energy Conference:

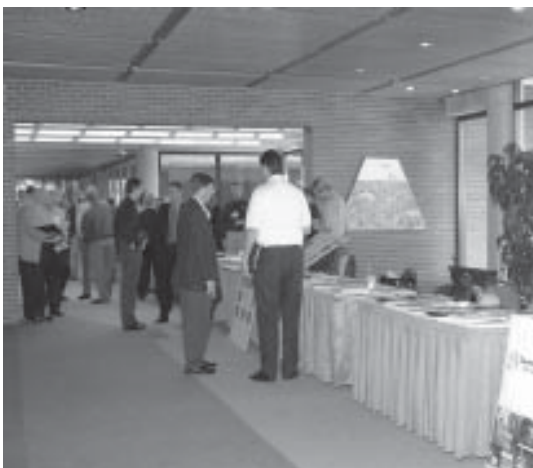
With the face of energy changing, its volatility and reliability over this past year, and more importantly, future, more and more companies are looking to make sound investments in their energy future. We expect a great turnout of end-users to learn about cogeneration options in the Midwest. There are many projects on the drawing board, especially with the revelations of the future price increases and other power reliability issues in our area and out East, and the shaky situations surrounding many power marketers. This year's conference will be an excellent opportunity to meet new and potential customers.



- 3 ft. by 3 ft. (half of a 6' table):
- \$300 (includes one free registration to the conference)
- \$400 (includes two free registrations to the conference)
- Exhibit area located immediately outside conference session room
- Closing reception will be held in exhibit area

Normal registration fees are \$150 for (MCA) members and \$195 for non-members.

Contact Bob Conway at (630) 834-6000 x116 or bob.conway@charlesequipment.com if you are interested in exhibiting.



Wednesday, October 24, 2007
McDonald's University
Oak Brook, Illinois

**Clean, Green & Efficient
the future of
Distributed Generation**

CONFERENCE REGISTRATION

Wednesday, October 24, 2007

**Midwest Cogeneration Association
Annual Energy Conference
McDonald's University
Oak Brook, IL**

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____ Fax _____

E-mail _____

Your Company Business _____

CONFERENCE FEE:	MCA Members	\$150
	Non-Members	\$195 (includes MCA membership through 2007)

Enclosed is my check in the amount of \$_____ to cover registration.
Make check payable to Midwest Cogeneration Association.

Please charge my credit card in the amount of \$_____ to cover registration.

Visa Mastercard American Express

Credit Card # _____ Exp. Date: _____

Signature: _____

Send your reservation form and payment to:
Midwest Cogeneration Association
P.O. Box 283
Western Springs, IL 60558-0283

You may also fax your registration form to (847) 202-0427 and make payment at the door the day of the conference. Please note that if you make a reservation and cannot attend, please send a substitute. Reservations not cancelled by October 17, 2006 will result in the MCA invoicing you for all associated meal costs.

THE TREND TOWARD ON-SITE POWER GENERATION

There is a growing trend in the United States for self generation of electric power. In past decades, very few people thought seriously about having their own generating capacity, either as emergency power or to provide for their basic needs. The Northeast Blackout of 2003, this winter's storms throughout the West and Midwest, the hurricane season of 2005 and our changing society are all driving the trend towards self-generation. Of all the shifting factors that are driving Americans to embrace on-site generation economics are perhaps the easiest to quantify. If the economic argument is not compelling, then the independence and reliability concerns usually are. Electricity has come to be viewed as necessary for life, and while this is rarely the actual case, it is the perception that is important. The reliability of the electric supply in the U.S. is extraordinarily impressive, but ironically this is the very reason that any interruption has become so important. We have structured our lifestyle and our businesses around a reliable electric supply to the point where we have become unwilling to endure even short and infrequent outages. **Rising Prices are Influencing The Demand** Electricity prices are rising fast, as are energy prices in general, which strongly encourages the most complete usage possible of every BTU in the fuel. The average retail price of electricity in the U.S. rose by 9.2 percent in 2006, a trend which will

likely continue for the next several years. The national average masks some much more volatile regional prices where certain locations have seen price increases as high as 30 percent. It is inevitable that electric prices rise as the older power plants with higher emissions are forced into retirement and replaced by newer and cleaner plants. These older plants are fully depreciated and supplied with fuel under long term agreements that typically are priced considerably below current market prices for fuel. Any new power plant built today, regardless of technology, will have a cost of generation at least 30 percent higher than the current average cost of generation.

At the same time prices for the fuel which homes and business use for space heating and material processing have experienced even steeper increases. To stretch their energy budget further, more homes and businesses can be expected to turn to cogeneration. Cogeneration is the process whereby fuel is used first to produce electricity, and secondly to provide heat. Reality dictates that cogeneration is best applied near the point of use; it is not practical to transport thermal energy very far. The potential for small-scale cogeneration sited at the point of use is absolutely staggering. In 2005, approximately 5.5 billion gallons of fuel oil and 7.9077 TCF (tera cubic feet) of natural gas were used for space, water and process heating. Had this fuel been consumed in on-site

cogeneration systems to produce some electricity as well as heat, approximately 12 percent of the nation's electricity needs would have been met by these systems. For larger systems, the heat rejected from the engine can be used to supply air conditioning via absorption chillers when space heating is not required, increasing the benefits derived from the system. This type of system is becoming popular for hotels, hospitals, large commercial buildings and universities. The amount of electricity currently generated and used on-site is not necessarily reported to the U.S. Department of Energy, as is the amount of electricity generated for sale, so comprehensive data is not available. Large cogeneration systems providing heat to industrial processes or commercial users and who sell the electricity they produce, do report data to DOE and currently account for 8 percent of the electricity produced in the U.S. A survey was conducted by DOE of the owners of smaller systems who are not obligated to report their data, and of the respondents, most indicated that they use their generators only in emergencies, indicating a large untapped potential. Cogeneration is not the only option for on-site generation. Small scale wind turbines are also very popular in favorable locations, and photovoltaic panels are currently enjoying very strong demand. While popular opinion holds photovoltaic electric generation to be too expensive, a perusal of PV manufacturer press

THE TREND TOWARD ON-SITE POWER GENERATION

releases tells a different story. There is currently a major expansion of PV manufacturing capacity underway, with six companies announcing plans for new plants or expansions totaling 900 megawatts, just since the beginning of the year. The recently announced expansions, together with those currently underway will double the worldwide PV manufacturing capacity in the next few years. Unquestionably, some part of this very strong demand is due to the steep tax credits and other incentives, but many other factors are at work as well. Concern for the environment, energy independence, and pure economics are the principle drivers behind this trend. As electric rates continue to rise, costs for on-site generation are falling. For the past few years the prices of PV panels have stayed relatively constant, after having steadily declined for decades. The costs to manufacture the panels however, are still falling, which indicates that the very strong demand is pushing manufacturer profit margins higher. **Grid Interconnections are Critical** In the past, the largest hurdle to self-generation was connecting it in parallel with the utility, and stand-by systems avoided this with a transfer switch which allowed power to be supplied either by the utility or the generator but not both. This is not a very convenient arrangement. In most cases, the on-site generation will produce either more or less power than the home or business is using and it would be ideal for the utility to

make up the difference. The majority of states have now passed legislation which makes this net-metering concept obligatory for utilities and eliminates their most powerful tool for preventing self-generation. Another major obstacle has been lack of uniform interconnect requirements. Each utility has had the freedom to decide what protective relaying, metering, switchgear and system stability analysis would be required for interconnection, which meant that interconnection requirements varied from one utility to another and sometimes from one project to another. Many states have now also adopted uniform interconnect requirements so everybody knows beforehand exactly what will be required for interconnection. While net-metering and uniform interconnect standards are intended primarily to benefit producers of renewable energy, it actually makes all on-site generation easier to implement. In many cases the problems existed simply because the utility did not have a program or procedure in place to facilitate self-generation by its customers, and it had nobody who was familiar with the issues and empowered to make decisions in the utilities behalf. After being required to implement net-metering and adopt uniform interconnect requirements for renewable energy, these resources are now in place for all types of self-generation. Further, the standard requirements for interconnection can be

incorporated into mass-produced devices making them cost-effective and readily available. The net result of all these trends will be that the demand for grid-supplied electricity will not grow as fast as many expect. Certainly the rising electric rates will inspire some amount of conservation, but even more will it encourage alternate sources of supply. The grid will increasingly become viewed as a large "storage" and trading system rather than as the supplier of electric power. As consumers are becoming increasingly aware of the wide difference in prices between peak and off-peak power there will be a desire to capitalize on that by using their generating assets for peak shaving. Larger users who can take advantage of time-of-day pricing and discounts for interruptible power are presently the ones who are benefiting the most and it can be expected that smaller users will demand the same benefits. For many years proponents of distributed generation have been advertising its advantages, now we are witnessing the application of the most distributed form of generation known.

*Article from EnergyPulse.
Written by Don Kopecky, Senior
Supervising Engineer,
WorleyParsons*

BROOKFIELD ZOO POWER PLANT EXPANSION

The Brookfield Zoo in Cook County Illinois is expanding its existing electric power generation plant. A new gas engine-generator is being installed in the existing power plant at the Zoo. It is a Waukesha VHP9500GL natural gas fueled engine gen-set with a rating of 1490 kW at 4160V. It will join (3) other existing gen-sets which produce peak period electricity required by various facilities throughout the Brookfield Zoo campus and will operate in parallel with the existing ComEd electrical service. The project also includes new electrical switchgear, modifications to the existing switchgear, a new master control panel, a control panel for the new Waukesha engine gen-set, and modifications to the existing master and "engine-generator control panels (Gen-sets No.2 and No.3).

Several members of the MCA are involved in this project, including:

- Mechanical/Electrical Contractors: AMS Mechanical Systems, Inc., Tom Kelleher/Jim Guenther
- Generator Supplier: Charles Equipment, Bob Conway
- Design: EME, LLC, Marc Willard
- Construction Management: PCI Management & Consulting, Dean Karafa
- Project Development: Reliable Power, Ray Protich



UPCOMING EVENTS

September 24, 2007 *FERC Natural Gas 101*

Location: Sheraton National Hotel, Arlington, VA
Contact: EUCI (201) 784-5389

September 24-28, 2007

Comprehensive 5-Day Training Program for Energy Managers

Location: Harrah's Atlantic City, Atlantic City, NJ
Contact: AEE (770) 925-0633 or valerie@aeecenter.org

September 25-26, 2007 *Managing Aging T & D Infrastructures*

Location: Sheraton St. Louis City Center, St. Louis, MO
Contact: EUCI (201) 784-5389

September 25-26, 2007

Electricity 101 The Essential Seminar on Power Market Restructuring

Location: Doubletree Hotel, Crystal City - Arlington, VA
Contact: The Energy Catalogue (201) 784-5389 or sales@energycatalogue.com

October 3-4, 2007 *Energy Auditing 101: Identifying Cost Saving Opportunities in Plants & Buildings*

Location: Sheraton Hartford, Hartford, CT
Contact: AEE (770) 925-0633 or valerie@aeecenter.org

October 10-22, 2007 *Basics of Distributed Generation & Onsite CHP*

Location: Knott's Berry Farm Hotel, Anaheim, CA
Contact: AEE (770) 925-0633 or valerie@aeecenter.org

October 15-16, 2007 *Clean Energy: An In-Depth Introduction*

Location: Hilton San Diego, Del Mar, CA
Contact: EUCI (201) 784-5389

October 15-19, 2007 *Comprehensive 5-Day Training Program for Energy Managers*

Location: Hotel Indigo Chicago Northwest, Palatine, IL
Contact: AEE (770) 925-0633 or valerie@aeecenter.org

October 17-18, 2007 *Natural Gas Hedging for the Producer and User*

Location: Crowne Plaza, Houston, TX
Contact: The Energy Catalogue (201) 784-5389 or sales@energycatalogue.com

October 24, 2007 *MCA Annual Energy Conference*

**Location: McDonald's Lodge, Oak Brook, IL
Contact: (630) 323-7909**

October 24-25, 2007 *Fundamentals of Business Energy Mgmt*

Location: MGM Grand, Las Vegas, NV
Contact: AEE (770) 925-0633 or valerie@aeecenter.org

November 8-9, 2007 *Energy Management in Federal Facilities*

Location: Clarion Anaheim, Anaheim, CA
Contact: AEE (770) 925-0633 or valerie@aeecenter.org