



## Letter from the President

By Gretchen Coleman (Gretchen Coleman Commissioning Group, LLC)

Happy Holidays to you, NCC Members! 2009 was a very active year for our chapter, and we look forward to activities in 2010. The following are highlights of 2009 – hopefully you were a direct beneficiary. If not, plan on becoming more active in 2010...we have some exciting events planned!

First, congratulations to our new NCC Board members!

**Emmillee Hogan**, a long time BCA and NCC volunteer, and two year (in a row, no less) recipient of the BCA President's Award, joins the Board after filling in part of last year when we lost two board members – thanks Emmillee!

**Tracey Nawrocki**, a recent transplant from the Central Chapter to the Scranton, PA area, we are excited to have Tracey. She was very active in the Central Chapter and at Association events – welcome Tracey!

**Jeff Dukes**, Jeff works with outgoing director, Mike Bilecky, and we are looking forward to his contribution this year – congrats Jeff!

Second, our Chapter held 4 events this year in addition to participation in the NCBC and BCA Expo.

In **March**, we had a Meet and Greet in DC, and had a booth at the AIA's [Vision 2009: Building Commissioning Symposium](#) in DC.

In **July**, we had a very well attended all day seminar in Philadelphia. Please see our 2009 Fall newsletter for highlights. This can be found at the bottom of the About page on our website:

[http://www.bcxachapters.org/national\\_capital/about.html](http://www.bcxachapters.org/national_capital/about.html)

In **September**, we had a very informative tour of the USGBC's LEED Platinum HQ in DC. The tour was preceded by presentations from the design engineer and commissioning authority. Highlights can be found in the 2009 Fall Newsletter.

In **November**, we rocked George Mason University in Fairfax, VA with a day of presentations ending with a lively Owner's Forum. Details can be found later in this issue.

Our GMU event was so popular that we plan to do a similar event in Baltimore, MD in March 2010. The focus, however, will be on contractors since on most Federal projects, the GC is hiring a Commissioning Authority. We would like to get their input on our industry. Be looking for details of that event in January!

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## Fairfax, VA - Commissioning Seminar and Owners Forum

By Michael S. Bilecky (Brinjac Engineering, Inc )

On Friday, November 6, 2009, the National Capital Chapter held a day-long commissioning seminar geared towards building and facility owners. The seminar was held on the campus of George Mason University in Fairfax, VA. National Capital Chapter members Tony DiLeonardo, Gretchen Coleman, and Philip Wright each gave informative presentations on Commissioning Basics, LEED Commissioning, and Existing Building Commissioning.

The final session, and perhaps highlight of the day, was the 90-minute Owners Forum. National Capital Chapter member Ray Smith moderated lively discussions among the panelists: Seth Adams of Montgomery County Public Schools, Eric Black of Washington Property Company, Rassa Davoodpour of Montgomery County Government, Chuck Fanshaw of George Mason University, and Brad Melton of Fairfax County Government; and between the audience and panelists.

The 50 person attendance limit for the Seminar was reached shortly after the event was announced and many on a wait-list could not be accommodated. The free event was made possible by efforts of the National Capital Chapter and gracious sponsorship of Dustin Construction Company, George Mason University, and Hess Construction Company.

Feedback from the event was highly positive and enthusiastic; response to the Owners Forum was that more commissioning discussions such as these were needed and 90 minutes was not nearly enough time. Building on this feedback, the National Capital Chapter is entertaining the prospects of hosting a half-day Owners Forum in 2010. A similar day-long seminar and forum geared toward contractors involved in the commissioning process is also in the works for 2010.



### Thanks to Event Sponsors

The GMU Commissioning Seminar and Owners Forum had Event Sponsors who committed \$1500 (Hess & Dustin) who are also automatically Chapter Sponsors for the next years. Thanks also to George Mason University for hosting event.



Highlight of the Day "Owners Forum" (left to right) Brad Melton, Rassa Davoodpour, Seth Adams, Chuck Fanshaw and Eric Black



Lively Discussions during the Owners Forum



Entrance to the Johnson Center at the George Mason University



Gretchen Coleman presents "Commissioning for LEED"



Owners Forum – Rassa Davoodpour, Seth Adams and Chuck Fanshaw leading the Roundtable Discussions



The Johnson Centers Atrium

**The schedule for the event was as follows:**

- 9.00 am - Registration
- 9.20 am - Introduction
- 9.30 am - Commissioning 101
- 10.30 am - Commissioning for LEED
- 11.30 am - Lunch
- 12.30 pm - Existing Building Commissioning
- 1.30 pm - Owners Round Table

**Thanks to All for making this a successful BCA event!**

**We Need Volunteers!**

*Participate · Build Your Resume · Get Published · Enhance Your Commissioning Industry Network*  
Opportunities for:

- Publication of short and medium length articles in regional and national publications
- Support logistics and marketing for regional events
- Participate in National trade conference booth on behalf of the BCA
- Openings in Membership, Events and Communications Committees
- Business development and fundraising opportunities

Contact a Board Member for further information!

## Carrier Sustainability Symposium Presented by Tom Kelly of Carrier Corporation

Reported by Wayne Williams – (Brinjac Engineering, Inc )

On December 7, 2009 at the Westin in Tyson's Corner Tom Kelly of the Carrier Corporation provided an educational workshop to many local professionals seeking educational credits.

Tom Kelly's first presentation was on designing an HVAC System to Optimize LEED Points. New projects seeking LEED certification are now required to use the LEED Version 3.0 rating system. Changes in this new version increase the weighting of points related to energy efficiency design. LEED V 3.0 now references newer versions of ASHRAE standards, which also impacts the determination of energy related credits. Since HVAC systems are a major energy consumer, these changes make efficient design even more imperative. High performance buildings should also provide improved indoor air quality. The requirements for improved air quality and improved energy efficiency often appear to be competing strategies. The actual impact of these requirements are often very climate dependent, making the right choice a difficult decision. HVAC system designers need to have the tools to be able to evaluate the interaction of applying these often competing strategies while optimizing LEED points.

Tom Kelly's second presentation was a "Green Guide for Health Care/Impacts on Mechanical Systems". The healthcare market has the highest intensity of any building segment. Energy costs coupled with indoor air quality concerns present constant challenges to hospital facility managers. The HVAC systems represent a major portion of the energy use and are instrumental in delivering good indoor air quality. At a time when facility budgets are tight it is imperative the hospital designers and facility managers look for sustainable solutions in HVAC system design and operation. The Green Guide for Healthcare was developed as a guide to achieving sustainability in healthcare and the LEED rating system for health care will be based on the Green Guide. This presentation looked at how the Green Guide addresses energy use and indoor air quality in construction and operations. Several practical tips were provided on how, through the design and operation of mechanical systems, the requirements of the Green Guide could be achieved.

### Latest Issue of *The Checklist*

For your reading enjoyment, the Third Quarter issue of [The Checklist](#) is now available on the Building Commissioning Association website.

#### About The Checklist

*The Checklist* is a free electronic newsletter of the Building Commissioning Association, and is available to members and non-members.



*Happy  
New  
Year!*

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## Aluminum: A Viable Replacement for Copper Conductors?

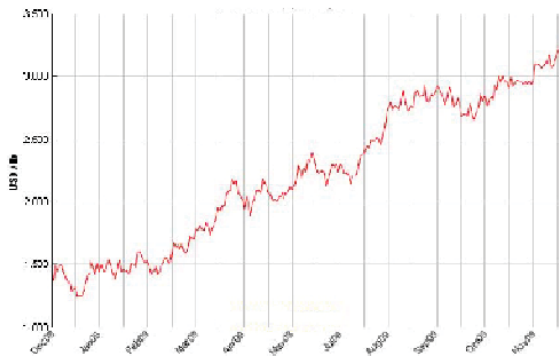
By John F. Mayan, P.E. (Liberty Engineering, LLP)

Traditional electrical distribution has used copper conductors for circuits because copper is generally perceived as the best available conductor material. Recent economic and installation conditions indicate that aluminum conductors may be a viable cost saving alternative.

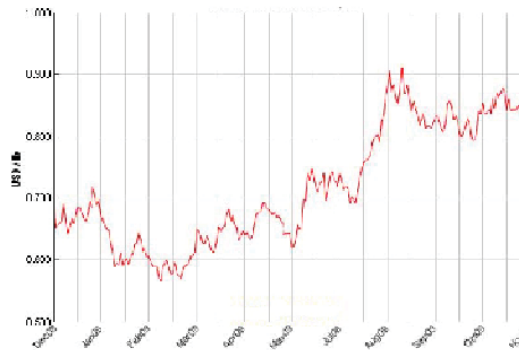
### Benefits of Aluminum vs. Copper

The major benefit of aluminum (AL) over copper (CU) is cost. Even though it might take 50% more material to deliver the same amount of power, the commodity price of aluminum is so much lower that its usage represents an immediate first-cost savings. The following three graphics tell the story. The first illustration shows the amount of material required for equivalent conductivity among different metals. The other two graphics from Kitco show the 2009 spot-pricing for aluminum and copper. CU has increased by more than 200%, whereas AL pricing has only increased by about 38%; making AL roughly 1/3 of the cost of CU.

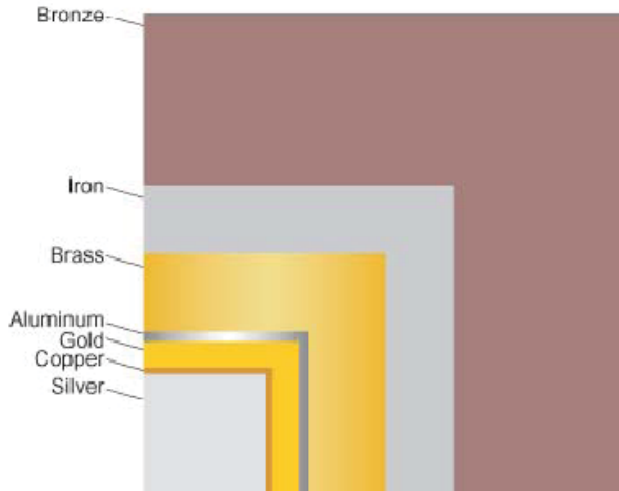
1 Year Copper Spot Pricing



1 Year Aluminum Spot Pricing



Required Material Sizes For Equivalent Conductivity



But whether it's the material of construction for the bus in a panelboard, a busway, or as a circuit conductor, aluminum will be cheaper than copper, on the order of 10 to 35%.

Aluminum is also lighter in a comparison of equivalent conductor ampacities. A 100 amp stranded AL conductor weighs about half as much as a 100 amp CU conductor: 77 #/1000 ft versus 160 #/1000 ft.

### **Benefits of Copper vs. Aluminum (continued from the previous page)**

Copper may be a better choice due to the fact that it is often easier to install and may be more corrosion resistant depending on the environment. It can also be argued that copper has a less expensive life cycle than aluminum due to the fact that it requires less maintenance, repair, and replacement which are in addition to the first-cost of purchase and installation. Another oft-cited reason for using copper can be space limitations. Copper conductors are smaller and can fit in tighter spaces than aluminum. This doesn't always change conductor spacing requirements due to voltage-necessitated clearances, but it can become a consideration.

### **Risks of Aluminum vs. Copper**

Many of the misconceptions associated with the use of aluminum have been eliminated by updated American Society for Testing and Materials (ASTM) requirements that ensure compatibility of aluminum conductors in electrical infrastructure applications. Corrosion resistance has been increased due to the use of plating materials designed to address environmental issues and dissimilar metal incompatibilities.

There may be more maintenance issues with aluminum, due to the increased coefficient of thermal expansion. This suggests that we need to pay better attention to aluminum terminations. However, many of these problems have been remedied by the use of belleville washers on bus connections torqued to recommended values, and high-compression fittings for feeder splicing and terminations. There doesn't seem to be much evidence pointing to conductor degradation over time, where sufficient maintenance practices have occurred; so life expectancy may not be an issue.

### **Things to watch out for during commissioning when using Aluminum**

Whether copper or aluminum feeders are used in a project, a quality installation must be insured. Terminations must be subjected to sufficient loading and IR-scanned to assure there are no hot spots. The resistance of paralleled conductors should be measured to assure current balance in the feeders. Also pay special attention to the terminations for the aluminum cables to make sure that approved/listed connection terminals are used with anti-oxidants as prescribed in the termination process. This includes high compression fittings with two-hole lugs rated for the specific wire size. While this list is not meant to be all-inclusive, it is intended to alert commissioning stakeholders to the importance of special care in the termination of aluminum conductors.

### **Who should use Aluminum in their projects?**

It's clear that there are savings associated with the use of aluminum, certainly above a 100 amp cable ampacity. But is your facility a candidate for the installation of aluminum conductors? A primary consideration is the availability of an electrical maintenance program. Aluminum conductor terminations should be visually inspected and IR scanned more frequently than copper, in order to avoid any expansion/contraction or corrosion issues. For best performance, aluminum should not be subjected to large temperature and humidity swings. The presence of a routine maintenance program is essential to assure reliability and uptime, not only for conductor terminations but for all of the equipment in the electrical system.

Appropriate projects may benefit from an evaluation of the use of aluminum conductors to drive cost savings. Consider weight and space limitations, maintenance program availability and performance, and then consider the potential cost savings. Your project may very well be a candidate for the savings associated with aluminum cabling.

## Your BCA National Capital 2009 Chapter Board Members

The following individuals consider it a pleasure to serve you as board members. Feel free to contact any one of them for information on committee work, events or what it means to be a board member.

Gretchen Coleman  
BCA NCC President  
Gretchen Coleman Commissioning  
Group, LLC  
<http://www.gccxg.com>

Tony DiLeonardo  
BCA NCC Vice-President and  
Membership Committee Chair  
WFW Engineering  
<http://www.wfweng.com/>

Ken Hahn  
BCA NCC Treasurer  
RMF Engineering  
<http://www.rmf.com/>

Mike Bilecky  
BCA NCC Board Member  
Brinjac  
<http://www.brinjac.com/>

Ray Smith  
BCA NCC Board Member and  
Communications Chair  
GHT Limited  
<http://www.ghtltd.com/>

Emmillee Hogan, Liberty Engineering  
BCA NCC Board Member and  
Association Board Liaison  
<http://liberty-eng.com>

### **SPONSORSHIP Request**

Our chapter has several sponsors! The GMU Commissioning Seminar and Owners Forum had Event Sponsors who committed \$1500 (Hess & Dustin) who are also automatically Chapter Sponsors for a year. Chapter Sponsors for the next year (whose logos are include above) include Butler Balancing and TriState and newly committed Pritchett Controls, and Chapin Enterprises. Brinjac Engineering and Wick Fisher White are Corporate Sponsors as well as event sponsors. Our chapter can use your sponsorship. Send off a check to our treasurer, Ken Hahn, to become a Corporate Sponsor.

Please send your checks made out to the National Capital Chapter of the BCA to:

Ken Hahn, NCC Treasurer  
RMF Engineering Inc.  
5520 Research Park Drive  
Baltimore, Maryland 21228

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the NCC BCA Board and  
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newsletter!**



**RMF ENGINEERING, INC.**

