

Leaning FORWARD

BY GEOFF WEISENBERGER

A reinvigorated steel industry fortifies its traditional strengths while better adapting itself for the future.

NASCC: THE STEEL CONFERENCE has, for years, been bringing together those who help design and build steel structures to approach design and construction methods from new angles and see the technologies and practices that will maintain our industry's success in the future. And this year's Steel Conference, which gathered nearly 3,400 attendees in Toronto in March, continued the trend of moving the industry forward.

"These conferences are lightbulb moments, as they bring greater clarity on matters pertaining to structural steel," said attendee Savitree Singh of KS&P.

"Research tends to be too theoretical and engineering tends to follow the design guidelines," said another attendee, Daniel Wan of Hardesty and Hanover. "The conference provides the opportunity to share real-life design experiences and new knowledge on the latest research and design development."

Not only did this year's conference forge ahead, it also took a look back at a sea of change in structural engineering. A special track, "Northridge-20 Years Later," was dedicated to the 1994 Northridge earthquake—which took 57 lives and resulted in \$20 billion of direct damage—and included 17 sessions presented by some of the people who have shaped seismic research, design and construction in the two decades following the quake. Topics included changes to AISC 341, the evolution of materials and inspection, revisiting W1a indications, buckling-restrained braced frames (BRBFs), column and splice details, prequalified moment connections and the SAC Steel Project, an initiative formed to investigate the damage to welded steel moment frame buildings and develop repair techniques and new design approaches to minimize damage in future earthquakes. (Another session, "Rebuilding New Zealand's Post-Seismic Christchurch: It's all about Damage Control," also communicated lessons from a devastating seismic event, the 2011 Christchurch earthquake.)

"The vast body of research and practice conducted after Northridge has helped spur new ideas for steel and composite structural systems that combine efficiency with effective use of materials to mitigate premature failures," said one of the speakers, Jerome F. Hajjar, P.E., Ph.D., professor and chair of the Department of Civil and Environmental Engineering at Northeastern University.

The Need for Speed

While looking ahead 20 years isn't quite as easy as looking 20 years into the past, the conference provided the feel of an industry that is revitalized for the future.

One of the signs is a push for further digital connectivity in the industry. While we've long heard and promoted the benefits of building information modeling (BIM) and better digital communication between designers and fabricators, one part of the steel supply chain that has maintained a more traditional approach is the materials ordering process. With the advent of steelXML, the industry now has a quicker, more accurate and easier option for ordering steel. Many of this initiative's sponsors were exhibitors at the show and were happy to demonstrate how the concept is being incorporated into their products.

"We've had very positive reactions and in some cases, urgency too," said Chris Moor, AISC's director of industry initiatives. "The fact that we are moving the industry into the 21st century seems exciting for many. Everyone who took part in the promotion has said their customers and prospects validated their investment in developing it." (You can read more about steelXML in "eSteel" in the March 2014 issue, available at www.modernsteel.com.)

While steelXML is geared toward expediting the ordering process, one company on the floor, Qnect, demonstrated the ability to expedite connections. The company's QuickQnect software determines the type of connections needed for selected

Geoff Weisenberger
(weisenberger@modernsteel.com) is
Modern Steel's senior editor.



joints in a Tekla 3D model, based on job and fabrication preferences. Within hours (or sometimes minutes, depending on the size of the building area) the cloud servers engineer and connect the joints in one integrated, automatic process.

“We have been working on the software for over five years, and the pre-commercial version was flawlessly used on multiple buildings including a building for Harvard University,” said Jef Sharp, the company’s CEO.

Fitting and welding are also getting a turbo boost. Prodevco introduced ProFitter, a 3D projection fitting system that determines a work piece’s position in 3D space and projects a laser outline indicating placement locations for parts, showing fitters and welders exactly where pieces need to be positioned and welded. If changes are made to the product design, the system simply references an updated CAD file to accurately guide assemblers.

Another means for expediting the welding operation—robots—was also present on the show floor. Geared toward lager fabrication operations (at least 10,000 to 15,000 tons per year), AGT’s BeamMaster system uses three robots—one for pick-and-place, one for tack welding another for main welding—to do the work of 10-12 welders with one operator. Not only that, the system is self-learning.

“An automotive plant has several robots, all working all the time but only doing one thing,” said an AGT representative. “This system can figure out how to weld almost whatever assemblies you give it.”

Session Progression

This year’s sessions were equally forward-thinking, and while many were technical in nature, several others took more of a 30,000-ft view of the industry and offered personal experiences.

“Women in Construction” featured a panel of five women in various areas of the structural steel world offering their advice and sharing their stories. (For more on this session, see this month’s “Editor’s Note.”)

Another session, “Lessons I Wish I had Known Starting Out: 35 and Under!” provided testimony from several under-35 engineers on what they’ve learned so far in their careers, as well as their suggestions for the next generation of engineers emerging from school. Several of the speakers stressed the importance of identifying a mentor, and there were many “don’t be afraid to” points, such as: ask for things, be your own advocate, be proac-

tive and speak up when you’re overwhelmed. One speaker also pointed out the need to “manage up as well as down.”

Cliff Schwinger, P.E., of the Harman Group, offered several pieces of business relationship and communication management advice in his session “Improving Communication Skills—Tips for Structural Engineers from a Structural Engineer.” “Learn to listen,” he stressed. “This includes listening for what is *not* said.” Other communication advice included the need for dealing with problems before they become big, learning to write well and not assuming everyone in your audience knows all the technical jargon. “To a worm in an apple, the whole world is an apple,” he said, noting that the world (let alone the construction industry) isn’t filled with just engineers that will understand everything you say.

Addressing another constantly evolving topic, sustainability, AISC vice president John Cross, P.E., gave a current snapshot of the green buildings landscape and what will be expected of the structural steel industry moving forward. In the session “Sustainability Update—What’s New for 2014,” he noted that “it’s not about points but about transparency,” explaining that the green discussion has moved beyond having a building meet specific benchmarks to demanding more “background information” on all of the products and materials that go into it. “All parties will need to do more tracking and paperwork,” he advised. “Engineers should have a cheat sheet, and not just for steel.” (For questions on how to meet the requests and requirements of the LEED and Green Globes rating systems, the *International Green Construction Code* and ANSI/ASHRAE/USGBC Standard 189.1-2011, *Standard for the Design of High-Performance, Green Buildings*, you can contact AISC’s Steel Solutions Center at solutions@aisc.org.)

You’ll be able to view online versions of all the 2014 NASCC sessions—PowerPoint presentations linked with audio—in approximately one month at www.aisc.org/2014nasconline.

One last tool to keep handy for steel construction and life in general: a positive attitude. As author and speaker Neil Pasricha stressed in his keynote “1000 Awesome Things,” it’s the smallest things in life that can sometimes bring the greatest happiness.

Next year’s NASCC, in Nashville, will run March 25-27. See you there! ■

