



# Steel Sector Looking Good

Software Industry Provides Design Barometer and Steel Construction Industry Backs Up Projections

By Larry Kahaner

Steady improvement seems to be the sentiment most often expressed by company officials involved in the business of steel construction. With the United States economy improving slowly but surely and the global economies booming in certain regions, those in the steel sector are optimistic about what lies ahead for 2013.

“From my conversations with people in the industry, things are turning in the right direction. There are areas that are doing better than others, but the worst of the economic downturn appears to be behind us,” says Michelle McCarthy, Strategic Sales Manager for software developer Design Data ([www.sds2.com](http://www.sds2.com)) of Lincoln, Nebraska.

Others concur. “We continue to see improvement in the number of projects in construction. Although I don’t see the ‘boom’ of five years ago, we are definitely seeing a steady increase in projects and are even seeing older projects being resurrected,” notes Amber Freund, Director of Marketing at RISA Technologies ([www.risa.com](http://www.risa.com)), in Foothill Ranch, California. Adds Michael Brooks, President of Enercalc, Inc. ([www.enercalc.com](http://www.enercalc.com)) of Corona del Mar, California, “Since last June we’ve noticed a surge in activity, meaning there is lots of design work ‘on the boards’. Users are staying current with their software maintenance, and new sales of full systems have increased. After 30 years of observing economic cycles, we believe you will see construction starts looking strong in mid-2013.”

Companies are continuing to upgrade products, keeping them current with new standards and customers’ demands. For example, Design Data has been in business for more than 30 years and its SDS/2 software solutions provide automatic detailing, connection design, engineering information, and other data for the steel industry’s fabrication, detailing and engineering sectors. “The release of SDS/2 v7.3 not only introduced an enhanced version of our core product to the market, it also served as the launch of a new suite of solutions designed to serve the needs of all members of the construction team,” says McCarthy. “Of particular interest

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to structural engineers are SDS/2 Connect, SDS/2 Engineering, SDS/2 Approval and SDS/2 Viewer. SDS/2 Connect is an add-in for Autodesk Revit Structure that gives engineers access to the powerful connection design of SDS/2 within their own Revit model. Engineers can design and apply steel connections in Revit that are backed by long-hand design calculations and provide a higher level of detail for the model,” she says. “SDS/2 Engineering, SDS/2 Approval and SDS/2 Viewer all work in the native SDS/2 model environment, but are segmented according to the user’s role. SDS/2 Engineering is a structural analysis software that allows users to design and size structural members, calculate loads on the structure like wind loads or transfer forces, and still includes the ability to design connections. Because SDS/2 Engineering works in the SDS/2 native environment, this same model can be opened by the detailer, reducing the time spent duplicating model input.

“With SDS/2 Approval, approving engineers can view the model, design calculations and drawings, giving easy access to vital information while eliminating the need to flip through hundreds of pages of paper documents. The free SDS/2 Viewer can be used by anyone who wants to view the project’s progress. SDS/2 Viewer provides engineers with an easy method to get an overall view of the steel on the project, even if they are not taking part in the model approval process,” McCarthy says.

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RISA has added features to its software, too. Says Freund: “Retaining wall design was added to RISAFoundation last year, and we are excited about this new feature. The interface is easy to use and allows engineers to quickly input their soil and wall properties. This feature is fully integrated with RISA-3D so your wall or column reactions can be transferred to RISAFoundation to design your retaining walls, mat slabs, pile caps or other foundation elements. It allows you to go back and forth during your design process and these model changes are automatically updated between the two programs.”

She adds that the company is proud of reaching its 25<sup>th</sup> anniversary last year, saying: “RISAFoundation has had the ability to design all other foundation types so retaining walls completes this program. Whether an engineer is designing one retaining wall or an entire building foundation system, RISAFoundation can handle all of the different foundation elements. We have had a number of new versions released this year that include many new features such as 64-bit versions of all of our programs which enables users to run even larger models than before.” (See ad on page 67.)

**A**nother company celebrating an anniversary, its 30<sup>th</sup> year in business, is Enercalc where Brooks notes, “We’re also celebrating our sixth major release of our structural engineering software system. We tailor the software to the common yet complex component calculations for low to mid-rise buildings...the most common structures anywhere. We’re a group of experienced structural engineers and have a large and long term, yet constantly growing, user base.” He says that the company has released its steel modules now conforming to AISC 360-710. Enercalc also added to its series of loading development modules with more wind, seismic and snow calculators. The new Project Load Group Builder provides a way to list and tabulate individual contributions of gravity loads for a project.

“Providing a tool to assist the engineer in the calculation of loads frees the engineer to apply his or her time on higher and better uses such as economizing the structure, proportioning LFRS frames to bring lateral drift under control, or coming up with creative solutions to meet the needs of the owner and/or the architect. It also offers the engineer an independent check on their input used to develop loads in other programs,” Brooks says. “Our users provided feedback indicating that these were areas that cost them a great deal of time, or that require the development and maintenance of spreadsheets and other tools. All of this becomes a distraction and an inefficiency to our users... keeping them from adding the greatest value to products by functioning at their highest and best use.” (See ad on page 3.)

**O**ur products undergo constant enhancement and improvement to stay current with the ever-changing requirements of the structural engineering profession,” says Rob Tovani, Director of Verification, Validation, and Training at Computers & Structures, Inc. ([www.csiberkeley.com](http://www.csiberkeley.com)) headquartered in Berkeley, California. The company has four specific products: ETABS, SAP2000 CSiBridge, and SAFE. “ETABS is a building program, just like Bridge is a bridge program, and SAFE is a concrete floor and foundation program. SAP2000 is a general analysis program,” he says. “Now we’re going to be releasing a product that enhances the way we do detailing, so that engineers will be able to first analyze, then design, and have a whole set of drawings produced for steel and concrete buildings. It’s an enhancement to our existing

programs. We actually have a version of this which has been released in our SAFE program, but we’re enhancing all of our programs to have this feature.”

As for the overall market, Tovani notes: “We have four products for different sectors, so it seems there’s always some energetic activity somewhere in the world... I’ve talked to some engineering firms who are slowing down, and that does trickle over into software purchases. People weren’t making purchases of software a while back, but now have to get current again. So, our software sales remain brisk.” (See ad on page 68.)

**S**-Frame Software ([www.s-frame.com](http://www.s-frame.com)) in Guilford, Connecticut announced the release of S-FRAME Structural Office R11 this year, according to CEO Marinos Stylianou. “This marks one of the most extensive releases ever delivered by S-FRAME Software. It contains significant updates and new functionality to the complete product line of S-FRAME Analysis, S-STEEL Design, S-PAD Design, S-CONCRETE Design, S-LINE Design & S-CALC plus two brand new products S-VIEW and S-FOUNDATION.” He adds: “R11 includes important new functionality and many enhancements designed to improve our client’s user experience and to address their need to innovate and improve their productivity: full integration of analysis and steel design, addition of three new advanced analysis types, increased solver performance and accuracy, new nonlinear material models, an across-the-board new licensing system, two revamped BIM links for Revit and Tekla, updates to several design codes and the addition of new ones, ability to customize the programs based on language, and a host of other new features and enhancements. In addition, we introduced two brand new products, S-VIEW for structural model viewing, sharing, and validating and S-FOUNDATION for foundation analysis and design.”

Stylianou says the company saw strong growth in 2012 and he expects to see considerable business growth in North America and Asia. “We also believe that Europe will offer some opportunities that we plan to evaluate with localized R11 products.” (See ad on page 4.)

**A**ccording to Stuart Broome, Vice President of Chicago-based CSC, Inc. ([www.cscworld.com](http://www.cscworld.com)), the company specializes in developing code-based structural design solutions. “This means that rather than adding design post processors on a frame analysis program, we build our software from the ground up around the requirements of a design code (such as AISC360 in the case of Fastrak).” Broome adds: “We have just launched our latest version – Tedds 2013 (Tedds is a structural calculations software). Up to twice as fast as its predecessor, Tedds 2013 includes a new, fully integrated 2D frame analysis application as well as many new and enhanced calculations to both U.S. and Canadian design codes. Tedds 2013 is also compatible with Microsoft Word 2013.” Fastrak is a steel building design software alongside CSC’s Integrator.

As an Autodesk Structural Industry Partner, the company has launched CSC’s Integrator. “Available as part of Fastrak, this unique and free software enables structural engineers to synchronize models between Autodesk Revit Structure and Fastrak. It is an industry-leading solution making two-way integration with Revit Structure easy, highlighting any amendment made during the synchronization process, thus enabling engineers to react to changes quickly and reduce the risk of errors,” says Broome.

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Also upgrading their software is IES, Inc. ([www.iesweb.com](http://www.iesweb.com)) in Bozeman, Montana. Engineer and Developer Terry Kubat says: “We are regularly upgrading our products, like VisualAnalysis and ShapeBuilder to meet customer needs by adding new features or just by simplifying existing tasks. Structural engineering is a demanding profession that requires the use of sophisticated tools, but that does not mean engineers should be forced to decipher complicated software. If we have done our job, then we will have fast tools that get the right answers. And, if we have done our job well then even when engineers make mistakes the software will catch those problems and clearly communicate it back to the customer – automatically. “ IES prides itself on listening to customers and using what they say to improve their products. “We know that engineers are overworked and have little time to evaluate new tools. Our web site offers very brief introductory videos to make it easy to find out what a product does and how it works. Once they are ready to try a product, it takes less than five minutes to get it downloaded and running,” says Kubat.

Although computers and software are vital to engineering, Leroy Emkin, Founder and Co-Director of the CASE Center (CASEC) in Atlanta ([www.gtstrudl.gatech.edu](http://www.gtstrudl.gatech.edu)), says that SEs must be “in control of the engineering analysis and design process, with a clear understanding of the characteristics and facilities of the computational tools used for that design. Those computational tools cannot be simple and highly automated ‘black boxes’ working in the

way programmers have chosen them to work, rather than in the way engineers intend them to work.” He adds: “This can only be achieved by providing the engineer with control over software processing, and by having complete and extensive user documentation. CASEC is committed to the development of structural engineering software that engages qualified, knowledgeable, and experienced structural engineers in the modeling, analysis, and design process. We provide structural engineers with a variety of powerful command, menu, and GUI tools that allow them to implement analysis and design strategies developed by the engineer for solving simple to complex structural modeling, analysis, and design problems.”

According to Emkin, the success of GT STRUDL – its Structural Design & Analysis software programs – is demonstrated by its widespread use in the nuclear power and nuclear defense industries of the United States and other countries.”GTSTRUDL development fully conforms to the rigorous ASME and NRC quality assurance and quality control regulations and guidelines. GTSTRUDL’s verification and validation procedures include more than 4,100 test problems ranging from relatively simple textbook academic problems to highly complex and very large structural models of actual heavy industry structures.”

Companies on the hardware side of the steel sector are busy as well. “Our international business is booming, and the U.S. seem to be picking up, indicating a slow but steady climb out of the funk of 2008,” says Chris Curven, Vice President, Field Bolting Specialist at Applied Bolting Technology

([www.appliedbolting.com](http://www.appliedbolting.com)) in Bellows Falls, Vermont. Applied Bolting Technology designs and manufactures Direct Tension Indicators (DTIs) used predominantly in structural bolting applications. They are designed to guarantee that bolts are installed to the specified tension, regardless of the torque required to get there, says Curven. “Our DTIs and Squirter DTIs conform to ASTM standards, and can be used in accordance with the RCSC and AASHTO specifications.”

Curven notes: “The Squirter DTIs have revolutionized the bolt-up process in structural applications. They have the added feature of providing a visual indication when the desired tension is achieved. They make bolt installation and inspection easier and more accurate. In large structural projects, bolting can consume over half of the total labor expense. Improving accuracy and efficiency translates into huge savings. We’ve heard numbers as high as 20 percent.” He says that Applied Bolting provides training to engineers and iron workers. “We travel all over the world to inform designers about the benefits of using DTIs, and showing first-time users how to use them properly,” Curven says. (See ad on page 52.)

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Education is also an important part of the agenda at JMC Steel Group ([www.jmcsteelgroup.com](http://www.jmcsteelgroup.com)) in Chicago, says Senior Sales Engineer Brad Fletcher. “We’ve done a number of things along that front. That’s my main purpose for going out and talking to people. We educate people about our company, as well as about the product and the industry itself.”

In order to help SEs understand more about hollow steel structures, JMC has developed a video series which can be viewed on their website. “We debuted a number of the videos during our Steel Day event last fall, and the immediate feedback from that crowd was very positive.” He says that the industry has grown in the past 10 to 15 years and with that growth has come many more available sizes. “We met and exceeded our goals last year of what we wanted to do and so we set the bars a little higher this year. We’re promoting a jumbo-size range as well, so that’s definitely something to show off.”

In January, the company also launched an online forum called the Atlas Connection that allows engineers to join a secure community and ask questions of HSS experts inside and outside of the company. “It’s a way to create a dialogue or a conversation about HSS and the issues surrounding HSS, so we’re pretty excited about that. The feedback for that has been really great.” (See ad on page 6.)

Dialogue is also an important goal at Vulcraft/Verco Group ([www.nucor.com](http://www.nucor.com)), according to T.J. Mauk, Manager of New Product & Market Development in Norfolk, Nebraska.

“Even though we are large, we listen to our customers to ensure we are continuously improving, not only ourselves but our working partnerships as well. We may have the largest range of steel joist and deck products in the nation and produce more of it than anyone else, but it is for naught if both our customers and ourselves aren’t successful while doing it; that is a partnership. This mutual respect is just part of why we’ve been taking care of our customers for more than a half century,” he says.

Mauk notes two products that he would like SEs to know about. First is Ecospan, a Proprietary Composite Floor System that has been around for several years and is starting to find its place in today’s economy. “Our lightweight, mechanically fastened Ecospan system with our proprietary Shearflex composite fasteners have really made a lot of progress in areas like hotels, dormitories, multi-family residential, and mezzanines that increase floor space in already existing warehouses.” Second is NuBIM Vulcraft, a plug-ins for Tekla, SDS/2 and Revit. “Vulcraft is continuing to provide value-added tools based on listening to our customers. These BIM tools are assisting the AEC community in specifying our products and providing easier communication methods for fabricators. While this is still an ever-changing area, we believe we must commit time and resources to utilize these tools to communicate more effectively with our customers.”

Mauk adds: “The last few years have been a challenge not only for our customers, but for individual American families, difficult for American companies and difficult for the United States of

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America as a whole... We and our customers were forced to find new ways to make and save money, and through this challenging time we've all gotten better. As for the future outlook? Overall business appears to be getting stronger every day. Everyone is cautiously optimistic that this is the year that things really start – in the 2<sup>nd</sup> half of 2013.” (See ad on page 53.)

**O**n the welding side of the steel sector, officials at the ESAB Group, Inc. ([www.esab.com](http://www.esab.com)) in Hanover, Pennsylvania, would like SEs to learn about Warrior, which they call the next generation of welding technology. Greg Stauffer, Vice President for Sales Support and Standard Equipment, ESAB North America, says: “Warrior is an inverter-based power source for MIG, flux-cored, stick, and TIG welding. It’s also for arc gouging. Warrior delivers up to 500 amps and is designed for heavy-duty use in rugged environments.”

Stauffer says that fabricators want versatile equipment that can consistently perform in dirty work environments. “Of course, in this economic climate, everyone needs tools that return value on the investment. Warrior delivers value not only with price, but it uses less energy than other machines, making it cost effective. It is also one of ESAB’s user-friendliest machines, which makes it easy for novice welders to use. The simplicity of Warrior means users aren’t losing time on the learning curve.” He adds: “Our customers also don’t want to lose time when machines are down for repair. Warrior is durable and designed to perform consistently in harsh work environments. It is designed to work with generators, and the

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