Software Business

ROBUST

UPGRADES APLENTY

By Larry Kahaner

The software segment of the construction industry is doing very well, according to those involved in the business. And most expect it to get even better.

"Business is robust and appears to be strong through the remainder of the year. We have seen a record number of new customer additions, and available talent is becoming short in supply," says Doug Evans, Vice President of Sales for Design Data (**www.sds2.com**). To help ease the talent crunch, companies are taking advantage of technology. "With the strong market, we are seeing firms trying to optimize their investment in technology to meet project timelines. With BIM workflows and qualified personnel shortages, many firms are trying to leverage technology resources over people resources to meet short-term project crunches. Longer term, we are seeing firms place an emphasis on developing the technical expertise to plan these projects under new BIM workflows in an attempt to meet customer and market requirements."

Stuart Broome, Engineering Business Manager (USA) for Tekla (**www.tekla.com**), agrees that the market is strong. "We're very busy. The recent release of Tekla Structural Designer was received very positively by engineers who tell us they're excited by the concept of combining code-based design for both concrete and steel buildings with general structural analysis all in one software tool that has a fresh, easy-to-use interface and a fast, powerful core. Our sales engineers are rushing around the country demonstrating Tekla Structural Designer and TEDDS to engineers who are updating their analysis and design tools now that the construction market is back on solid ground."

When it comes to products, Evans says: "SDS/2 Engineering provides all the tools and features to design and analyze a steel structure. SDS/2 is a very illustrative product, allowing you to visually add and inspect your structure. In 3D, you can graphically add all loads and easily review the results, such as deflected shape diagrams, stress analysis and much more. In addition, the industry-leading automatic connection design has been enhanced to enable you to design around specific variables within each connection, including plate thickness or weld size. This robust product has many benefits that can be used throughout the engineers' project." To make reviewing and approving easier, Evans recommends SDS/2 Approval. "A rapidly growing workflow of model approval over drawing approval is gaining momentum, and SDS/2 Approval was created to service this demand. You can save many hours, and increase the depth and understanding of communication to all project partners, using the model as a project center."

Adds Evans: "SDS/2 Detailing is the flagship product of Design Data's software solutions and has set the standard for all other structural steel detailing systems for over three decades. The automatic connection design and automatic drawing production combination are unparalleled in the industry. Moving your design model into a manufacturing model is time critical. SDS/2 Detailing can help you meet short timelines through its ability to import models and quickly start creating connections and drawings to manufacturers' specifications."

Tekla's Broome also notes that the company launched version 21 of Tekla Structures in March, bringing more drawing capabilities to their BIM solution. "Tekla Structures is well known around the world as being the most widely used and complete solution for steel and concrete detailing, but is less well known as a structural engineer's tool for producing construction documents and general arrangement drawings. V21 includes many new features to make drawing production quicker than ever before. Because all of the detail is contained in the actual model, there is no need for additional 2D line work. Even dimensions and labels are automatically produced on the drawings. This also makes dealing with changes very quick. We have introduced these new features based on required deliverables that engineers are facing." (See ad on page 46.)

Tekla has also launched its 2015 version of TEDDS. "In this software, users can choose from one or more of the Tekla calculation library, or they can write their own," Broome says. "Professional documentation can also be created from the software. Forget time-consuming hand calculations and cumbersome spreadsheets. Instead, automate your repetitive structural and civil calculations with TEDDS and transform the way you work." Also new is Tekla Structural Designer (TSD). "TSD was developed using some of the technologies from previous CSC solutions, Fastrak and Orion," says Broome. "Developed with BIM integration in mind, TSD enables structural engineers to model, analyze, design and produce drawings for complete buildings in a single interface. Capabilities include: steel, composite and concrete and is versatile enough to include floors, complex roof structures, gravity and lateral systems all in the same model."

At GT STRUDL (**www.intergraph.com**), Executive Technical Director Leroy Z. Emkin also sees a healthy business environment ahead. "We expect a significant surge in new business opportunities for GT STRUDL as a consequence of its new CAD Modeler and GTMenu user interfaces, which make GT STRUDL far easier to use by engineers at all levels of knowledge and experience while continuing to deliver the important structural engineering benefits for which it is widely known."

The company has recently released GT STRUDL 2015. "Among the most important new features and enhancements included with this version are the new CAD Modeler Graphical User Interface (GUI), and a significantly updated GTMenu GUI," says Emkin. "As an extension to AutoCAD, CAD Modeler enables structural engineers to take full advantage of AutoCAD's powerful, robust and easy-to-use 3D graphical manipulation features in order to create models for structural analysis and design. CAD Modeler includes a rich collection

continued on page 47

of easy-to-use dialogs to specify information required, and to display the results of structural analysis and design. It also incorporates the ability to automatically create GT STRUDL input command files, and the ability to automatically execute GT STRUDL using menu picks in the CAD Modeler ribbon within the AutoCAD screen. CAD Modeler creates an environment within which structural engineers can far more easily create simple to highly complex models in less time, at less cost, and in a more reliable manner."

Emkin says that GTMenu also has been updated to provide a more modern GUI look, feel and features. "Significant improvements include easy navigation through dockable dialogs, improved mouse control, increased display speed, easier-to-follow workflows, and display features that provide very smooth graphical manipulation of model displays. It also provides the ability to display two concurrent and interconnected views of the model which improves the review of model details, analysis and design results."

Ahmed Khalil, Senior Structural Consultant at Applied Science International (**www.appliedscienceint.com**) says they will soon release Extreme Loading for Structures Software (ELS) v4.0. "The new version allows creating numerical models of structures for nonlinear dynamic analysis with more than a million elements; and yet, the advanced level analysis runs in a reasonable amount of time, with reliable accuracy, on a standard PC. ELS allows building three-dimensional nonlinear solid models for complete structures, taking into consideration the contribution of secondary members and slabs."

The timing is excellent, says Khalil. "This new release of ELS could not come at a better time as the trend in the United States and all over the world is to use explicit building code requirements for preventing disproportionate collapse of a structure due to local damage of any of its components. The Alternate Path Method is increasingly becoming the standard of practice for preventing progressive collapse in all government building codes. Performing nonlinear dynamic analysis is preferable when using the Alternate Path Method, as it leads to a more uniform factor of safety and a more cost-efficient design." He adds: "With ELS, structural engineers can perform nonlinear dynamic analysis for the column removal scenarios, taking into consideration three-dimensional effects such as membrane action from slabs or arching action in masonry walls. Contribution of non-structural members as well as secondary structural members can also be evaluated. This allows an accurate estimation of the inherent strength of structures that is not possible using traditional beam and shell element linear models. This becomes particularly important when evaluating existing buildings or new buildings with non-traditional structural systems." (See ad on page 67.)

"Business is the best it has been in over a decade," states Michael D. Brooks, president of Enercalc (**www.enercalc.com**). "There is a huge amount of work on the boards, and users are updating long-outdated software. We are seeing strong new license sales. Once this design work comes into construction, the economy will be flooded with dollars, creating a great economic boom." Says Brooks, "We have discussed our Cloud deployment before, and after some delays, which were actually just subscription management related, we are now up and running. We use a scalable Amazon Web Services platform to provide our user base with our same proven software system running in the cloud through any HTML5 browser. There is nothing else like it in the Structural Engineering community.

"We've been in business for 32 years and have seen three large economic cycles. The United States is strong and will continue to lead the world. For the short term, business will be strong, and for the long term we can only hope." (See ad on page 3.)

continued on page 49

When it comes to wood construction, Kevin Rocchi, WoodWorks (**http://cwc.ca/woodworks-software**) Technical Support Leader says their software continues to be the industry's leading software of wood design for engineers. He would like SEs to know their latest software version, Design Office 10 (SR3a), was released in October, 2014. "The current U.S. version conforms to the IBC 2012, NDS 2012, SDPWS 2008, and the ASCE-7-10. This summer, the WoodWorks software developers will begin the development of a new version of the software which will be updated to conform to the IBC 2015, NDS 2015, SDPWS 2015 and the ASCE 7-10. The current goal is to release the updated version before the end of 2015."

He notes: "In Canada, our latest version of the software is the Design Office 9 (SR3), released in July, 2015. This version of the software was updated to conform to the CSA O86-14 and NBC 2010. In this latest version, there were significant changes to the Shearwalls module, as the shearwall resistance equations in the CSA O86-14 were updated to a mechanics-based approach and also now includes a check for the panel buckling for the sheathing of the shearwall. Along with these changes, a new feature was added to the software. The Detailed Shearwall Design shows the shear resistance and panel buckling calculations for all the shearwalls designed in a model. This feature is very useful for understanding the new shearwall resistance equations and checking the calculations made by the software."

Sales have been strong, Rocchi says. "WoodWorks software sales over the past year have steadily been increasing for both the U.S. and Canadian editions. Currently, there are over 2,500 users of U.S. WoodWorks Design Office and over 1,200 users of the Canadian WoodWorks Design Office.

Nemetschek Scia (**www.scia.net**) is celebrating its 40th anniversary as an engineering software company, according to Dan Monaghan, Managing Director, North America. In addition, the company released Scia Engineer v.15, which is its most substantial release ever, he says. "With the theme Open BIM and Open Checks, Scia Engineer v.15 is helping firms plug analysis and design into BIM and allowing engineers to expand their FEA workflow by letting them script their own custom checks. "

Says Monaghan: "With Open BIM, Scia Engineer v.15 offers bi-directional links to Revit 2016 as well as the 64-bit version of Tekla Structures, and continues to be the only engineering software certified for IFC. With IFC, Scia Engineer supports the ACI, PCI and ASIC new BIM interoperability initiatives. It also gives engineers an easy way to exchange models with over 150 BIM software programs. And, for firms working with graphical scripting, Scia Engineer v.15 introduces new links to Rhino, Grasshopper, and Dynamo.

"Open Checks is being introduced in a new product called Scia Design forms," Monaghan adds. "Scia Design Forms is similar to Mathcad and MATLAB but tuned for structural engineering. These checks can run as stand-alone or linked to Scia Engineer's FEA modeling design environment. This ability to allow engineers to extend their FEA workflow by writing custom checks is 'game changing.' More than a 'box of software,' Scia Engineer is a platform upon which firms can centralize their design tasks and consolidate the number of engineering programs they need to own and maintain."

How's business? "In general, we're seeing an uptick in business across all sectors we serve," Monaghan says. "The big drivers are the steady migration to BIM and a new emphasis that firms have to save money by consolidating the number of software they own and maintain. With Scia Engineer, firms have a very efficient engineering program for their day-to-day work, and a deep set of analysis capabilities they can tap for larger, more complex projects that require advanced non-linear and dynamic analysis. This desire for one program to handle all of a firm's analysis tasks also extends into design. Engineers don't want to check gravity in one system and lateral in another, or beam/columns in one program and floors in another. There's a true efficiency to programs like Scia Engineer that can help firms integrate and consolidate their workflows." (See ad on page 50.)

At Bentley Systems (**www.bentley.com**), Senior Product Manager Josh Taylor says that the company has some breakthrough capabilities coming this year. "We've begun to connect all the family products, not just the structural but Bentley wide, which is a successor to the current V8i generation. The exciting thing about this for structural engineers specifically is that we've given access to cloud-based analysis and design services that have orders of magnitude more power compared to what they're using in the traditional desktop environment. We're doing this for both the STAAD and the RAM lines. A key point is that we're not reinventing the way that users use these products and services. They will be accessible directly from the interface of the product and are aimed at bringing more power to the way that users currently use their products. This allows users to evaluate 10, 100, maybe even 1,000 times the number of design scenarios that they're currently able to do purely in the desktop environment. We're using analysis engines and design services based in the cloud as opposed to the desktop. This will all fall under a service we call CONNECT Edition scenario services. There will be a portal to this service available within each application. STAAD.Pro and RAM Concept will likely be the first to do this. "

The company also is simplifying their licensing. "We're offering both STAAD and RAM products under one license. We call this structural enterprise. It's a special license that gives the user unlimited access to products. It's very favorably priced in comparison to purchasing each of these licenses as a stand-alone. The other big factor, aside from just the price, is that it enables the full use of interoperability across products."

"Last," says Taylor, "we're continuing to develop the core analysis and design features within each of the products, and that includes color-coded activity enhancements that engineers find useful."

Also supporting efficiency for clients is ADAPT Corporation (**www.adaptsoft.com**), a recognized leader in the detailed design of post-tensioned slabs and beams for over 30 years. According to Florian Aalami, President and CEO, "We are building on our long heritage of concrete design expertise to develop a comprehensive software solution for the integrated design of concrete buildings. Most software vendors are advertising the same complete solution for all design requirements, making it very challenging for the practicing engineer to distinguish between offerings and their respective 'value.' We have taken a very practical approach to our product development strategy. Instead of

continued on page 51

driving ahead with the implementation of marketing oriented features, we embedded ourselves in the workings of a few strategic clients and sought to discover critical bottlenecks that cause inefficiencies in their design workflows. This led us to discover practical design steps that almost every engineering firm still carries out manually, like the calculation of tributary-based areas and load takedowns for the gravity loading and verification of their vertical elements."

Aalami describes how ADAPT went from discovery to a solution, "Learning about this requirement, we implemented a new feature as part of our ADAPT-Builder 2015 release that quickly calculates tributary-based loads in any simple or complex 3D model. Our tributary loading feature has added tremendous productivity gains to our clients, by freeing them of burden of having to develop a fully functioning FEM model before being able to calculate column and wall loads. A builder's integrated column design module can be run with forces calculated using the tributary module or finite element method."

And, striving to improve efficiency for the SE's workflow results in other improvements to ADAPT's offerings. "We are also leveraging our unique software architecture, which supports global and single-level analysis and design procedures in one model, to provide workflow efficiencies other disparate solutions can't provide. For example, engineers can carry out the detailed design of slabs for lateral frame action forces in the same model they use to run the global building model for wind or seismic loads, eliminating the need to maintain multiple models and transfer data between them." (See ad on page 38.)

According to Darin Willis Director of Engineering at Ram Jack (**www.ramjack.com**), the company has recently updated its ICC Evaluation Service Report (ESR-1854) for its helical and driven-steel piles to the 2015 International Building Code (IBC). "It's important to Ram Jack that engineers and building officials have peace of mind when specifying our products," he says. "Who is more qualified to evaluate and rate a building product for compliance with the building code than the ones who publish it? Ram Jack also received our ISO 9001:2008 certification. This demonstrates our commitment to quality control, as well as assurance that our products are manufactured with the highest standards."

Says Willis: "We are seeing a steady growth pattern of approximately 20 percent year-over-year, and the credit goes to our staff and franchises for never ceasing in our pursuit of giving our customers solutions that work. We always hold true to our mission statement: 'To be recognized for providing peace of mind through engineered foundation solutions and exceeding customer expectations; nothing more, nothing less.' "

Willis concludes: "Ram Jack's core values include 'complete integrity' which means building our future by providing support for our customers. We furnish an incredible support system for our franchises that includes: IT support, marketing, technical coaches, business coaches, research and development, and professional engineers for our 60-plus installation locations throughout the U.S., Canada, Puerto Rico, and Central America. Providing the support to our franchises equates to providing the best support to our customers. We are continuing to grow all of these areas of Ram Jack support."

Shannon Hughes, Product Manager – Services and Customer Experience at Weyerhaeuser (**http://www.woodbywy.com**), notes that the company, headquartered in Federal Way, Washington, continues to see customers struggle to find new efficiencies in today's building environment. "This makes it all the more important that Weyerhaeuser delivers efficient tools that keep pace with technology, changing building codes, varied user sophistication and evolving customer needs,"

says Hughes. “Structural engineers benefit from recent updates to two Weyerhaeuser software tools. Javelin software allows users to build a complete model of the entire structural frame. The 3D modeling, state-of-the-art CAD capabilities, and integrated design tools provide the power needed to specify products and track vertical loads from the ridge to the foundation. Javelin was updated in 2015 to include force orthogonal snapping, hatch beams and controlled spacing – all features to make designing easier and more flexible.”

Hughes adds, “Our Forte single-member sizing tool easily performs load calculations and to help identify solutions for specific conditions and geometry. The latest version of Forte offers the ability to analyze members for commercial loading with improved input and analysis. It also offers load assistance for complex conditions, the ability to size engineered wood as well as dimension lumber and an intuitive workflow and user interface. The best part is that it is a free tool available for download.” In addition, Hughes notes an increase in the use of open floor plans. “Our software, design support, specification guidance and several of our product offerings help engineers and designers navigate these tricky open floor plans.”▪