



Design & Construction
Division
The Global Voice of Quality™

DCD QUALITY CONNECTIONS

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Vision: *To be the World's recognized champion and leading authority on all issues related to quality in realizing and maintaining the built environment by the design and construction community and its customers.*

Mission: *The Design and Construction Division shall advance individual performance excellence worldwide by providing opportunities to members for learning, quality improvement, and knowledge exchange.*

MESSAGE FROM THE CHAIR/EDITOR

It's conference time again and the DCD will be running a Quality in Sustainability Conference within a Conference (CwC) along with the Energy and Environmental Division as we have for the past three years. Please see below for session dates and times. By the time you read this we'll be planning for 2013. To get involved contact Catherine Hader (Catherine.hader@aecom.com).

World Conference on Quality and Improvement

May 21-23, 2012 · Anaheim, CA · Anaheim Convention Center

Also Featuring Programs on Healthcare, Software, Sustainability and Continuous Improvement.

The DCD will also be holding its May monthly meeting on Sunday May 30th from 3:00 PM to 4:30 PM in our hospitality suite at the Anaheim Hilton adjacent to the Anaheim Convention Center. The agenda is as follows:

*Welcome from the Chair
Treasurer Report
Membership
Business plan
DAC update
ASQ Headquarter
Committee Chair Reports
Open Discussion*

*Chuck Kanapicki
Bill Hall
Danny Kahler
Celia Gray
Ray Crawford
Jessie Kasberger
Various*

Admission is free and we hope you'll have the chance to join us.

2012 Quality in Sustainability Conference

May 21-23, 2012 · Anaheim, CA · Anaheim Convention Center

Environment, energy efficiency, and quality are just a few essential elements of sustainability. The Quality in Sustainability Conference sessions tie together these elements with the principles and practices of social responsibility, providing useful tools attendees can readily implement within their organization or business.

[Quality in Sustainability](#) (QIS) is a component of the [ASQ World Conference on Quality and Improvement](#) which draws thousands of quality professionals worldwide. A registration to QIS includes full access to the co-located ASQ World Conference on Quality and Improvement with hundreds of presentations on world-class quality techniques.

2012 QIS Sessions

Monday, May 21, 2012

1:30-2:30	QS01 Continuous Improvement for Sustainability and Social Responsibility Holly Duckworth, Kaiser Aluminum	QS02 Lean Facility Design: Better Quality, Lower Cost Teresa Deason, Lean Synergy and Solutions LLC
3:00-4:00	QS03 This Journey Seems Familiar? Ron Kingen, CVI Group LLC	QS04 Optimizing Performance With Simulation David Morgareidge, RTKL Associates Inc.
4:15-5:15	QS05 The Sustainable Value Chain Richard Crespin, SharedXpertise Media	QS06 Point Clouds-to-BIM for Sustainability Cliff S. Moser, AECCatalyst

Tuesday, May 22, 2012

9:15-10:15	QS07 ISO 50001 Energy Management Systems Overview Eric Bagenski, AQS Management Systems	QS08 Cost of Quality in Construction Projects Dr. Abdul Razzak Rumane, SSH International Engineering Consultants Kuwait
10:45-11:45	QS09 ISO 50001: Preparing for the Audit Bob Auerbach, DEKRA Certification Inc.	QS10 Paperless Quality Management in Real Time Brian Palmquist, Ledcor Construction Limited
4:00-5:00	QS11 The Future of Energy Management: The Nexus of Quality Control and Innovative Engineering Richard L. Hack, University of California – Irvine	QS12 Quality Management on Project-Based Joint Ventures Charles J. Kanapicki, American Bridge/Fluor Enterprises Inc. A Joint Venture

We're also going to plug another couple of ASQ-related events (see the Upcoming Activities section at the back of the newsletter). This August, member leader Danny Kahler will be taking his AASHTO/TRB road show to San Francisco. We will try to coordinate an after hours meeting open to all (as we have in Washington DC and Ft. Worth) to give local DCD members and others a chance to meet and exchange ideas. Way to go Danny! The ASQ Denver Section will be holding their annual Quality Conference in Denver, CO and we hope that our DCD members will attend and support this noteworthy function (see the Upcoming Events section for details).

Finally, this issue of the newsletter completes our around the world journey by highlighting our "international" DCD members. We hope you enjoy reading their Who's Who and the article on EPC quality practices.

Sincerely,

Chuck

Charles J Kanapicki, PE, CMQ/OE, CQA
Chair, ASQ Design and Construction Division
ckanapicki@abfjv.com

THE INTERNATIONAL VIEW

Who's Who

Name: Afaq Fayzee Ahmed

Residence: Dhahran, Saudi Arabia; permanent resident of the United States

Education: Master's degree in Mechanical Engineering, University of Southern California, Los Angeles
Introduction to Quality: Corporate Quality Engineer at General Automotive, helped in enhancing auto parts manufacturer's quality systems

Current Job: For last twelve years he has served at the corporate headquarters of world's largest oil and gas company. In this position he provided leadership and consultation on quality for a world-wide supply chain, capital oil & gas projects and mentoring young engineers through a highly structured competency based program. Currently he is actively involved in developing an operational excellence program

Previous Experience: In his 26 years career in quality he has extensively applied methods of quality in quality management systems, supply chain quality, quality engineering, continual improvement, auditing, training and inspection & testing. He has made significant contribution in quality through public speaking, writing, and

participating in ASQ technical committees and certification examination activities.

ASQ Activities: Senior member, Certified Quality Manager, Engineer and Auditor

Recent Honor: RABQSA QM Test Specifications Sub-Scheme Committee member, Subject Matter Expert for ASQ Question Bank project, Regional Councilor-Healthcare Division, Regional Councilor-Audit Division, Oil and Gas Committee Member-Energy and Environmental Division.

Family: Married to Tarannum; son, Daniyal and daughter, Salva.

Favorite Ways to Relax: Playing tennis, workout, reading, music and travelling

Quality Quote: We are living in a world which is more complex, unpredictable and volatile than ever before. Creating a quality mindset, empowering employees and holding them accountable for their actions will enable organizations to be better equipped for this ever changing world.



Name: Mehmet Onur Artan

Residence: Doha, Qatar

Education: Bs Metallurgical Engineering degree from Yildiz Technical University in Istanbul, Turkey

Introduction to Quality: I started my career as a Third Party Inspector in Istanbul in 1995 just after my university education. I was responsible for quantitative and qualitative inspection of structural products such as reinforced bars, beams, profiles, billets, coils etc. in several steel manufacturing facilities.

Current Job: QA/QC Manager, Tekfen Construction & Installation Co., Inc.
Previous Experience: I was QA/QC Manager of main contractor, Baytur Construction Co., in Qatar National Convention Center Project between 2009-2011. Project budget is around 800 million USD. I worked in Head Office of Baytur Construction as Management System Specialist between 2007-2009. I made over 40 internal audits in the project sites during this job. I was QA/QC Manager of Tekfen Construction in pipeline projects in Qatar for Qatar Petroleum and in KSA for Saudi Aramco between 2004-2007. I worked as QA/QC

Engineer in the factory of Tekfen Manufacturing Co. for manufacturing of pressure vessels between 1998-2004.

ASQ Activities: I'm attending the activities of ASQ Qatar Community regularly. I'm studying for next CMQ/OE exam which will be the 3rd of March.

Family: My wife and my 5 year old son are living with me in Qatar.

Favorite Ways to Relax; I enjoy to read and search about ancient history, specially civilizations around Aegean Sea

Quality Quote: Quality should be a life style for everybody, improvement can be carried through the life.



Name: Pierfrancesco Mazzocchi

Nickname: Piero

Residence: Milan, Italy



Education: BSC in Chemical Engineering from University of Rome “La Sapienza”, Italy

Introduction to Quality: My first meeting with quality was in 1996 when I decided to attend a 1000 hours master in quality management organized and sponsored by the European Economic Community.

Current Job: Quality Director for multinational EPC contractor

Previous Experience: Quality Control Manager

ASQ Activities: Member, DSC Design & Construction Division

Family: married with two children

Favorite Ways to Relax: swimming, cycling, reading & listening to music

Quality Quote: “Quality is everybody’s responsibility”



INTERNATIONAL ARTICLES

When Net Thickens

By Piero Mazzocchi

In our projects there is always a moment when the EPC schedule shifts from “construction driven” to “commissioning oriented”. At an early stage of the erection, activities are planned, controlled and organized according to the plant’s areas. Commission is far away and the keyword is constructability. While the commissioning phase approaches, priority is given to systems, as the plant will be commissioned per single system regardless of the various areas. Systems usually cover different areas and, therefore, in one area there are many systems and each system may cover more than one areas. Somehow there is a net among areas and systems. The more complex the plant is the thicker the net is.

Somehow there is a net among areas and systems. The more complex the plant is the thicker the net is.

During the past years, project time schedules have been shrinking while competition becomes always tougher and we are asked to be more efficient. This shrinkage of schedules implies an early overlapping of erection and commissioning phases in order to reach the contractual milestones.

So as to forge ahead with quality control planning, Project Quality Managers must have at their disposal a corporate standard set of inspection & test plans (ITPs) which are continuously aligned with engineering standards & specs. These ITPs will be customized at project level to meet contract requirements.

An effective QC plan, developed at an early stage of the project during the engineering phase, ensures that inspections and tests are carried out duly and integrated into the erection activities. The general approach is to prepare an ITP for each item. This method is suitable when schedule is construction-driven, but becomes inadequate as soon as commissioning comes in. For a project of 5 million of standard man-hours, we usually carry out about 80.000 inspections & tests which correspond to an equal amount of certificates. Should one of these tests fail or miss, the handover of that system from construction to commissioning could be blocked. This fact stresses the control quality system and causes a great headache to the Site Quality Manager.

The solution is found in tracing both items and systems within the quality control system at the same time. This could be easily achieved when Quality engineers, design engineers and commissioning engineers cooperate during the design development.

When complexity of the project is high, we are supported by an IT tool, namely Completion Management System, which allows following-up completion of the ITPs, both by Items and System, and give a quantitative analysis of the achieved progress. There are some tools on the market that can be used for this purpose, but we have preferred to develop an in-house software that incorporates our standards. Practically, this is a Data Base (DB) which reports exactly all the ITPs of the project and related quality records to be issued. At the beginning of the project, the Quality Engineer uploads Items and Systems and customizes the ITPs and records according to the contractual requirements. As soon as erection starts, the DB is available at site and the quality control team can upload the certificates.

At the end of the project, the DB will easily allow building up the Final Certification Dossier that can be handed over to the customer when required.

Moreover, the DB is a source of information that can be used to improve the corporate quality control system. All changes of the standard ITPs and records are traced and can be retrieved and analyzed at any moment.

Implementing Quality Management at Wathen-Castanos Hybrid Homes: A Case Study – Part 2

By

Denis Leonard and Duncan Prah



This is Part 2 of a case study describing the implementation of quality management at Wathen-Castanos Hybrid Homes (WCHH). Part 1 (published in the previous edition of *Quality Connections*) discussed the implementation strategies and the ultimate impact. Part 2 provides detailed insight into WCHH and describes how quality management has been deployed throughout the organization.

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A Profile of Wathen-Castanos Hybrid Homes

WCHH has a team of 34 full-time employees building single-family, detached homes ranging from 1,100 to 2,348 square feet, with a price range of \$128,900 to \$289,900 in the Fresno/Clovis area of California's Central Valley. WCHH high performance homes surpass the requirements for California Title 24 energy code by approximately 30%, Energy Star, and the Build It Green California programs. In recent years WCHH launched a new marketing campaign that promotes a "Hybrid Home." None of WCHH's competitors is achieving the levels of energy efficiency of the Hybrid Home.

Mission, Vision, and Leadership

The Mission Statement of WCHH was developed with input from all employees.

The Mission Statement focuses on the following:

- Treating customers with integrity, appreciation, and respect
- Delivering what WCHH promises, when WCHH promises it
- Hiring excellent people
- Meeting high standards
- Fostering an environment that demonstrates appreciation for the employees and their families
- Sharing the profits and the resources with the community

In support of the Mission Statement is a set of Core Operational Directives that have detailed explanations to enable everyone to understand their meaning. In summary they are as follows:

- WCHH cares
- Customer satisfaction
- Profitability and cash flow
- Process efficiency through continuous improvement and measuring goals

A set of detailed Fundamental Values has been established to guide corporate decisions and behavior. In summary, those Fundamental Values are as follows:

- Integrity
- Dedication to customer service
- Authorship in decisions
- Proactive mind-set
- “Get it done” solutions
- Teamwork and trust
- Continual improvement and follow-up process

The WCHH Vision is as follows:

- Pass on the legacy/succession of WCHH
- Grow in operational excellence at all levels from employees to trades
- Build energy neutral homes as a production builder
- Develop true communities with a value proposition higher than the market
- Achieve 95% customer satisfaction and 95% referral rates
- Maintain a strong cash position

The detailed explanations behind the Mission Statement, Vision, and Fundamental Values allow each to be clearly linked to how they define the corporate culture, strategic planning, and daily operations of WCHH. The results of these actions are articulated in the aligned Quarterly Metrics (rocks), Quarterly Dashboard, Milestones, and Progress Improvement Measures that measure and monitor how WCHH is progressing toward its Vision.

Leaders and managers reinforce this at the start of all company, department, and other meetings as well as through communication tools such as the monthly “From the President’s Corner” newsletter updates. This newsletter updates everyone in the company on, for example, the Work Improvement Groups (WIGs) in which employees lead and participate in strategically focused initiatives. Also WIN Success newsletters (where “WIN” represents “What’s Important Now”) are specifically designed to recognize teams and individuals for their work while updating the whole company on the progress of the WIGs.

WCHH leaders act as role models by participating in the Process Improvement Training with all the other employees. By doing this, they show that they believe in quality and find the training essential. Feedback from the company National Housing Quality Award (NHQA) Self-Assessment Survey is used to identify Opportunities for Improvement (OFIs), including feedback on how leadership can improve.

Strategic Planning

Strategy Identification and Analysis is based on information from a number of sources, all of which are coordinated and focused toward identifying the Strengths, Weaknesses, Opportunities, and Threats (SWOT). This is supported by conducting a two-day event for a Business Process, Strategic Mapping, and Gap Analysis using the IBACOS “Green Blueprint.” An organization-wide Baldrige-based NHQA Self-Assessment Survey and Analysis was also conducted. Demographic data and market intelligence are a crucial part of the strategic planning. Research is conducted by a consultant on local/regional buyer and market information, secret shopper information, trends, competitor analyses, and input from focus groups, employees, and their contacts. This provides only some of the data used to support the SWOT and the creation of the strategic plans.

Strategic planning begins with the clarification of the Mission Statement, Core Operational Directives, Fundamental Values, and Vision. The next step is a review of actual versus planned business results. Then the annual goals are defined and broken down into Quarterly rocks. This includes revenue, net profit, gross margin, cash, sales, starts, warranty costs, and variance dashboards. Projected goals are established and measured against the actuals each quarter. Key Quarterly Milestones are then established to further break down the plans into detail to meet the goals. These Milestones are directly linked to Progress Improvement Measures. These measures track progress and include Customer Feedback to Construction, Option Processing Improvement, and Focused Buyer Follow-up in First Two Weeks After Closing. These clearly defined milestones and the assignment of deliverables ensure that WCHH can actually execute the plan effectively and can monitor its progress.

Process Improvement

The strategic plan defines key areas on which to focus and improve; these are addressed by cross-functional WIGs.

These WIGs were formed by first participating in Process Improvement Training. This included training on the use of the following:

- Team charters
- Team skills
- Team facilitation/leadership
- Define, Measure, Analyze, Improve, Control (DMAIC)
- Brainstorming
- Pareto's 80/20 Analysis
- Fishbone-Root Cause Analysis
- Process Mapping

The initial WIGs focused on the following:

- High performance home strategy
- Local market product research and absorption
- Home delivery process
- Scope of work development
- Option processing
- Sales training
- Customer service feedback to construction

The next round of WIGs focused on the following:

- High performance builder/buyer class
- Quality process procedural manual
- Focused "Two Weeks After Close" buyer follow-up
- Redefined "First 12 Months of Ownership Customer Care Program"
- Lean/OFI product and systems review process
- Hot spot improvement process
- Buyer road map to home ownership
- HR/employee growth and goals professional initiative for success

Each WIG has its own individual metrics and milestones that have been determined and clarified in its charter. Progress is reported and communicated through quarterly and weekly meetings, emails, the "From the President's Corner" email newsletters, WIN Success newsletters, bulletin boards, and Quarterly Dashboards.

Key Processes are measured by department and higher level Progress Improvement Measures, Key Milestones, and Quarterly rocks. This allows WCHH to monitor and control processes and to identify OFIs.

As members of a National Association of Home Builders (NAHB) Builder 20 Club and the IBACOS Best Practices Research Alliance, WCHH has access to other builders to compare their performance results, market shares, and best practices. WCHH also attends conferences such as the International Builders Show (IBS), the Pacific Coast Builders Conference (PCBC), and the Energy and Environmental Building Alliance (EEBA) to participate in training and seminars and to engage in networking opportunities. WCHH also conducted benchmarking visits to builders, including an NHQA winning builder as well as organization outside the homebuilding industry.

WCHH works with some of the industry's best consultants and architects to guide the company with focus groups and market research on local and regional levels. WCHH involves its homeowners in focus groups to better understand buyers' needs and key purchasing patterns to ensure that they are aware of trends and changes.

Employee Focus

Company benefits offered to WCHH include eight paid holidays along with an appreciation week of time off between the Christmas and New Year's holidays; paid medical, dental, and vision for employees; paid time off based on a sliding scale related to time in service; 401K; and a profit sharing plan. Other benefits include a laundry service discount; complimentary snacks, sodas, and teas; monthly birthday breakfast recognition; health and wellness training; community service outreach, serving lunch at the Poverello House; and employee potluck days. WCHH prides itself on the long list of community outreach programs in which it is involved.

WCHH evaluates all positions to ensure that the company is in line with the industry and region for base compensation. In addition to base compensation, all employees have a bonus incentive plan that is in line with the company's annual business plan and goals. In addition to a competitive base salary and company aligned bonus plan, WCHH also provides up to a 3% match of base salary for employee 401k contributions. In 2010, compensation for middle management and front-line employees on base salaries was held through the recessionary times, with these employees making the same base pay as they earned in robust years. Upper management base salaries have been reduced to be in line with the economic times. Extra employee effort has been recognized for increased workload periods such as the second half of the 2009 federal incentive period. Employee bonuses of approximately 8 to 10% of the respective employee's base annual salary for this period were paid out in December as a thank-you for the extra effort and excellent work in producing top quality homes while closing homes at the pace of 30 homes per month for this period. This extra effort was acknowledged in the personal recognition of each employee's efforts and through this compensation.

Training is an important aspect of the employee focus. It includes role playing and improving key areas to support the Hybrid Homes and other aspects based on secret shopper and customer satisfaction survey feedback.

Leadership training covers the following:

- Vision of the ideal managing leader
- Performance management
- Performance development
- Self-development
- Follow through, culture of commitment
- Effective use of time
- Organizational skills
- Communication

- Self-initiative
- Relationships
- Managing high quality work

Training on high performing home methodologies has also been conducted for all employees, and cross training has become a stronger focus. This training has included the following:

- IBACOS – Building science training of all employees and trades
- Sales weekly "huddles" on Fridays to role play, preparation for weekends, and the study of relationship selling through training with Will Nowell/Value Path
- Home Energy Rating System (HERS) inspector training on building systems for field employees and trades
- PG&E Pacific Gas & Electric training on energy systems from top professionals in the industry
- In-service training on systems and processes for growth and efficiency
- Safe Written Work Procedures, safety, Occupational Safety and Health Administration (OSHA), and CPR training on a regular basis for all employees

Attendance of conferences such as PCBC, EEBA, and IBS is still seen as important to keep up with industry trends and additional training.

Customer Focus

WCHH is focused on achieving "Evangelical Fans." This starts when homebuyers are at the earliest stages of considering WCHH to build their homes. Online and from the sales models, WCHH offers potential buyers a "We Care—You Compare" chart that lists all the energy efficient, water conservation, and health focused value-added features of the homes being offered. The chart quantifies the benefits in retail value and provides columns for the potential homebuyer to record information from other builders, quantifying how those builders rate against WCHH.

The WCHH sales team stays in contact with homeowners at every key construction milestone. At closing the homeowner and the home are handed over to a WCHH Customer Care representative. After move-in, the homeowners are contacted at three "Touch-Point" times within the first two weeks. In addition, WCHH surveys buyers at move-in, 6 months, and 12 months to ensure satisfaction.

WCHH has established Referral Education And Promotion (REAP) Touch Points that cover the Shopping, Purchase, Build, Close/Move-In, and Warranty periods. The Touch Points include Marketing, Models, Lender Pre-Approval, Sales Initial Visit, Reservations and Expectations, Construction Orientation, Home Personalization, Sales Building Process Follow-Up and Care, Frame Walk Meeting, Home Personalization Follow-Up, Orientation Welcome with Customer Service, Closing and Orientation to Move-In, Move-In Sign-Off, and then Customer Care at 2 weeks, 30 days, 6 months, and 12 months. Two contact visits and a call to the new homeowner are also made two weeks after close of escrow to verify that they are well attended to throughout their move-in.

Surveys that come back with a score of less than 70 result in the Director of Customer Care calling the homeowner to ask what is wrong and what can be done to resolve any issues and improve in the future.

Construction Quality and High Performing Homes

WCHH fosters the strategy of delivering a high value home with environmentally sound features that are included as standard. Through this strategy the objective is to provide a quality built home while reducing the carbon footprint, water consumption, and waste, while increasing the longevity and durability of the home.



Blower door & leakage test



Ducts and water

This strategy promotes the homeowner's well-being from an overall lifestyle mentality. Products such as low volatile organic compound (VOC) paint, Forest Stewardship Council (FSC) lumbers, formaldehyde free insulation, 16 SEER HVAC, tankless water heaters, and high efficiency glazing are used. A fresh air ventilation system is used to improve the indoor air quality of the homes. The use of smart irrigation results in approximately 59% less irrigation water with 71% less runoff.



Attic insulation



3.7W photovoltaic system

In 2010, WCHH built an "Advanced Performance" or Zero Net Electrical (ZNE) home that included upgrading the tankless water heater to a 0.98 EF condensing unit, the air conditioning upgraded to a 19.2 SEER combined with an annual fuel utilization efficiency (AFUE) 94.7% furnace. The attic insulation went from R-38 to R-49, and the walls were elevated from R-18 to R-20. As a ZNE home, it features a 3.6 kW photovoltaic (PV) array and Control 4 automated power control system. The house has a Home Energy Rating Index of 59 (without PV) and 29 (with PV).

In 2011, WCHH is continuing to evaluate new building systems and technologies and is an active participant with IBACOS in the U.S. Department of Energy's Building America program.

WCHH uses a series of checklists to keep the construction process consistent and as a way to monitor any issues that arise. They also have a House Readiness Incident Report and a Corrective Action Form that help to focus on improvement areas.

In addition to internal inspections, the customer is involved in the quality review process of the new home with a Frame Walk Through at the framing stage, a Walk Through Orientation at the final building stage, and a Move-In Sign-Off appointment at close of escrow to ensure the home meets the homeowners' standards. The homeowners are provided with a Homeowner's Manual at the time of contract and are asked to bring it with them to their Walk Through Orientation. The manual covers all the high performance features and includes an FAQ sheet on the Hybrid Home, a copy of the Builders Challenge Certificate (E-Scale), and the Green Points Rating.

WCHH utilizes Superintendent and Trade Partner feedback on First Time Quality documents for 360° information back to trades. WCHH also uses a third-party inspector through Quality Built LLC to cover all structural and water intrusion inspection, as well as a HERS rating company, Duct Testers, to verify energy performance of the homes, including a whole house airtightness (blower door) test. The HVAC Trade Partner conducts duct tightness tests on every home. This allows WCHH to ensure that the homes are not only built to the highest standards but that WCHH has multiple checkpoints for both corrective and preventive action. Multiple architects are used to help maintain checks and balances in design versus functionality.

WCHH also has a quarterly customer service feedback-to-construction meeting to ensure that both departments focus on opportunities for ongoing improvement based on measured feedback from the customers. The opportunities are tracked through completion.

Safety is an important aspect of the building process at WCHH. The practices used ensure not only compliance but also go above and beyond to protect the WCHH employees and the subcontractors' employees as follows:

- Job site visits by a third-party OSHA consultant are made on a quarterly basis.
- Biweekly meetings are held by a superintendent using Tool Box OSHA compliance documents with a signature by each field employee.
- Once a month random job site visits are made by the safety coordinator for each tract to ensure that safety is being complied by WCHH as well as by subcontractors on the site. A disciplinary action of a warning or fine is addressed for each non-compliance issue for OSHA requirements.

Meetings with subcontractor owners or key field representatives are held once a month by the WCHH director of construction to reiterate any issues or concerns found during prior safety visits by either the third-party consultant or the WCHH safety coordinator.

Trade Partners

WCHH fully involves its Trade Partners in the development process of the new plan designs, engaging with the Trade Partners early, with a focus on value engineering and smart design. WCHH also costs out new plans with the Trade Partners early in the process, giving targeted areas in the design that may be modified for better pricing from the Trade Partners. This early involvement with the Trade Partners creates an open line of communication that continues throughout the build process, allowing the Trade Partners to work more cost effectively. As new plans are completed, WCHH follows up with redline review meetings with the Trade Partners, looking for areas that can be improved.

True partnership is essential. An example of this is that WCHH designed and launched a new series homes in 2009 in only 16 weeks, considered an industry best practice. Trades are considered part of the WCHH team in communication and information flow. Product, market, manpower, resources, and timing are constant subjects of daily dialog.

A monthly "Trade Partner Letter" is distributed to provide updates on sales, starts, and upcoming issues and to provide encouragement and recognition. The WCHH Director of Construction has annual one-on-one meetings with the trades and hosts a biannual trade appreciation event. WCHH also has quarterly Small Group Trade Partner Meetings with the Director of Construction, with a specific agenda that is run through during an open forum. In this meeting, Trade Partners that work closely together in the field discuss areas of improvement that may overlap among them. The comments from this meeting are followed up with action items for different WCHH employees and Trade Partners.

Each Trade Partner's performance is assessed quarterly by having site superintendents rate the Trade Partners on a 10-question survey. Results of the survey are provided to the Trade Partners for review.

Typically, WCHH has a substantial amount of dialogue once the Trade Partners receive the survey results. WCHH also has quality control meetings once a month to focus on the Trade Partners that WCHH has seen decrease in quality or job performance. During this meeting, WCHH will typically go through a hit list of quality and job performance issues that have shown a pattern over the past few months. The WCHH Director of Construction and the Quality Control Representative will meet with the Trade Partner to run through the issues with them. Once completed, the Trade Partner and WCHH Quality Control Representative sign off on the list of items and establish improvement goals. Follow-up meetings are scheduled for a later date to confirm improvements based on the goals that were set.

Conclusions

WCHH shows how quality management can be used throughout an organization and reaches out to its partner organizations to drive improvement. It is also an excellent example of how quality management can be used to support green building practices.

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Denis has a degree in Construction Engineering, an M.B.A., and a Ph.D. in Quality Management. A Fellow of the American Society for Quality, he is a Certified Manager of Quality/Organizational Excellence, Auditor, and Six Sigma Black Belt.

Denis has served on the Baldrige National Quality Award Board of Examiners, the National Housing Quality Award, and the International Team Excellence Competition. He is a member of several boards including the U.S. (ANSI) Z1 Standards Group for Quality Management, ASQ's Quality Management Forum, and Quality Press Review Boards. He has also co-authored *The Executive Guide to Understanding and Implementing the Baldrige Criteria*.

Denis developed and implemented integrated quality, environmental, and safety management systems at Veridian Homes in Madison, Wisconsin, earning Veridian Homes the National Housing Quality Award, Energy Value Housing Award, Innovative Housing Technology Award, NAHB Safety Award for Excellence, and *Professional Builder* magazine's Builder of the Year. In 2007 Denis won *Big Builder* magazine's APEX Award for his work in Quality Management.

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Duncan has nearly ten years of experience at IBACOS, assisting builders and developers with implementing high performance housing using Building America research results. His research focuses on process-related barriers that can be found in most builders' organizations, with the goal of creating new process models for builders. Duncan plays a strategic role within Building America and participates in the Building America QA/QC working group. Previously, Duncan was a partner at Spectrum Design Collaborate, LLC, and a Program Manager for the Energy Crafted Home Program with Northeast Utilities. He is a Registered Architect in New York and earned a Bachelor of Architecture degree from Rhode Island School of Design.

Survey Error

By Paul Cardis

Paul Cardis is founder and CEO of AVID Ratings, the leading provider of customer loyalty research and consulting to the home-building industry. Through the AVID system, home builders improve referrals, reduce warranty costs, and strengthen their brands. He can be reached at paul.cardis@avidratings.com.

Don't be fooled by high response rate programs that measure very little.

When experts criticize their own industry, it tells you there is a real problem brewing that deserves attention. As a surveyor of customer satisfaction for over 20 years, I am going to share with you a disturbing trend that is leading many large-scale home builders seriously astray, causing them to lose millions each year.

I am going to share with you a disturbing trend that is leading many large-scale home builders seriously astray, causing them to lose millions each year

In the last several years, phone marketers have converged on home builders with an intriguing value proposition – namely to provide 75% response rates for customer satisfaction surveys. Sounds good? So good that I was intrigued, and became tempted to join them in offering this service, until I did the research. Bottom line--this approach can seriously damage businesses.

Instead, I have been sharing the research studies of the world's foremost experts from Harris Poll, Oxford Press, and the US Census, all of who warn against adopting such programs.

The Tantalizing Offer

What we hear is that telemarketing company sales reps who, with little or no formal research background, make statements like "your current program is error-prone because it's not getting the 70-80% response rates that our surveys can get". This "more is better" sales pitch is quite tantalizing given that most surveyors today would be happy with 20-50% response. When JD Power and Associates did their studies of home builder satisfaction their response rates averaged 20%. The average response rate for Avid Ratings' 30-Day Move-In Survey is 56%.

The fact is that, in all surveys, we must rely on sample sizes that are less than the total population to do sound research. 75-100% is simply not necessary. In order to test someone's blood for disease, you don't need to drain his or her entire body—Right? Randomization is the key principal that makes sample sizes work and, when it comes to customer surveys, decades of research have established that we have an equal number of happy vs. unhappy homeowners who fill out surveys. At Avid we have tested this assertion multiple times within the building industry. When we survey builders at a 50% response rate and compared the results after we drive the responses up to 75% (through multiple mailings)-- the results show virtually no change in the scores. Contrary to the erroneous assertion that the current survey methods are broken and higher response rates are needed, actually what is needed for improving the validity of survey results is properly controlling for other sources of error like survey length and social desirability. Simply put, telemarketing companies vying for your business fail to tell you the entire story about survey methodology.

The Facts: Detailed Surveys Deliver More

While on the surface it may seem better to get more surveys from customers, the reality is that these telemarketing surveys actually capture *less* information. Telemarketers must dramatically shorten their surveys in order to administer them over the phone. Often, 50-75% of the questions typically found on a detailed home buyer surveys are eliminated from the telemarketer's survey, resulting in a net-loss of information, and not a gain as they claim.

Unfortunately, shorter surveys have been sold as a benefit by telemarketing companies who often quote the book *The Ultimate Question* by Fred Reichheld, as justification for eliminating questions. Unfortunately, Reichheld's work, also known as Net Promoter Score (NPS), has come under considerable fire within the last five years. Morgan and Rego (2006) conducted an extensive study comparing the various survey methods to future business success and found that short "Net Promoter Surveys" have little relationship to business financial performance. Below is a summary of the results of their study that was summarized by the consulting firm The Cicero Group.

Customer feedback metric	Relationship of customer satisfaction metrics to future business performance metrics				
	Net operating cash flows	Total shareholder returns	Annual sales growth	Market share	Gross margin
Average Satisfaction	Strong	Strong	Strong	Strong	Strong
"Top-2" Box	Strong	Weak	Strong	Strong	Strong
Customers Complaining	None	None	Strong	None	Strong
Net Promoters	None	None	None	None	None
Repurchase Likelihood	None	None	None	Strong	None

*Table adapted from Morgan and Rego: *The Value of Different Customer Satisfaction and Loyalty Metrics* Marketing Science 25(5), pp. 426-439, June 2006

The Cicero Group concluded:

"Recent directives for companies to replace these traditional satisfaction metrics with recommendation or net promoter metrics are misguided. Companies wishing to maximize the benefits of customer satisfaction should measure at multiple customer lifecycle touchpoints. The multiple touchpoint approach allows companies to dig deeply into the customer experience while not sacrificing data reliability."

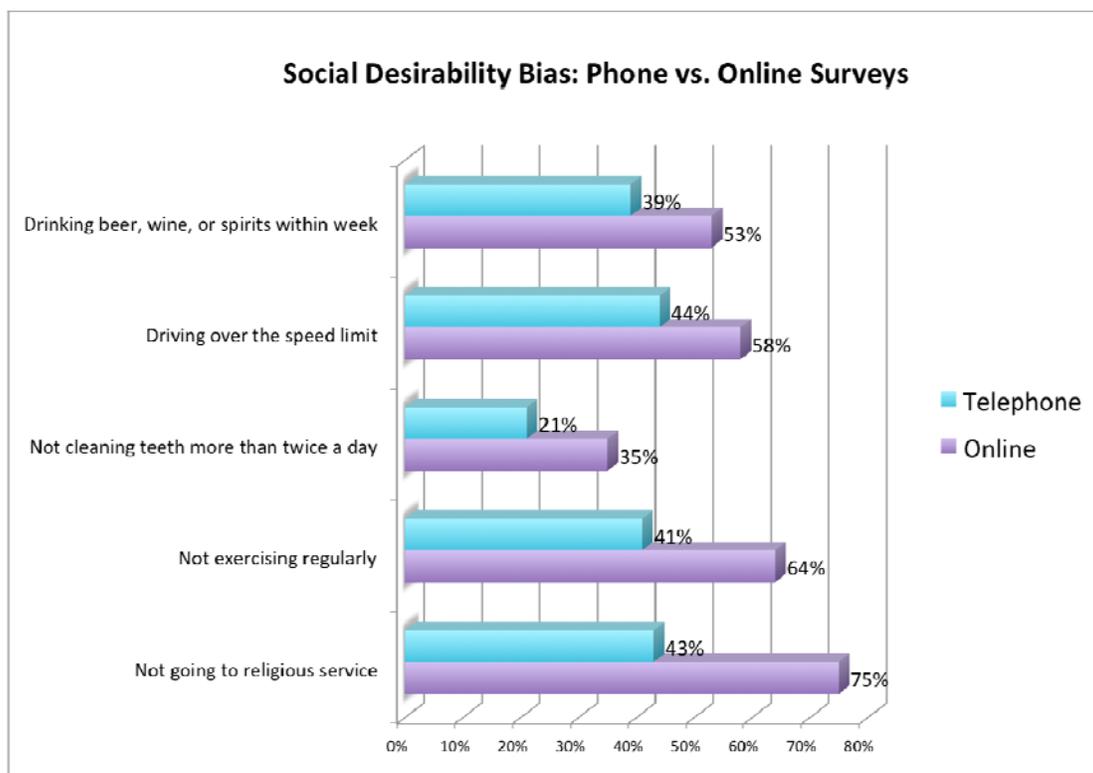
[Source: <http://www.cicerogroup.com/articles/Customer%20Satisfaction%20and%20Business%20Performance.pdf>]

Since telemarketers use shortened survey instruments to measure a complicated transaction such as home building, a comprehensive customer review is simply unattainable, rendering many builders blind to the realities of their business.

The Facts: Phone-Survey Bias

Research has found that phone-surveys are highly subject to *Social Desirability Bias*, which means respondents provide answers that are least controversial in order to avoid conflict with the real-life surveyor. For example, we see this every day in the restaurant industry where a majority of restaurant customers respond with "good" when the manager asks "how was everything?", –even though the meal or service was below expectations when asked later about it. We have all done it because we want to avoid conflict with the person asking. Not surprisingly, this phenomenon goes beyond restaurant interactions to all aspects of life.

The renowned research group Harris Interactive studied this phenomenon and uncovered the pervasiveness of this problem. The graph below illustrates the difference between survey methodologies and the impact social desirability has on a number of commonly asked questions.



Source: Harris Interactive, [Taylor, Krane, and Thomas, 2005](#).

Conclusion

The bottom-line with high response rate, phone-survey programs is 1) less real information to diagnose problems, and 2) customer satisfaction results are skewed toward a positive score. Overall, this is not a good situation if your company doles out bonuses to its employees based on customer satisfaction, unless of course you are an employee of one of these companies (tongue firmly in cheek).

Unfortunately, we may have come to a point where home builders are valuing raw quantity of response rates over the quality of customer research, only to find it misleading their companies by allowing substandard performance to go unnoticed, and in some cases even rewarded. If more builders are fooled by this folly, we could find many executives resembling emperor in the children's story *The Emperor's New Clothes* (where the emperor is told what he wants to hear rather than the truth). However, I am hopeful that factual reporting and open dialog on this issue will keep our industry from being bitten by this brand of snake oil salesman.

The Testing, Inspection, Certification, and Accreditation Infrastructure in Public Safety

Hershal C. Brewer, CCT

Public safety has a wide variety of applications. For the built environment, public safety has a need to rely on products that meet codes. Those products in turn require testing and inspection by accredited entities to assure the confidence in compliance to the codes. This provides the confidence for the contractor and the Code Official.

Testing for code compliance, performance, and energy efficiency:

Whether the contractor is pouring a concrete slab for a building, installing roof underlayment, or installing flooring in a completed structure, there are codes and standards that must be complied with. These and many more examples require testing laboratories to conduct testing. Many contractors are familiar with symbols that appear on products such as ICC ES Evaluation Reports issued by the International Code Council Evaluation Service (ICC ES). These symbols are known as logos or marks. Other logos from organizations such as Underwriter's Laboratories (UL) also provide confidence. These and similar reports and logos do not in themselves provide the information of the rigor of testing required to obtain the logo.

Testing laboratories such as operated by UL, Intertek (ITS), Canadian Standards Association (CSA), and others receive a product. The laboratories must consult with the customer supplying the product to discern necessary information such as where it will be sold. The information is necessary to identify the tests and standards that must be met. For safety testing a variety of tests may be required. These tests are often destructive. Carpets, wall coverings, doors, and many other products are subjected to fire testing among other tests. Windows are tested with pressure and vacuum, impacts by 2x4's, and for water intrusion. Concrete slabs are sampled, cured for specific lengths of time, and tested to determine strength. Plywood is tested for formaldehyde content.

Sometimes the testing is for performance. Photo-voltaic (PV) panels receive both safety and performance testing. Office roll-around chairs are rolled back and forth for thousands of times. Roof coverings may be tested in wind tunnels.

Testing for energy efficiency is more recent. Requirements such as the US Environmental Protection Agency's (US EPA) ENERGY STAR® program dictate specific requirements for all types of products. Televisions, dishwashers, lighting products, vending machines, and other products are tested to US EPA requirements. The US EPA requirements also use industry standards and then include or exclude requirements as necessary for the purpose of energy efficiency. As every contractor knows, energy efficiency is "table stakes" and the most recognized brand is ENERGY STAR®.

Certification of products:

Organizations known as certification bodies such as UL, ICC ES, CSA, ITS, and others certify products. Within the organization is a group that specifically reviews test results and makes decisions whether to issue what is known as a listing report or not. The listing report includes the authorization to use the logo. The certification body does not conduct the testing or any follow-up inspection. The certification body only issues the certification. Testing reports and follow-up inspection reports are provided to the certification body for both initial certification and for maintenance of the certification. This is the indication that a contractor has for confidence in a product.

The ENERGY STAR® program requires additional testing under certification, known as verification testing, where a percentage of products certified must be retested. ENERGY STAR® also has a challenge testing allowance which may affect certification.

Inspection and special inspection:

Once a product has been certified, there is typically a follow-up inspection requirement. Often the inspections are in manufacturing locations and are no-notice. The inspections are in the manufacturing locations to assure that the product is being constructed exactly as the product has been certified. Changes in construction, such as a different transformer, require review and approval, and may require a complete re-test.

Special inspection is slightly different. Special inspection is directed by codes such as the International Building Code® from the International Code Council. Chapter 17 in particular outlines requirements for special inspection. Jurisdictions such as Las Vegas and New York City require special inspection agencies to be accredited by organizations such as the International Accreditation Service (IAS).

The role of accreditation:

Accreditation is typically understood as being applicable to colleges and universities. In truth, it is also applicable to testing laboratories, certification bodies, inspection bodies, and special inspection bodies. Accreditation provides an independent, third-party, verification that these organizations may be considered competent for the efforts detailed in the technical scope of accreditation.

How does accreditation accomplish this verification? Laboratories, certification bodies, inspection bodies, and other organizations, are assessed by accreditation bodies (ABs) such as the International Accreditation Service (IAS) and others. Accreditation bodies need to be what is known as signatory to a Mutual Recognition Arrangement (MRA) such as the International Laboratory Accreditation Cooperation (ILAC), or a Multi-Lateral Arrangement (MLA) such as the International Accreditation Forum (IAF). The signatory status means that the AB has been evaluated and the level of rigor in assessment and accreditation is equivalent to other ABs in the MRA.

This signatory status means that a report issued by a laboratory accredited by one signatory can be accepted in other locations such as the US. This allows international commerce with a minimum of issues. The signatory status also means that should a product have a logo and yet not meet requirements of the code, there are formal methods of redress. Absent internationally-recognized accreditations, no such method of redress exists to the vast majority of contractors and their customers. ABs assess laboratories to the international standard ISO/IEC 17025:2005, inspection bodies to ISO/IEC 17020, and certification bodies to ISO Guide 65, which will become ISO/IEC 17065 in the not-too-distant future. These assessments include the quality management system (QMS), but also include the technical scope that the organization seeks. The technical part of the assessment requires someone knowledgeable in the discipline(s) and test methods to complete the assessment.

ABs also undergo a regular re-evaluation to maintain signatory status in the MRAs. The re-evaluations often are much longer and more intense than an assessment of a laboratory. This is necessary to maintain confidence in the AB which in turn is necessary to assure confidence in the other organizations.

Summary:

Products that meet code must be available to meet the requirements within the built environment. The products have requirements that must be met in order to be acceptable. Testing laboratories, inspection bodies and special inspection bodies, and certification bodies need to be accredited by internationally recognized accrediting bodies. The products that undergo this rigor provide the confidence that the products meet code.

References:

Application for Recognition of Accredited Laboratories by EPA under the ENERGY STAR® Program Version 1.0. OMB Control No. 2060-0528. Washington, D.C.: U.S. EPA. Retrieved from http://www.energystar.gov/ia/partners/downloads/mou/Application_Accredited_Laboratory.pdf
ILAC listing of Signatories, retrieved from http://www.ilac.org/documents/mra_signatories.pdf

DIVISION COUNCIL ACTIVITIES

ASQ Design and Construction Division Supports Future City 2012

The National Engineers Week Future City™ Competition is to provide engineering based academic competition to all seventh- and eighth-grade students. The National Engineers Week Future City™ Competition is for seventh- and eighth-grade students, fostering an interest in math, science, and engineering through hands-on, real world applications. The competition is open to all public, private, and parochial schools in selected areas.

The mission of the National Engineers Week Future City™ Competition is to provide a fun and exciting educational engineering program for seventh and eighth grade students that combine a stimulating engineering challenge with a “hands-on” application to present their vision of a city of the future.

This year's national competition was held in Washington, D.C. from February 16-18th, 2009 as part of the National Engineer Week. For more information about the contest visit their web site:

<http://www.futurecity.org/awards> .

The DCD sponsors a scholarship to the team (school) for:

Best Use of Innovative Construction Materials and Techniques.

Bases for Selection:

- Use of innovative construction materials
- Use of innovative construction techniques
- Overall construction of design

DCD Judges: Robert Orkin, Parsons Brinckerhoff & Kim Schiffgens, DMJM AECOM, conducted the judging.



The winning team from Louisiana and includes: Back Row: Shirley Newman, Robert Orkin (PB), Kimberly Schiffgens (AECOM); Front Row: Vincent Bianca, Stormi Verret, Sam Lovretich, Casey O'Quinn.

UPCOMING EVENTS

DATE	EVENT	LOCATION
May 2-4, 2012	AWS FABTECH Mexico	Mexico City, Mexico
May 21-23, 2012	World Conference on Quality and Improvement (Includes DCD/EED Conference-within-a-Conference)	Anaheim, CA
Aug 12-16	AASHTO Subcommittee on Construction Conference (see below for more information)	San Francisco, CA
Sept 12-14	ASQ Section 1300 Rocky Mountain Quality Conference (see below for more information)	Denver, CO
Oct 11-12	ASQ Audit Division 21 st Annual Conference	Augusta, GA
Oct 18-20	ASCE 142 nd Annual Civil Engineering Conference	Montreal, Canada
Oct 21-25	ACI Fall Conference – Forming Our Future	Toronto, Canada
Nov 8-10	ASCE Construction Institute Summit	Fort Worth, TX
Nov 12-14	AWS FABTECH 2012	Las Vegas, NV

AASHTO Subcommittee on Construction Conference – Danny Kahler, PE, ASQ Design and Construction Vice Chair for Design and Membership, will be presenting a session titled “Construction Inspection of the Future” at the AASHTO Subcommittee on Construction conference, being held in San Francisco in August. This presentation will focus on the implementation of recently emerged technologies and information models within construction quality assurance to allow construction inspection staff to be leaner, faster, and more effective. Activities such as these continue the collaboration on the subject of design and construction quality between the various stakeholder organizations such as the ASQ DCD, AASHTO, ASCE, AIA, and TRB.

Rocky Mountain Quality Conference

September 12-14, 2012
 Arvada Center of the Performing Arts
 6901 S. Wadsworth
 Denver, Colorado

Keynote Speakers:

Joseph A. De Feo - Juran Institute
Forrest W. Breyfogle III - Smarter Solutions

Workshops Includes 6 Tracks: 1) People, 2) Process (and Tools), 3) Product/Service, 4) Testing Info/Preparation, 5) Healthcare/Medical Device and 6) Increasing Knowledge/Skills

DCD DIVISION COUNCIL

Design and Construction Division Board and Committees

Jan 1, 2012- Dec 31, 2012

Division Officer Nominee List (Require a vote)

Position	Member Name	Member Email	Start Date
Chair	Charles Kanapicki	ckanapicki@abfjv.com	01/01/12
Chair Elect	Celia Gray	cgray@ci.charlotte.nc.us	01/01/12
Secretary	Anita McReynolds Lidbury	amlidbury@att.net	01/01/12
Treasurer	William Hall	whall518@gmail.com	01/01/12
Vice Chair	Greg Wennerstrom	greg_wennerstrom@yahoo.com	01/01/12
Vice Chair	Danny Kahler	dannylkahler@hotmail.com	01/01/12
Vice Chair	Denis Leonard	leonard_denis@yahoo.com	01/01/12
Vice Chair	Ray Crawford	crawford@pbworld.com	01/01/12
Vice Chair	Cheryl Prince	cprince@itsi.com	01/01/12

Division Standing Committees List

Position	Member Name	Member Email	Start Date
Immediate Past Chair	John Mascaro	jfmascaro@hotmail.com	01/01/12
Auditing Chair	Ray Crawford	crawford@pbworld.com	01/01/12
Membership Chair	Danny Kahler	dannylkahler@hotmail.com	01/01/12
Nominating Chair	John Mascaro	jfmascaro@hotmail.com	01/01/12
Program Chair	L. Catherine Hader	catherine.hader@aecom.com	01/01/12
Publications Chair (Newsletters)	Celia Gray	cgray@ci.charlotte.nc.us	01/01/12
Strategic Planning Chair	John Mascaro	jfmascaro@hotmail.com	01/01/12
Standards Chair	John Broomfield	jbroomfield@worldofquality.com	01/01/12
Web Site Chair	Cliff Moser	cliff.moser@gmail.com	01/01/12
VoC Chair	Ray Crawford	crawford@pbworld.com	01/01/12
Certification Chair	Pete Hunter	charles.hunter@shawgrp.com	01/01/12