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Letter from the President

BCA Members,

It is such an honor to have been elected president of the BCA. The association is strongly positioned for an exciting future, and I have great enthusiasm for my new role in leading it towards accomplishing its goals in the coming year. I’d especially like to thank outgoing president, Ed Faircloth, for his many contributions. The association has grown tremendously in recent years, becoming a much more robust organization, and I think we would all acknowledge that we have Ed’s leadership to thank for that.

As we begin working to accomplish the goals recently established at the BCA leadership conference, members may find it helpful to understand a little bit of my background. I began my relationship with the BCA in 2003, when I helped to found the Northeast Regional Chapter. As founding president of the chapter, I helped to develop the chapter’s charter and to obtain the necessary endorsements and membership. I served as president at the chapter level for three years. And so, that’s where my BCA roots were established. Over the years, I became more involved at the national level of the association, joining the International Board of Directors (IBOD) in 2009, becoming vice president in 2010, and now today becoming the association’s president.

From the beginning, I have developed some great friendships and relationships with members of the BCA. Those friendships and connections have also been incredibly important to me professionally. On many levels, belonging to the BCA has been valuable, rewarding and also lots of fun. The BCA comprises people with like minds and a shared interest. Our businesses may sometimes compete, but we all have common goals and common interests to advance the commissioning industry. These connections make for a really great BCA experience.

On page 7 of this issue of The Checklist, BCA Secretary Michael Chelednik writes about the BCA leadership conference that occurred Feb. 3 to 5. How the IBOD can help strengthen our chapters this year was one of the big themes of the conference. The BCA will also continue its work in the three key areas of 1) best practices, 2) education and 3) outreach.

From a best practices perspective, a new white paper on commissioning new buildings will be completed and issued. This important work is being led by BCA member Karl Stum and IBOD Director Bruce Pitts.

On the education side, we’re going to broaden our already successful webinar series. Also, on the education front, we’re collaborating with a number of organizations to develop and implement a national commissioning provider training program. The BCA is providing the technical content for this effort. The BCA will also continue to provide five-day, co-branded training courses with the University of Wisconsin.

With regard to outreach, we are for the first time ever, coproducing the National Conference on Building Commissioning (NCBC). This is a major win for the BCA, and a big responsibility that will require a concerted effort from BCA volunteers and staff. The BCA has had recent productive discussions with the U.S. Department of Energy; U.S. Green Building Council; American Institute of Architects; American Society of Heating, Refrigerating and Air-Conditioning Engineers; National Environmental Balancing Bureau; and others, and plans to work more closely with these organizations in the years ahead. Closer to home, the BCA staff is implementing a new website that includes a social networking platform that will increase collaboration and communication at all levels of the BCA.

There will be a lot of opportunities to be involved and engaged in 2011, from supporting the NCBC to helping organize and deliver chapter events. The Marketing and Outreach Committee will be developing some event ideas that can be rolled out at the different chapter levels and is planning to provide support for these events.

I would like to thank the board for electing me during this exciting time, and I would especially like to thank the individual members of the BCA for making it the strong organization that it is today.

We have much to accomplish this year. I look forward to being able to share our successes in 2011.

Sincerely,

Mark F. Miller, PE, CCP, CEM
BCA President
Member Spotlight

with John Villani

Home city & state: Evanston, IL

Employer: Grumman/Butkus Associates

Position: Associate

BCA Member Since: 2001

Years in the building commissioning industry: 11

Volunteer positions held with BCA:
- President, Central Chapter
- Vice President, Central Chapter
- Secretary, Central Chapter

Major BCA Accomplishments:
- Presented at NCBC numerous times
- Webinar presenter in 2010
- Played an active role as a Central Chapter board member
- Represented BCA at Greenbuild 2010 and other conferences

The BCA Central Chapter has three new board members. Does that signify major changes are underway? The major change with the Central Chapter is there’s a big push to renew membership, get in contact with our members, and really try to push the chapter to be a more active. The new board members and existing board members are highly committed to doing that. We’re looking forward to several chapter events in 2011 that will be an opportunity to reconnect with our membership face-to-face.

What’s driving this new activity? Over the last several years, there’s been a lot of growth and momentum. You’re actually seeing the results of the hard work that’s been taking place. We’re turning a corner. Previously, there were only two or three board members doing things. Now there are seven or eight board members that are all actively participating, so the progress of the chapter is really culminating. Like other chapters, we have monthly teleconferences, and in years past, there would only be a handful of people in those calls. Now, over the past year, we’ve seen a tremendous increase in the amount of people calling in, both from the board and the membership. That’s the momentum I’m talking about. As more people become engaged, we’re able to reach out and do more activities.

What events do you have in mind for 2011? In 2011, we’ll be fortunate enough to have NCBC (the National Conference on Building Commissioning) taking place in Cincinnati, Ohio (Aug. 10-12). With the NCBC being held in our region, there will be a strong draw of our membership to the event. This will afford us a great opportunity to have an all-hands Central Chapter annual meeting at the event.

What do you want to achieve with an all-hands Central Chapter meeting? The challenge for the Central Chapter, and other chapters, is that we cover a large geographic area. And as a result, face-to-face meetings are extremely challenging to take place. The NCBC offers a significant enough of an event that we’re optimistic that it will be a draw for many of the Central Chapter members. We’re looking forward to a very successful Central Chapter meeting at NCBC that will gain the attendance of the majority of our members.

The main agenda for the meeting is reconnection with membership and membership growth. That’s one goal. The second is planning for 2012 events. We actually already want to start planning for a 2012 all-day commissioning event, similar to the Northeast Chapter, which has an all-day commissioning event.

The other events are to have several regional Central Chapter meetings that would be held in locations throughout the chapter to reconnect with region members. St. Louis, Chicago and Detroit are possible locations.

The Central Chapter is also actively pursuing opportunities with other associations, specifically ASHRAE (American Society of Heating Refrigeration and Air-Conditioning Engineers) and USGBC (U.S. Green Building Council), to conduct educational seminars and presentations at those associations’ meetings. The Central Chapter has submitted to the USGBC for the state of Illinois. The USGBC had an RFP (request for proposal) process for presentations, and we submitted for the entire state. We’re actively pursuing opportunities to assist and present at other association meetings.

What topics are under consideration? That’s yet to be determined,

continued on p. 16
Mark Your Calendars!

NCBC to Colocate with GovEnergy in Cincinnati, Ohio

Aug. 7-10
GovEnergy

Aug. 10-12
NCBC

BCA is excited to be partnering with PECI to produce the National Conference on Building Commissioning. Together, BCA and PECI will bring more experts to the table to deliver an engaging and thought-provoking conference.

The 2011 NCBC will be colocated with GovEnergy, a training workshop and tradeshow for federal agencies. You will gain increased exposure and access to large building owners and managers, while receiving the exciting training opportunities you’ve come to expect from the nation’s top commissioning conference.

For the past 18 years, NCBC has been a vehicle for generating and refining best practices and promoting the benefits of building commissioning. Together, participants have accomplished so much! Best practices have been established, guidelines are plentiful, and the ASHRAE commissioning standard is right around the corner. The market shift to make commissioning business as usual is almost complete.

Please join us in Cincinnati to learn about advancements in the industry, and join the conversation as we learn from each other.

Visit www.peci.org/ncbc for more information

Co-produced by
Align your company with a champion in the field and increase your visibility among our growing membership.

The BCA is offering an expanded sponsorship program to highlight your company’s commitment to commissioning and its support of the industry.

Now, your sponsorship benefits both the BCA, and new this year, the National Conference on Building Commissioning (NCBC), our industry’s premium conference.

The BCA is partnering this year with PECI to bring you NCBC, which is colocating with GovEnergy in Cincinnati, Ohio, in August. Your sponsorship allows us to continue developing a vibrant and dynamic infrastructure for the commissioning industry. Plus, your involvement and commitment to the industry will be seen by three audiences: BCA members and partners, NCBC attendees and GovEnergy attendees.

Depending on your level of participation, whether silver, gold or platinum, you will receive:

- One or more BCA memberships
- Logo displayed to BCA website visitors and 7,500+ recipients of e-newsletters and e-marketing
- NCBC registrations, advertising in conference materials and verbal recognition during the conference.

Our 10-page sponsorship prospectus ([www.bcxa.org/about/sponsorship.htm](http://www.bcxa.org/about/sponsorship.htm)) provides all the details. There are many options to suit your company’s needs and budget.

Whichever level you choose, you’ll join the ranks of these industry leaders and current BCA sponsors.
BCA Leadership Conference Focuses on Chapters, Volunteerism

With the BCA increasing its support of chapters in the form of more financing and staff time, the association is asking for more volunteerism at the chapter and committee level. What do you want from your chapter and from the overall BCA? The leadership wants you to answer these questions and get involved. This was the recurring theme during this year’s BCA leadership conference.

The International Board of Directors (IBOD), chapter boards of directors and committee chairpersons gathered in a cold and sunny Las Vegas from Feb. 3 to 5 to discuss this theme and to conduct official business. After nominating and electing a new Executive Committee, the group of 45 BCA leaders methodically worked through an agenda that included reviewing the association’s five-year strategic plan and revising marketing strategies for 2011.

Other highlights included a presentation from an outside expert who taught the group how to raise funds, and how to recruit and retain volunteers. BCA staff member Catherine Craglow also demonstrated a new BCA website that the association is developing to provide more interactivity and social networking.

Before the conference, our Executive Committee, President Ed Faircloth, Vice President Mark Miller, Treasurer Dave Conner and Secretary Michael Chelednik, along with association manager Liz Fischer and certification board liaison Bill McMullen, met with ASHRAE President Lynn Bellenger and the ASHRAE Task Force on Commissioning to explore ways in which the organizations can collaborate more closely. The meeting was very successful and a spring meeting is planned with other organizations. ASHRAE is the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

EXECUTIVE COMMITTEE ELECTIONS
The leadership conference began with President Ed Faircloth declaring the meeting open, one of his last duties as president, and the election of a new Executive Committee. BCA bylaws state that a director may only serve two consecutive terms of three years. Ed completed six years of service, the last three as BCA president. During

continued on p. 11

www.bcxa.org
About 20 years ago, my colleagues and I were building a school equipped with water source heat pumps. During construction, we noted less than desirable practices in terms of piping cleanliness. We notified the contractor and were assured that every assembly was “ragged out” and cleaning and flushing would take care of any other contaminants. Then the building came on line, and all the heat pumps in one wing regularly shut down on internal safety controls. We took readings, ran trends and investigated to the conclusion that the problem was low water flow due to blockage in the pipe. We even identified the section where we thought the blockage was located. The contractor resisted for weeks before draining the system and pulling apart the assembly in the suspected area. We found a Korean soda can in an elbow fitting right where we predicted the blockage would be. The contractor clearly had not maintained cleanliness, nor “ragged out” the lines as promised, as this soda can was likely in the pipe before delivery.

The commissioning process when properly applied is basically the same regardless of the system. As the soda can story illustrates, each system does, however, have unique elements that warrant further discussion. This article focuses on applying the commissioning process to piping, pumps, expansion tanks, air separators, make-up systems and hydronic appurtenances, leaving the discussion of boilers and chillers for another day.

OWNER PROJECT REQUIREMENTS (OPR) REVIEW AND DEVELOPMENT

Often, subjects like maintainability, access, labeling, control sequences, system preferences and training requirements are not fully developed early enough. Without proper definition, subsequent work such as the specifications, tends to contain whatever was used last time, or the designer’s preference. The OPR is intended to remedy this.

Important hydronic related OPR topics include:

- Water treatment strategies for open and closed systems. Maintenance staffs often have strong preferences about methods because of past experiences, existing installed systems, chemical stocking or a current relationship with an outsourced chemical treatment provider.
- Freeze protection. Use of glycol results in lower heat transfer efficiencies and adds to first and maintenance costs due to the glycol and feed system. One client we work with has a rigorous cooling tower winterization process built into its scheduled preventive maintenance program, so the client is not interested in complex cooling tower freeze protection systems.
- Pipe insulation and cladding. When you walk into a well laid out central plant with clean painted floors and color coded plastic clad piping, pride of ownership shows and you know the systems are being better maintained. It’s also possible to see insulation systems a few years old ripped apart and not properly re-insulated where maintenance was done and no removable insulation components were installed.
- Control system integration including sensor wells, chemical feed controls and pump and VFD control.
PROJECT DOCUMENT REVIEW
A good review exercise for hydronics is to do a flow rate sum check on terminal devices and compare to pumps and line sizing. The design is reviewed in consideration of how the system will be balanced, valve placement for zone isolation, dielectric fittings on dissimilar metals, maintainability, general pipe layout and pipe sizing. A common issue on variable speed pumping systems is either too many three-way valves (no variance in flow) or too few three-way valves included in the system (incorrect minimum flow). Placing three-way valves at the end of hydronic runs is important so that the two-way control valves along the way have instant access to hot water, improving dynamic response and control. Installation and start-up details should be fully developed at the design phase, including requirements for pressure testing, a cleaning and flushing plan, water treatment, expansion tank pre-charge, system pressure setting, glycol feed start-up, pump start-up and VSD start-up.

CONSTRUCTION OBSERVATIONS
Key areas to observe include pipe routing, correct installation of components, insulation, cleanliness and capping of line ends. We want to be sure there are no soda cans left in the pipe. On one project, someone was soldering the three-way valves in backwards. Needless to say, the contractor was happy this problem was found after only a few units were installed. Field observations are a prime opportunity to develop trust and appreciation between the commissioning authority and contractor, an important element for success.

START-UP
Monitor and witness selected start-ups to include pressure testing, cleaning and flushing, make-up systems (including glycol feed) and pump start-up. One of the most important considerations at this point is the cleaning and flushing. Improperly cleaned systems result in contaminants such as copper shavings, plastic shavings and solder flux gobs blocking the strainers and damaging control valves.

INSTALLATION VERIFICATION
Verify that pipe routing is correct, installed components are correct, insulation is correctly installed, systems are accessible and labeling is correct. One useful technique is following the pipe routes on the schematic and comparing them piece by piece to the field install to find missing components and incorrect routes. On a recent project, a 12” chiller bypass line was routed to the wrong side of the loop. On another project, a fluid cooler three-way valve was installed backwards making it impossible to cool the water source heat pump loop. Obviously, these errors would be noted later in testing, but finding them earlier in the process allowed the contractors to correct them earlier, thus saving time.

TESTING AND BALANCING (TAB) VERIFICATION
The TAB report is reviewed and also spot checked in the field by having the TAB contractor demonstrate a percentage of reported values. For automatic flow devices, it is a simple matter of verifying the pressure drop is within range. For circuit setters, the differential pressure and valve data is used to confirm flow. Pump curves are confirmed by checking differential pressure at operating conditions and at dead head.

FUNCTIONAL TEST
Hydronic-specific subject matter is only a small part of functional testing, as the hydronic loop is a subset of the higher level testing involving the building automation system. On a component level, the sensors should be checked for calibration, pump hand-off-auto switches verified, glycol pump operation tested and the glycol low level alarm verified.

OPERATIONS AND MAINTENANCE (O&M) REVIEW, SYSTEMS MANUAL
O&M manuals often contain only information on what was installed and not much on how to take care of it. Also, there is typically nothing that discusses maintenance of the system as a whole, just the components. The systems manual is a document intended to bridge this gap, and is typically developed by the commissioning authority. For hydronic systems, this manual might include valve tag schedules with shut-off locations, water treatment chemicals and procedures, sensor locations, seasonal procedures, control interactions with pumps and overall system diagrams.

TRAINING VERIFICATION
During training, key elements include demonstrating the water treatment and make-up systems, and checking glycol levels, pump maintenance and location of shut-offs.

Bryan Welsh, PE, CCP, CCA, LEED AP, is president of Welsh Commissioning Group, located in Auburn, Washington.
Numerous evaluations and studies have proven the cost-effectiveness of building commissioning. Evan Mills produced one of the most comprehensive and recent assessments on the topic in his 2009 study "Building Commissioning: A Golden Opportunity for Reducing Energy Costs and Greenhouse Gas Emissions." In this study, Mills concludes that as a building owner you would be a complete nincompoop (my words, not his) not to have your building commissioned. The Mills report demonstrates a 13 to 16 percent whole building energy savings from commissioning with a median payback as low as one year for existing commercial buildings.

Results like these immediately lead one to ask the question, if building energy commissioning is so great; why are relatively few building owners doing it? Mills takes a whack at this lingering question—and when reading his study I eagerly leapt to his conclusions on the topic. The reasons for underutilization were mostly the usual suspects including “lack of awareness” on the part of the customers and “misperceptions” of the benefits in the marketplace. Mills also pinpoints several other reasons for commissioning “underutilization.” These include:

- omission or obfuscation of the strategy in most energy efficiency potentials studies
- tension between standardization and recognition that each building is unique

Okay, so the closest that I’ve ever come to commissioning a building myself is programming my thermostat, so what do I know? But do we really think that there are just hundreds of potential commissioning customers out there who were just about to invest in commissioning, but decided not to because all of that darned “tension between standardization and unique approaches”? And is it really the case that those in the building commissioning industry are any less professional, than, say, those in the landscape maintenance service industry (or other building services)? I know that these kinds of things impact the organization of a particular industry, which can, in turn, impact the success of the industry. But if I had to name one thing that plagues the implementation of building energy commissioning, it’s the marketing. It seems like the industry has a great product—this has been proven time and again—now it’s time to sell it!

Now I’m no marketing genius, but I’d say if you want to get building energy commissioning off the ground you either need to make wasting energy scary or saving energy sexy.

Let’s try scary first. My neighbor, a practical, intelligent, thrifty person, calls a commercial pest control service to come spray toxic pesticides around her house nearly every time she sees a spider in the vicinity of her home. A number of people have tried to correct her “misperceptions” about spiders and her “lack of awareness” about the potential harms of overusing neurotoxic pesticides in and around her house, and yet she perseveres in this chemical warfare. Why? Spiders freak her out! And why does she call this particular company? Because they are the ones that distribute that advertisement with close-up pictures of nasty flesh-eating wounds committed by villainous spiders! Never mind the miniscule odds of contracting this kind of wound or the fact that very few of the perpetrators even live in our region, flesh eating wounds are yucky and things with eight legs are scary.

So can wasting energy be this scary? Maybe. Energy costs money, and spending money can be scary. But marginally reducing a building’s energy cost in undefined and uncertain ways with commissioning introduces its own element of fear, and thus, the overall fear factor for the building owner may not be reduced. The growing sensitivity and fear about global climate change may be another angle to make wasting energy scary; however, the connection between global climate change and how we manage our thermostats is often not
Ed’s tenure, the BCA has seen a large increase in membership and is recognized by many organizations and government agencies as the leader in building commissioning. Fear not, Ed will remain active in the BCA—as a non-voting member of the IBOD in the role of advisor and past president, as the BCA liaison to the U.S. Green Building Council (USGBC), and as an active member in the Marketing and Outreach Committee.

Three of the four Executive Committee members remain the same. Mark Miller was elected president, Bill McMullen is our new vice president, and Dave Conner and Michael Chelednik stay treasurer and secretary respectively.

**STRATEGIC PLAN**

The IBOD then reviewed the BCA’s Strategic Plan and Goals for 2010 to 2015, originally drafted during the 2010 leadership conference. This action plan breaks down the goals into an accountable, measurable timeline of work in three areas:

- Best practices—The Standards Committee is close to completing the Best Practices for New Construction, and is holding weekly conference calls to finish the guide. There was a delay with the document while the committee worked on the comments to USGBC’s 2012 LEED Rating Systems for Commissioning.

- Education—We need to concentrate on uploading a library of PowerPoint slides, Webinars and other training materials in 2011. We will be able to accomplish this within our upcoming interactive website.

- Industry promotion—In 2010, the Executive Committee, Liz Fischer and Bill McMullen met with National Environmental Balancing Bureau, American Institute of Architects, U.S. Department of Energy and USGBC to promote the BCA and discuss future collaboration. We also met with ASHRAE prior to the leadership conference. We plan on meeting with other organizations in 2011.

**MARKETING STRATEGY**

Based on a survey, the Marketing and Outreach Committee proposed to shift the focus of the BCA back to the chapters. Fifty percent of the committee’s budget is allocated to chapter events with each chapter determining its needs. We will continue to support trade shows such as GovEnergy and USGBC’s Greenbuild. The remaining budget is allocated to print advertising and interactive media.

The afternoon session was dedicated to training the IBOD on sponsorships and fundraising. The BCA does not make a lot of money from membership dues, Webinars or book sales. The BCA relies on sponsorships and volunteers. Sponsorships are the resource that allows the BCA to attend trade shows, visit other organizations and print education materials. The BCA hired an expert to teach us how to fundraise, and how to recruit and retain volunteers. The IBOD learned how to formalize a financial target, tell the BCA story and implement tips on fundraising.

**SAVORING OUR SUCCESSES**

The conference ended with the IBOD, chapter boards of directors and committee chairpersons meeting over dinner and reviewing the association’s successes in 2010:

- Formation of three chapters: Texas, Western Canada and California

- Increased membership by 8 percent to over 1,200 members, almost double the members in 2006

- New collateral to spread the BCA message with a solidified value proposition

- CCP exam now online

- Beginning the important work of unifying commissioning certification

- BCA representation in the ASHRAE commissioning standards committee, GovEnergy planning committee and Greenbuild education planning committee

- Chapter handbook update

- Outreach and education events in the Southeast and Northeast

- Strong BCA member attendance at NCBC (National Conference on Building Commissioning) in Chicago

Michael Chelednik, AIA, is the BCA Secretary, the Northeast Region representative and BCA liaison to the AIA.
The Alameda County Juvenile Justice Facility in San Leandro, California, was the first juvenile prison in the United States to achieve LEED Gold certification, and the first large-scale, ground-up facility in the county to be delivered under a design-build contract.

The three main elements to the campus include a three-story, 122,000 square foot courthouse with five courtrooms and office space for juvenile courts, probation, district attorney and the public defender; a 360-bed, 196,000 square foot juvenile housing and detention complex; and a 71,000 square foot service and support facility that includes a central utility plant, kitchen, maintenance areas and administrative spaces. The entire $176 million project, conceived in 2001 and completed in 2007, is 396,000 square feet over 18 acres.

The project’s commissioning, energy efficiency and sustainability goals were incorporated into the planning during project inception. I was hired by the county during this early phase to work with the bridging architect to develop commissioning requirements and energy performance specifications, the latter supported by extensive energy performance modeling, and to assist in the planning of sustainable elements. This work led to performance-driven conceptual design phase bridging documents that became part of the request for proposals for prospective short-listed design-build firms. I was also involved in design-builder interviews and assisted in evaluations of proposals and presentations related to commissioning and energy performance capabilities.

The design-build team of HOK architecture and Hensel Phelps Construction was ultimately awarded the detailed design and construction for the facility. My company, Enovity, was subsequently contracted by the county under a competitive process to provide LEED and total building systems commissioning for the project, and I became the principal in charge of commissioning. Commissioning encompassed LEED systems and all electrical, plumbing and fire/life safety systems; telecomm cabling infrastructure; and electronic security systems. The Enovity team included Salas O’Brien Engineers for electrical and plumbing systems commissioning, and Professional Systems Engineering for security systems commissioning.

Above: The 396,000 square foot, $176 million project was the first of its kind in Alameda County.

During the detailed design phase, the Enovity team performed commissioning reviews at various milestone submissions of design development and construction documents. Enovity authored the commissioning plan and led the county’s effort for managing the commissioning process through the construction phase and into warranty. The commissioning plan called for the design builder to name a commissioning coordinator, who was responsible for coordinating the commissioning activities of
subcontractors and acting as a single point of contact to the Enovity project manager. Enovity reviewed submittals concurrently with the engineer of record, developed the installation verification forms, reviewed startup forms and the testing, adjusting and balancing plan submitted by the design builder, and wrote the functional test forms for commissioned equipment.

Along with the Enovity project manager and key team members, I attended commissioning coordination meetings, often held on a weekly basis, with Hensel Phelps and county staff, beginning early in the construction phase to address controls, systems coordination, scheduling, testing requirements and project responsibilities. This close coordination was invaluable in the planning and execution of campus-wide integrated systems testing during the later phases of construction completion.

The Enovity project manager coordinated, and various team members witnessed, functional performance systems tests for all systems. A critical element of the process was testing of electronic security systems, which involved integration of the security monitoring and control system, personal duress system, fire alarm system, closed circuit television system, integrated communication system, nurse call system, television signal distribution system, watch-tour system and card access control system. Security systems commissioning was performed using “chain of custody” sequence validation testing throughout the campus. This method involved testing each security system in a sequence that was called upon to provide control or to restrict access. The sequence testing encompassed the uninterrupted process of escorting a juvenile from arrival at the facility, then through processing, medical examination and into a housing unit, as well as to and from the courthouse. Monitoring, surveillance and staff communica-
tion systems were all involved in this testing. Finally, whole facility testing was performed to simulate an electrical systems shutdown and activation of life-safety, emergency and security and monitoring systems.

The building automation system was a Delta BACnet control system that was integrated to a new Tridium Niagara enterprise automation system. Enovity established a Tridium server in its own offices and mapped the Niagara points to facilitate a continuous monitoring protocol through performance trending and systems evaluation beginning at functional testing and throughout the first year of building operation.

The Enovity team also oversaw the commissioning of the emergency generator, automated switchgear and uninterrupted power supply systems that required component testing and integrated systems sequence testing. An 850 kW rooftop solar power array was added to the project during construction, providing 66 percent of the power required for the facility.

The facility received eleven awards, including the California Governor’s Environmental and Economic Leadership Award; the California Construction Best of 2007 Awards Program, Green Building, Award of Merit; the Design-Build Institute of America, Western Pacific Chapter, Design-Build Excellence Award, Best Project, Public Sector; the Design-Build Institute of America, National Design-Build Excellence Award, Best Public Sector Building; and the Engineer Design + Construction Excellence in Design Award, Government Building Category.

Greg Cunningham, AIA, LEED AP, is co-principal of Enovity and oversees the firm’s commissioning work in California, Arizona and Hawaii.
Renewing Our Commitment to the Essential Attributes

Demand for building systems commissioning services has been growing for the last 20 years. That growth appears to have continued unabated, even through the recent recession. While the number of new design and construction projects has plummeted, I believe the percentage of those projects being commissioned has increased. This has been a great market validation of the value of commissioning but has also presented some challenges.

The number of people offering commissioning services has increased in an attempt to fill the demand, and an influx of less experienced and un-indoctrinated commissioning authorities calls for a review of the Building Commissioning Association’s Essential Attributes of Building Commissioning. I recommend that even experienced commissioning authorities take time to brush up on the attributes. It is critical to all building commissioning professionals and our hard-earned reputations for adding value to projects that we maintain our standards.

The 11 essential attributes create a framework within which commissioning should be planned and implemented on every project. They are broad enough to be universally applicable, regardless of project size, team, schedule, delivery process, systems to be commissioned, or any of the other elements of design and construction that make each project unique. On the other hand, the attributes are clear and specific enough for building owners to objectively determine if they are being applied to a particular project.

The attributes are the minimum requirements for the process to be called “commissioning.” They are not exclusive of other elements that can be added to a specific project’s definition of commissioning, but the essential attributes are just that—essential. If a commissioning provider or building owner decides that one or more of the attributes is not important or valuable for a project, perhaps the process should be called something else.

**ESSENTIAL ATTRIBUTES OF BUILDING COMMISSIONING**

BCA considers the following attributes to be so fundamental to effective building commissioning that all members agree in writing to adhere to them whenever they serve as a project’s commissioning authority.

1. The commissioning authority (CxA) is in charge of the commissioning process and makes the final recommendations to the owner regarding functional performance of the commissioned building systems.

2. The CxA is an objective, independent advocate of the owner. If the CxA’s firm has other project responsibilities, or is not under direct contract to the owner, a conflict of interest exists. Wherever this occurs, the CxA discloses, in writing, the nature of the conflict and the means by which the conflict shall be managed.

3. In addition to having good written and verbal communication skills, the CxA has current engineering knowledge of commissioning.

**“Member Spotlight” continued from p. 4**

We have presentations on general commissioning, retro-commissioning, and commissioning for LEED. We have commissioning for plumbing systems and electrical systems. There’s one I’m working on called Maximizing the Benefits of Commissioning. So we have a collection of things to offer, and we’re actively pursuing opportunities to work in conjunction with other associations.

What are your personal goals for this year, and farther into the future? Aside from these, I’ve been discussing with the BCA to present two more webinars—healthcare webinars—one in the spring and one in the fall.

How’s the commissioning business been in general? First, I need to put a caveat on that. The firm I work for is selective and we have a significant focus on the healthcare market segment. So even while the commissioning market continues to grow rapidly, the recession and the economy have taken a downturn on new construction, and therefore, we have seen a downturn on the number of health-
knowledge, and extensive and recent hands-on field experience regarding:

a. Building systems commissioning
b. The physical principles of building systems performance and interaction
c. Building systems start-up, balancing, testing and troubleshooting
d. Operation and maintenance procedures
e. The building design and construction process

4. For each project, the commissioning purpose and scope are clearly defined in the CxA contract.

5. The CxA recommends the commissioning roles and scope for all members of the design and construction teams be clearly defined in:
   a. Each design consultant’s contract
   b. The construction manager’s contract
   c. General Conditions of the Specifications
   d. Each division of the specifications covering work to be commissioned
   e. The specifications for each system and component for which the suppliers’ support is required

6. Each project is commissioned in accordance with a written commissioning plan that is updated as the project progresses. The commissioning plan:
   a. Identifies the systems to be commissioned
   b. Defines the scope of the commissioning process
   c. Defines commissioning roles and lines of communications for each member of the project team
   d. Estimates the commissioning schedule
   e. The building design and construction process

7. On new building commissioning projects, the CxA reviews systems installation for commissioning-related issues throughout the construction period.

8. All commissioning activities and findings are documented as they occur. These reports are distributed as they are generated, and included in the final report.

9. The functional testing program objectively verifies that the building systems perform interactively in accordance with the project documents. Written, repeatable test procedures, prepared specifically for each project, are used to functionally test components and systems in all modes of operating conditions specified for testing. These tests are documented to clearly describe the individual systematic test procedures, the expected systems response or acceptance criteria for each procedure, the actual response or findings, and any pertinent discussion.

10. The CxA provides constructive input for the resolution of system deficiencies.

11. Every commissioning project is documented with a commissioning report that includes:
   a. An evaluation of the operating condition of the systems at the time of functional test completion
   b. Deficiencies that were discovered and the measures taken to correct them
   c. Uncorrected operational deficiencies that were accepted by the owner
   d. Functional test procedures and results
   e. Reports that document all commissioning field activities as they progress
   f. A description and estimated schedule of required deferred testing

Care commissioning projects. However, while that has been a negative, what we’ve seen is a tremendous increase in the retro-commissioning marketplace. Very simply, while clients don’t have the money to implement new construction projects, they are turning inward and saying, how do I improve what I have? Let me improve my bottom line by improving what I already have. There’s tremendous opportunity in the retro-commissioning marketplace.

Anything else to add? Some of the best compliments I have received professionally from coworkers, designers, contractors and clients are their saying how passionate I am about commissioning. With over 10 years of projects and seeing the results and benefits commissioning and retro-commissioning can bring to our clients, commissioning is something I really believe in. I have found through my involvement with the BCA many others who likewise share this passion about our industry. I challenge all BCA members, to become involved in your local chapter or BCA committees. I promise you that you will meet some of the best individuals and leaders in our industry, and by getting involved you will enjoy what you do that much more.
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April 6
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Get details and register online at
www.bcxa.org/events/webinars.htm.
CCP™ Updates

The BCA congratulates the following individuals on achieving the Certified Commissioning Professional (CCP) designation:

Shane Doig, CCP  
Welsh Commissioning Group  
Auburn, WA

Daniel Frasier, PE, CCP  
Cornerstone Commissioning, Inc.  
Boxford, MA

Louis Starr, CCP  
Heery International  
Portland, OR

They join the ranks of some of the most qualified commissioning providers in the industry. Way to go!

The CCP exam is online and available at more than 200 testing sites. To apply, review the Candidate Bulletin and download the application at www.bcxa.org/certification.

Not sure if you are qualified? Send us your questions at certification@bcxa.org or call the BCA Hotline at (877) 666-2292.

“Extreme Commissioning Makeover”  
continued from p. 10

made in day-to-day decisions. It also is possible that global climate change for any given individual is just too scary and overwhelming, so rather than take action to combat these fears, it’s easier to just bury one’s head in the sand and hope someone else will take care of it. So although there is some potential in the fear-tactics marketing arena, it may be that in the near-term, building performance commissioning’s best marketing hope may be making saving energy sexy.

Making this topic sexy is a huge challenge. For one thing, the primary slogan with regard to most all energy-saving products and services is the “great payback” argument, or rather “a penny saved is a penny earned,” which is, let’s face it, about as sexy as Jimmy Carter turning down his thermostat and buttoning up his cardigan. Are we all drinking Starbucks lattes while talking on our iPhones because of the great payback? No. Sure, these might be different markets, but good marketing is key to these products’ success and sex appeal. So what makes something sexy? I’ve got no idea. I neither own an iPhone nor drink lattes. But I do know this—a “green building” is sexier than an “energy-efficient building.” I’m not sure why this is the case, but I will say, just off the cuff, that a “green building” denotes something cool and progressive while the term “energy-efficiency” is mostly just nerdy and boring.

I was at an energy engineering workshop not long ago where an engineer in the building commissioning industry told me that he doesn’t even bother to try to sell people on building energy commissioning by itself anymore. He said that he has much better success selling building owners on becoming certified through a sustainable building design rating system, such as LEED, and since commissioning is a prerequisite for becoming LEED-certified, he is able to accomplish his goal of getting the building commissioned. So why is he so much more successful in getting people to cough up the more substantial investment to become LEED-certified? Because LEED certification is sexier than just being a plain ol’ “commissioned” building. So if you’re having trouble getting people to sign on for building commissioning on its own unsexy merits, you might try coupling it with something sexier—let’s say a new paint job or some fancy landscaping or throw in an iPhone to communicate commissioning results. And if that doesn’t work, offer to exterminate the flesh-eating spiders from their building’s ducts and crawl space as part of the commissioning process. That ought to do it.


Katie Allen Cort is an economic analyst at Pacific Northwest National Laboratory, where she supports a variety of projects related to the assessment of energy-efficiency programs, technologies and research.
Whether you are interested in ensuring that your new building systems perform interactively in accordance with operational needs or identifying opportunities to improve conditions and achieve savings in an existing building, Eaton’s Energy Solutions group is focused on helping you manage the integrated, often complex process.

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