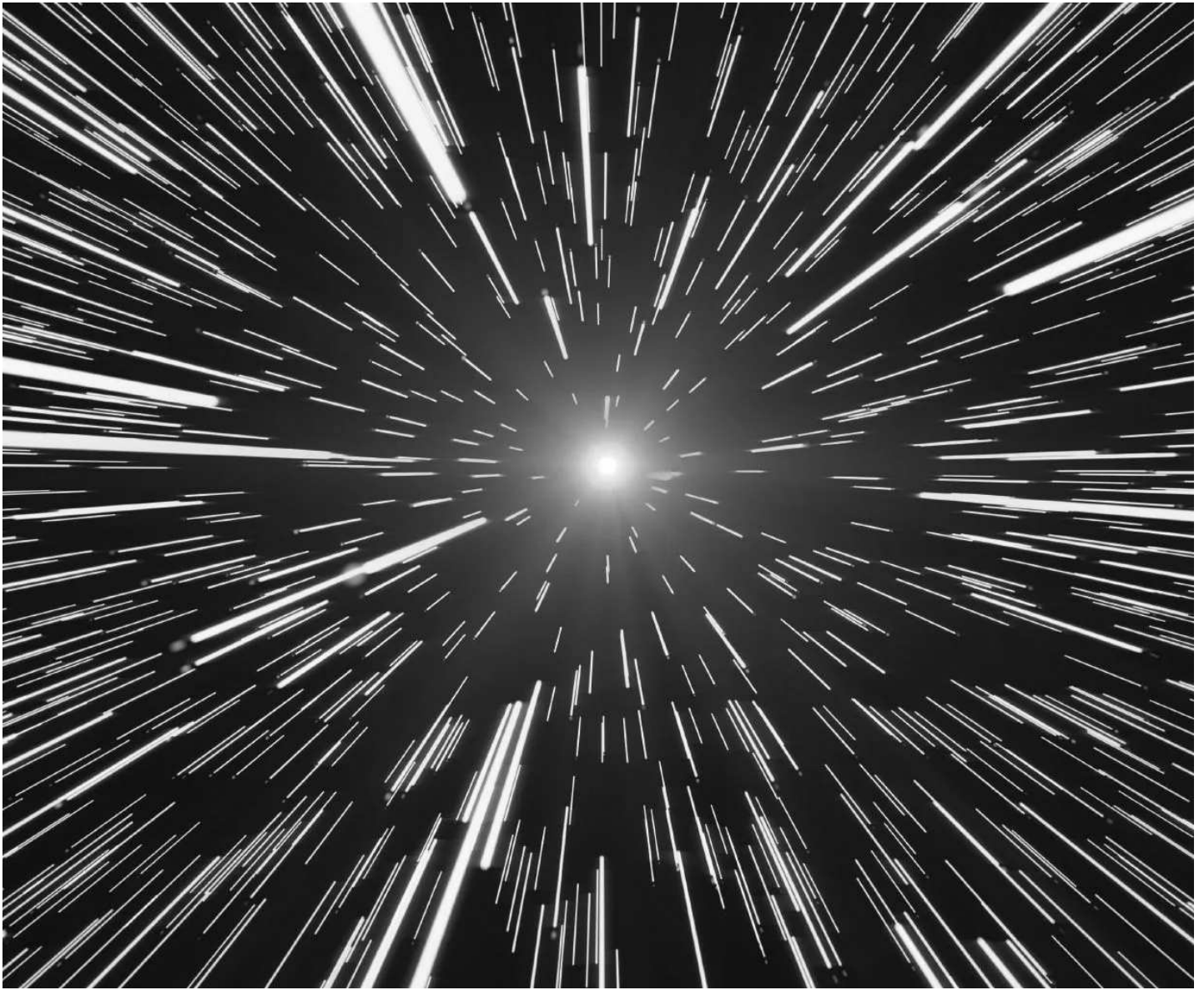


Moving at the Speed of Steel



At varying scales and every step along the way, speed-related improvements to the steel design and construction process are combining forces to help bring steel projects together faster than ever, now and in the future.

FROM INITIAL CONCEPTION to completion in the field, steel framing systems come together quickly relative to other options.

That's always been the case.

There are plenty of reasons for this, which we do our best to highlight on a monthly basis in *Modern Steel Construction*.

But this month, we're focusing even more on how steel projects can become (and are already getting) even faster.

Introduced in 2019, AISC's Need for Speed (N4S) initiative is intended to recognize, demonstrate, and further encourage efforts to accelerate steel projects—with an overall goal of increasing the speed at which a steel building or bridge can be designed and constructed by 50% by 2025.

But how is the industry making this happen? Gains of this magnitude aren't achieved with the flip of a switch—at least not entirely.

But what if that switch helped stabilize a heavy crane load via a high-flying load-stabilization solution? Or allowed a load to be released hands-free from that crane via remote control? Solutions like this are not only faster but also safer.

Or what if there was a rapidly deployable steel bridge system that could be installed following bridge damage or even on a permanent basis? Or resources to guide you to faster bridge design and fabrication?

Or what if there was a steel grade that reduced welding preheat times?

Or a system that speeds up bolting by employing bolts in areas that were previously inaccessible? (And just imagine if such a product were to be applied to the Speed- Core system!)

Or steel panelized wall and roof systems that can reduce onsite steel-related labor hours by up to 40%?

Or combination design-analysis software that can reduce data input by a quarter and cut results interpretation times in half?

Or systems that can increase fabrication productivity tenfold thanks to automated options that can be applied to nearly every shop process?

Or software that allows you to model stairs up to two to three times faster?

Or a bolted plate connection system that can save six weeks on a major hospital project versus a typical concrete shear wall system?

Or even a simply more streamlined process for ordering steel deck, thanks to a smart, widespread distribution network?

Good news: All of these solutions—and plenty more—already exist and are helping speed steel projects up *today*.

In addition, AISC and its partners are involved in several ongoing research projects exploring options to further increase steel's speed at every corner of the industry. These include leveraging existing power source feedback technology from welding machines to speed up nondestructive testing, developing an accelerated steel flooring system for office and multistory residential buildings, creating floor systems using asymmetric shapes to provide erection speed advantages in project types that have traditionally proved elusive to steel, a crowdsourcing challenge to create faster steel connections, leveraging augmented reality (AR) technology to overlay design elements onto steel shapes in the fabrication shop in an effort to speed up fitting and assembly operations, and ongoing research into the SpeedCore system to optimize it for wind and seismic behavior and fire design, as well as expanding bolting options.

You can learn about all of these accomplishments, opportunities, and initiatives on the following pages. Keep reading to see how AISC and others have been feeling the need for speed—and working to create

tangible results.

A Brief (and Recent) History of Steel and Speed

While we've worked to collect dozens of speed-related efforts and successes into one issue, we've also been working to better tell the speed tale regularly over the past couple of years.

- "Teaming Up" in the September 2022 issue tells the story of how an integrated team effort helped bring together a Philadelphia hospital project quickly. In the same issue, "Come Together" highlights another hospital project (in Denver) that took advantage of the SidePlate system to accelerate the erection process.
- "Facilitating Faster Framing" in the August 2022 issue highlights the finalists of AISC's SpeedConnection Challenge. Also in that issue, "No Paint? No Problem" serves as an important reminder about how a significant portion of structural steel framing doesn't need to be painted or primed, thus saving money and time.
- "Faster and Faster" in the June 2022 issue details the expedited erection of 200 Park in San Jose, Calif., which is the second building to incorporate the SpeedCore system.
- The May AISC IDEAS2 Awards coverage provides a look at SpeedCore's first implementation, Seattle's Rainier Square.
- The April 2022 New Product section highlights several speedy software solutions.
- "Augmented Approach" in the March 2022 issue elaborates on AR and how it can speed up the steel fabrication process.
- "Early Integration" highlights how Qnect software is helping designers create connections faster than ever.
- "Evolutionary Optimization" in the December 2021 issue focuses on a design data tactic that can move projects forward faster. And in that same issue, Jon Magnusson provides his observations on how the engineering profession has consistently accelerated in "The Times, They've Always Been a-Changin'."
- "Against the Wind" in the November 2021 issue focuses on wind design for the SpeedCore system.
- "Nearly 360 Degrees of Separation" in the October 2021 issue features testimonials from early adopters of robotic fabrication equipment.
- "Intuitive Details" in the August 2021 issue demonstrates how factoring in constructability early in the design process can make erectors' jobs easier— and faster. "Coat of Arms" in the same issue focuses on speed successes for KTA-Tator's new headquarters building.
- You can probably guess what "Accelerated Welding: Part Two" in the July 2021 issue, written by welding experts (including Duane Miller) at Lincoln Electric, is about.
- Every part two needs a part one, and the June 2021 issue includes "Accelerated Welding: Part One" as well as "Augmenting Productivity," another AR-focused article.
- "SpeedCore: Seismic Advantages" in the May 2021 issue details seismic considerations and implications for the SpeedCore system.
- "Inside Job" in the April 2021 issue highlights the expansion of Seattle's marquee basketball arena into a stunning, modern venue. "Driving Innovation" in the same issue ponders how the steel industry can elevate its "innovation" status. Also in that issue, "Moving Bridges Forward" details how press-brake-formed tub girders can speed up bridge construction.
- "Super Fast, Super Tall" in the March 2021 issue documents how Manhattan's supertall One Vanderbilt opened early thanks to an innovative connection design and modeling process. "Core Value" in the same issue tells the origin story of SpeedCore.

And don't be fooled. We only started applying the N4S label to articles in the past couple of years. There are countless other examples over the years in *Modern Steel* of how design, fabrication, detailing,

erection, and other tactics have helped bring a building together faster than other material options and previous steel projects.

You can find all of these articles in the Archives section at www.modernsteel.com.



Just Hit “Start”

Finding qualified fitters and welders will become increasingly difficult in the next decade and beyond, thus increasing labor costs for fabrication companies.

There are two major ways for such facilities to become more profitable: increase capacity or reduce costs. Ideally, both can happen at the same time. How? Automation.

Not only does it help with output and budget, but also accuracy, quality, and, most importantly, speed.

It's well known that structural steel fabrication is largely non-repetitive relative to industries like automotive. Every project or assembly is different. The good news is that it is becoming increasingly easier to weld using robotics. No wait times, no breaks, and no holidays. And while robots are currently limited to simple- to medium-difficulty assemblies, shops can continue to produce more complex assemblies with existing personnel. This flexible approach also extends to using robots for assembly and assigning all welding to shop personnel, or delegating assembly to a day shift and welding to a night shift.

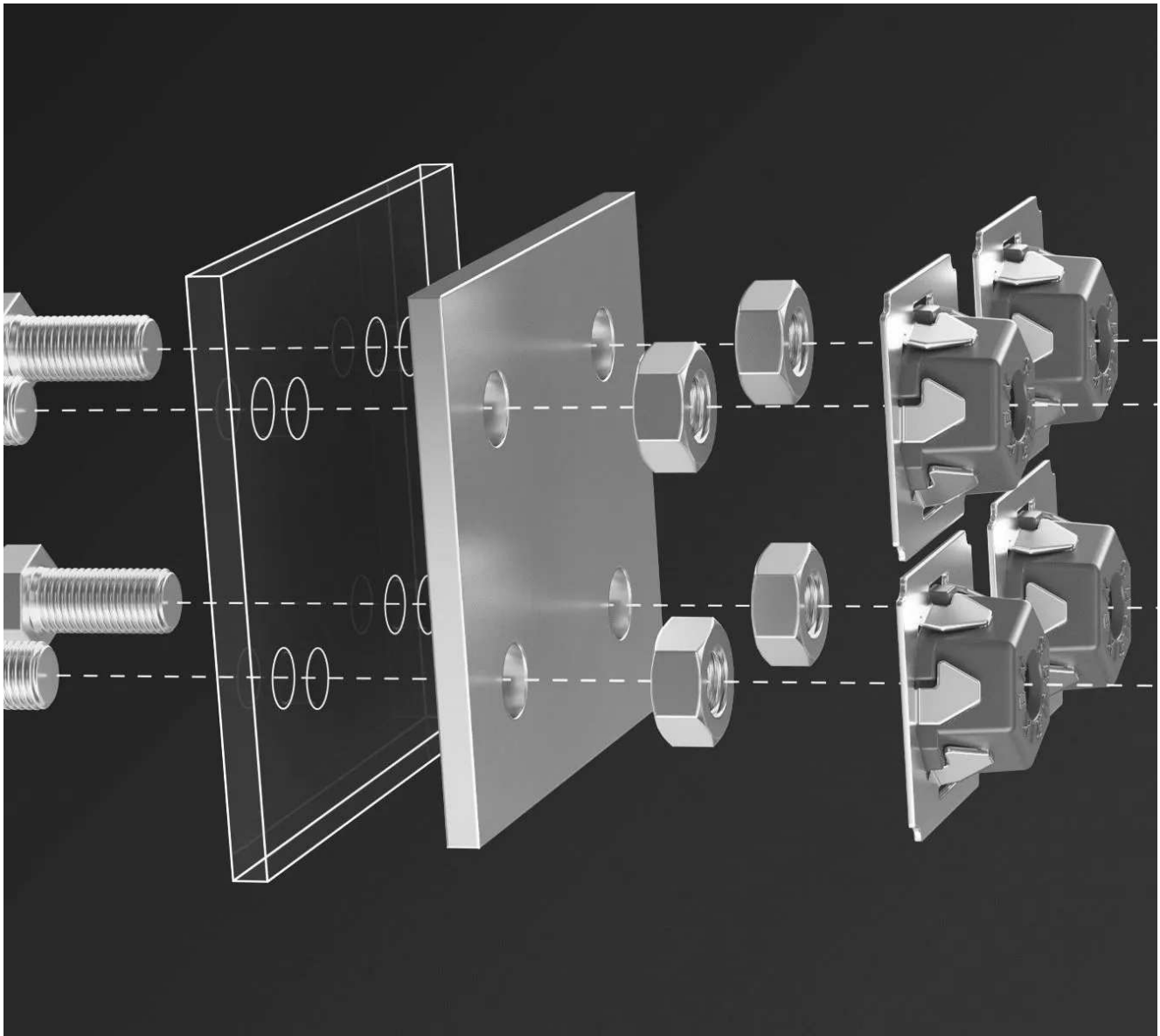


Depending on the size and weight of the assembly, robotic solutions can work up to five times faster while assembling and up to two times faster while welding compared with conventional methods. Considering the ability of lights-out and remote manufacturing, automation makes the difference.

The Abka Automation Robotic Structural Steel Assembler (Agen or Assembly Generator) can help shops be customized to any of these scenarios and fabricate jobs as quickly as possible, turning nonrepetitive production into mass production. The system fully supports SDS2 and Tekla Structures, and work orders, including magnet, tack, and weld positions, are generated automatically with just a few clicks.

The system starts with two industrial robots and can go up to six robots—the more robots, the shorter the time cycle. The robots can assemble and weld parts within a tolerance of 0.05 in, and the base configuration can handle profiles up to 43 in. wide and 39 ft, 4 in. in length. The system's beam rotators can rotate up to 6 tons and allow the robots to reach all sides of an assembly. And with the aid of infeed and outfeed conveyors, just one operator is adequate to fill a full shift. Just hit "Start" and let the robots do the work.

For more information, visit www.abkaotomasyon.com.



Bolt where You Can't Reach

Bolting is faster than field welding; that's not news.

But until now, if you couldn't reach it, you couldn't bolt it. Atlas' Shuriken™ bolted connections change that with a built-in wrench that lets you bolt where you can't reach, eliminating field welds, reducing the number of inspections, and shortening schedules. Originally developed to simplify and speed up HSS splices, Shuriken can save time and reduce costs wherever connection access is tight.

So how does it work? Shuriken is installed in the shop with tack welds and holds a standard nut in place on the back side of a bolt hole. Standard A325 and A490 bolts are then installed from the accessible side in the field. Shuriken is flexible enough to maintain installation tolerances, yet robust enough to handle the torque from pretensioning A490 bolts. The use of standard hardware also means design values come straight from the AISC *Steel Construction Manual* ([aisc.org/manual](https://www.aisc.org/manual)).

No application exemplifies Shuriken's potential to accelerate steel construction better than SpeedCore, the most exciting new system in building construction today, with the proven ability to cut months from high-rise schedules. But in the absence of an economical one-sided bolting solution, SpeedCore projects have traditionally required miles of field welds. If the Shuriken system were to be implemented on a

SpeedCore project, it could eliminate these time-consuming and labor-intensive welds by allowing builders to easily install high-strength bolts from one side. It's a simple and cost-effective possibility for further accelerating SpeedCore erection and expanding its applicability to more projects.

Just as field welding pops up in all sorts of applications, so do the opportunities to eliminate it with Shuriken. Whether it's HSS connections, new framing against an existing wall, a tightly spaced pair of beams, or an architecturally exposed detail, Shuriken enables field-bolted connections with less labor and simpler inspection.

For more information, visit www.shuriken.com.



Single Setup Solution

In today's fast-paced economy, fabrication shops and equipment makers are forced to maximize every dollar—and every minute. That's why it is important to invest in a machine that does more than just cut plate. Kinetic's all-in-one CNC plasma-cutting systems are designed to help businesses maximize profitability and productivity by helping them find ways to boost output, save time, and save money.

By combining plasma and oxy-cutting technology with vertical machining functions, Kinetic machines perform multiple processes in a single setup, eliminate moving work in progress between stations, and reduce labor needs. In fact, these machines can save time from start to finish—and they just might mean the difference between keeping up and getting ahead.

Work faster with multiple processes in a single setup. Businesses that are looking to save time can benefit from a plasma-cutting system that performs multiple processes in a single setup. Kinetic CNC plasma-cutting machines with integrated cutting, milling, and drilling capabilities eliminate the need to move workpieces from station to station, allowing fabricators to drastically reduce the amount of time

and handling it takes to complete a run of parts. In fact, engineering time studies have shown a 95% reduction in time to fabricate a part using Kinetic's combination machines.

Speed up production with automated part unloading. Busy fabricators and OEMs benefit from plasma-cutting systems that save time by processing plate *faster*. With automated part unloading, Kinetic plasma-cutting machines can unload and organize parts based on a specific part number or work order number. They can also select individual parts from a group nested in a single sheet—and then sort them onto pallets based on different criteria. This automation allows Kinetic machines to cut at one end of the table while unloading at the other and produce parts with minimal downtime.

Save money with reduced labor hours. When a shop's technicians can rely on a machine to do more on its own, the business can reduce its labor needs. With part marking, cutting, milling, drilling, tapping, and more, a Kinetic machine can form multiple fabrication processes in one step and save businesses time and labor. Not only can it eliminate or reduce the time and labor needed to move parts for downstream processes, but it can also reduce the labor hours needed to clean and service machines, thanks to its automatic chip, dross, and waste collection and coolant recycling.

A smarter, faster investment. When it comes to investing in a new combination plasma-cutting, milling, and drilling machine, the right device will ultimately save your business time and boost your bottom line without slowing it down. Thanks to a variety of time-saving and productivity-enhancing features, including automated part unloading, easy-to-use software, better workflows, and the ability to perform multiple processes in a single setup, Kinetic machines can help you save time, reduce labor hours, and ramp up production.



For more information, visit www.kineticusa.com.



Reduced Preheat Times, Increased Project Speed

The steel construction industry is becoming increasingly comfortable using ASTM A913 high-strength structural steel (recently branded as Aeos™ by Nucor) for its ability to support larger loads with less material. However, an often-overlooked attribute of Aeos— one that is directly beneficial to the structural fabrication community— is the weld preheat reduction inherent to ASTM A913 steel, which can result in time, material, and energy savings. As an approved base metal, grades 50, 65, and 70 are classified as Category D materials meeting prequalified preheat requirements per AWS D1.1, when a minimum base material temperature of 32 °F is met and appropriate weld filler materials are used. This weld preheat reduction was capitalized upon by AISC member fabricator Cives Midwest when fabricating the structural steel elements on the Salesforce Tower project in Chicago. Cives team members noted that they were able to realize a preheat time savings of between one to three hours per joint when splicing Aeos grade 65 members together. This resulted in significant overall time savings both in their shop and on the jobsite. Nucor is proud to announce its new *Aeos Welding Guideline*, which will prove to be a reliable resource for the fabrication, design, and construction community when questions arise regarding welding process, filler materials, and preheat requirements for Aeos. To get your copy of the new guideline, visit nucor.com/aeos-welding-guidelines or use the QR code below.



The design and construction industries are constantly striving to minimize initial investment while maintaining construction quality and facility operation throughout the life cycle of the structure. This

places sustainability at odds with designing and constructing buildings that contribute to a resilient community. Finding a speedy solution that meets sustainability and resilience objectives is ideal.

DuraFuse Frames are newly prequalified, high-ductility steel moment frames that provide speedy fabrication, speedy erection, and speedy repair following a significant seismic event. Full-scale laboratory and shake-table testing has proven the performance and repairability of the connections.

In developing this moment frame connection, the idea was to create an economical structural system without sacrificing critical structural elements. During connection development and testing, fabricators and erectors were engaged to ensure the connection would be easy and quick to fabricate and erect. The field-bolted connection eliminates field welding and the associated inspections.

On a recently erected project in San Diego, the steel erector indicated that the DuraFuse connections were the “most erectorfriendly moment connections” they had ever used. One additional erection benefit is that DuraFuse Frames do not require seismic lateral bracing. This reduces the number of bottom flange brace points by about 70% on typical projects, contributing further to reduced cost and time of fabrication and erection.

The speediness of DuraFuse does not stop at the frame’s topping out. The inherent repairability adds another dimension to the speed benefits. DuraFuse connection design focuses the damage from a significant seismic event into a bottom flange fuse plate rather than the beam. The combination of the bottom flange location and the bolted connection makes the post-event repairs drastically simpler. Simply unbolt the damaged fuse plate and replace it with a new one. Independent research indicates at least a 60% reduction in post-event repair time and cost (FEMA P-58 methodology) following a major earthquake.



For more information, visit
www.durafuseframes.com.

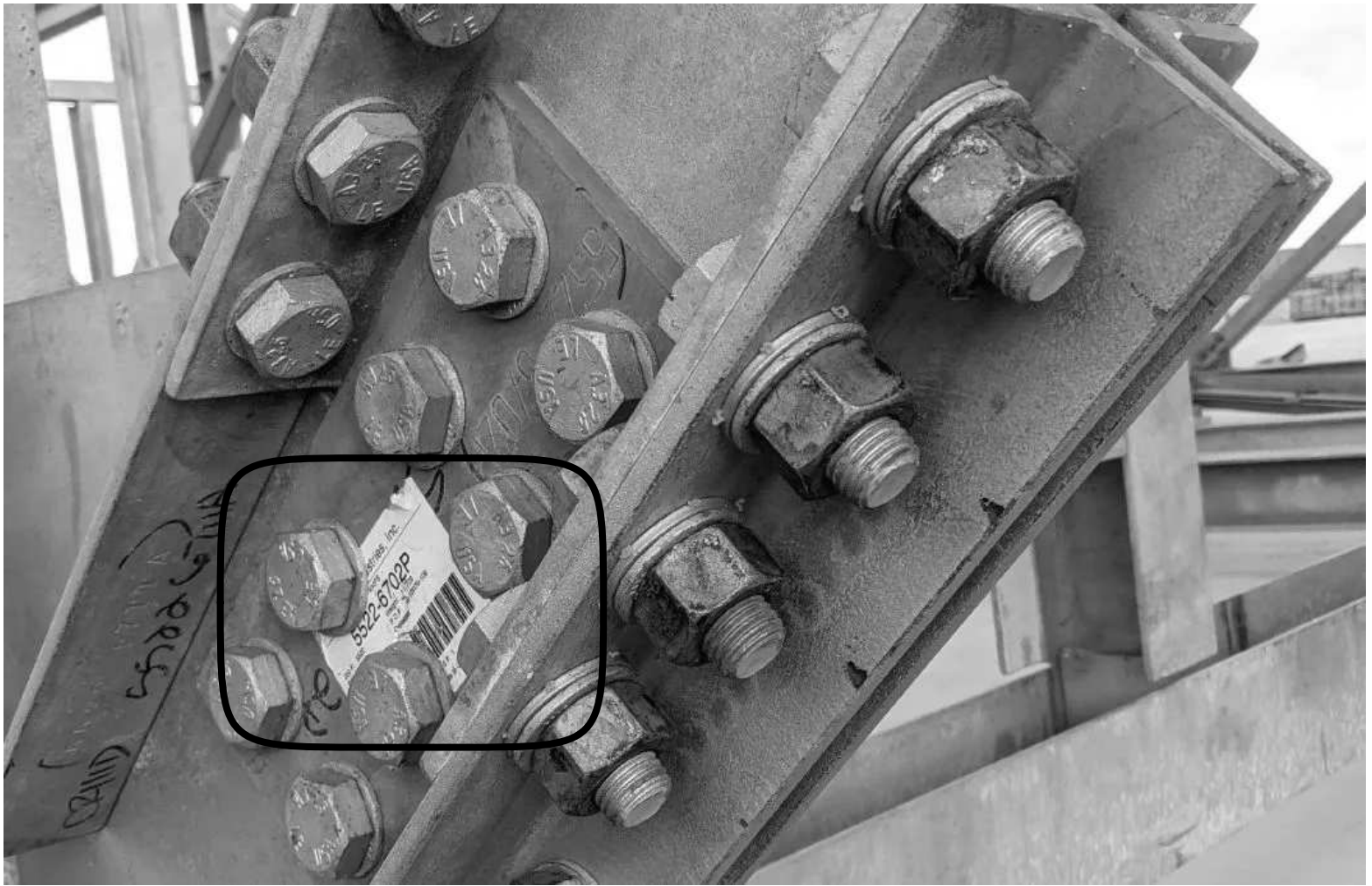


Far Reach, Fast Delivery

Columbia Safety and Supply, an outfitter of fall protection, safety equipment, and gear for at-height workers, accelerates the purchasing process through its online Columbia Safety PRO platform. The system empowers customers to seamlessly integrate management, accounting, and procurement needs into a single easy-to-use system.

PRO's robust purchasing approval system allows companies to set up purchasing controls based on their policies and lets them create and schedule custom reports, monitor purchasing trends, uncover cost-saving opportunities, identify process inefficiencies, and control employee spending. And the company's national distribution footprint means that for 91% of the U.S., orders can be delivered in two days or less.

For more information, visit [**colsafety.com/iron-steel-construction**](https://colsafety.com/iron-steel-construction).



Direct Tension = Faster Tightening

Want to speed up bolting installation? Applied Bolting's direct-tension indicators (DTIs) can help.

DuraSquirt® DTIs reduce bolting installation, marking, and inspection to a single-step process by following Section 2.12 of the *RCSC Specification*. Each bolt is tightened until the orange indication media is expelled, letting the installer know that the operation is complete. There is no need for checking the wrench's calibration or hash marking, such as when using the turn-of-nut, or harried installation before the fastener's lubrication deteriorates, as with twist-off bolts.

One testimonial, from a Canadian mod yard, indicated that DuraSquirt DTIs are four times faster than a comparable turn-of-nut operation. Another, from a New York bridge project, relayed that instead of going with a turn-of-nut option on a bridge project, where tightening 12 bolts took 11.5 minutes, they could tighten 12 DuraSquirt bolts in just 2.5 minutes.

For more information, visit www.appliedbolting.com.



Ordering Overhaul

AISC member service center Infra-Metals is leading the industry with technology solutions that not only enhance the customer experience but also improve the bottom line and accelerate projects.

We have long been invested in continuous process improvement both in our distribution centers and digital environments, and we bring value to the often-overlooked procurement life cycle through data integration. Our approach focuses on two areas: producing electronic information and delivering that information.

Infra-Metals has integrated the ability to import a customer's project files into our ERP system using several file types, the most notable being SteelXML. With the integration of SteelXML, whether you're a fabricator, supplier, or software vendor, you will incorporate a standardized file format designed to facilitate the entire process of buying and selling steel. Our inventory management and sales tools allow us to import a request for quotation, determine the best use of purchasable sizes and lengths, and respond to the request in minutes rather than hours, all while virtually eliminating human error and reducing material waste. Furthermore, SteelXML has many other opportunities to exchange information, such as purchase orders, mill test reports, advanced shipping notices, and invoices.

In addition to supporting files using SteelXML, we also have the ability to import many other file types, including KSS and CAD drawing files. We employ the latest processing equipment and staff that can import and optimize your drawing file directly to our machinery in any of our locations across the country.

To effectively deliver this transactional information, we rely on our customer portal, a customized resource for all things pertaining to orders, designed to provide real-time information and save

customers time and money. The portal allows users access to open orders, purchases, shipments, mill test reports, LEED documentation, and account information from a browser. Customers can search for documentation, including mill test reports, dating back years. We've found that our online portal serves as a personal filing cabinet as many customers elect to only download mill test reports as needed.



Looking toward the future, Infra-Metals strives to keep pace in this ever-changing digital world—and rest assured, there is more to come.



For more information, visit www.infra-metals.com.



Lightning-Fast Layout

The Lightning Rail® Automated Layout System from Automated Layout Technology, LLC™, uses a simple DXF file exported from a fabricator's detailing/design software to eliminate the countless manual labor hours involved in laying out handrails, stair stringers, trusses, and more.

In comparison to traditional methods, the Lightning Rail system will have a handrail drawn on the work surface before your fabricator has their drawings, tape measure, and soapstone in hand to begin the layout process. This results in time savings of an hour or more on every handrail and stair stringer they fabricate—an hour that can then be used for productive, value-added processes. The system also results in a more accurate layout, drastically reducing rework and erection time. In addition, the layout will not move, flicker, shutter, or shake, and fabrication is still performed on a rigid steel frame table. All in all, the combination of time savings, error reduction, and enhanced ergonomics can help reduce handrail and stringer fabrication time by up to 50%.

For more information, visit www.automatedlayout.com.



Fast Fasteners

The Birmingham Fastener family of companies manufactures standard, non-standard, and custom fasteners and operates the highest volume distribution center of nuts, bolts, and standard fasteners in the U.S.—and is the country's largest distributor of A325 and A490 bolts. In addition to standard manufacturing and distribution, Birmingham Fastener offers state-of-the-art specialty manufacturing capabilities and custom packaging and kitting services.

With current issues in the supply chain, lead times have lengthened significantly for most of the prominent structural bolt manufacturers. Due to Birmingham Fastener's vast inventory levels, we are typically able to offer significant time savings by having the largest structural inventory in the nation.



In recent years, Birmingham Fastener has grown its family of companies to include Atlanta Rod and Manufacturing Inc., K-T Bolt Manufacturing, and Champion Manufacturing. This diversity provides customers with the strategic advantages of certified quality, superior service, and fast delivery.

For more information, visit www.bhamfast.com.



Fine-Tuning Shop Processes

Steel Projects offers software solutions that speed up the production process for steel fabricators. Together with our parent company, Ficep, we have developed the “Intelligent Steel Fabrication Concept,” which can be partially defined by the following features.

Automatic and advanced integration with detailing software. Doing more than just dealing with traditional DSTV files, the software allows users to manage more advanced formats such as IFC, which include more information that can be used on the shop floor later in the process. For example, including assembly information enables marking parts’ locations and IDs on the CNC machines with scribing technology, eliminating the need for operators on fitting stations to measure since all the crucial information is marked directly on the parts—which also helps eliminate errors.

Part checking and validation. After importing drawings that have been designed by the detailing office, the software automatically checks what has to be produced. From here, the software can match the necessary tooling operations with ones that are actually available on the shop floor and automatically flag any mismatch. It will also detect any errors that may have been designed by the detailing office. Only compliant parts are sent to production, saving time dealing with potential errors.

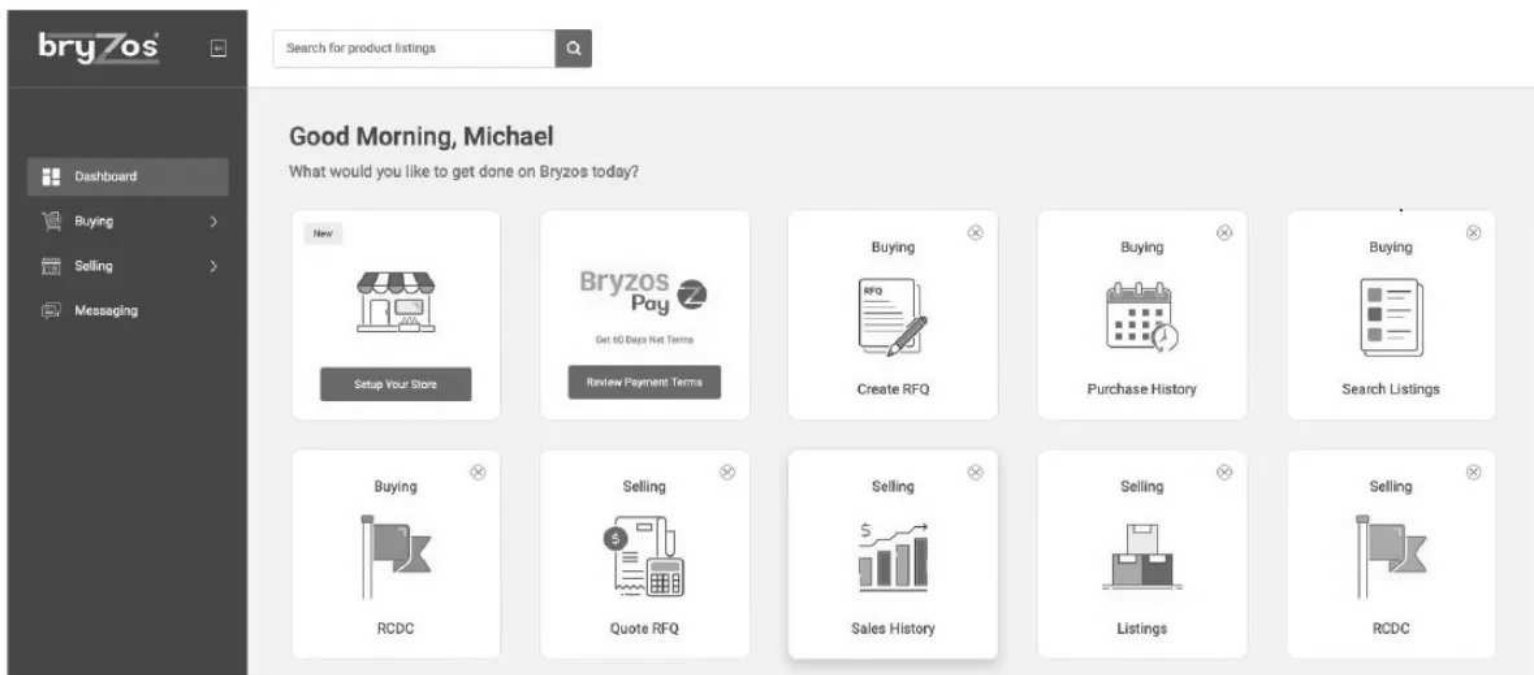
Section and plate nesting. Nesting is performed automatically, rapidly, and according to preferred parameters, allowing fabricators to save significant time and steel on an annual basis. In addition, the beam nesting is designed not only for procurement but also for actual production, meaning complex parts such as haunches can easily be handled. In addition, the plate-nesting engine allows users to maximize sequences—again, saving time.

Automatic CNC data creation (both CNC machines and automatic conveyors). The software automatically creates the required CNC data not only for individual parts but also for automatic conveyors, resulting in a seamless handling process.

Mobile management of manual workstations. The solution features a dedicated mobile application to operate physical workstations that are not automated, such as fitting, welding, or painting. Work orders can be sent digitally to operators, who can input production feedback to track and analyze production later.



For more information, visit www.steelprojects.com.



Prompt Purchasing

Bryzos is revolutionizing the way steel buyers and sellers trade online.

The steel-trading software has simply taken the traditional methods of buying and selling—and the processes associated with them—and made them digital. Built on top of time-tested financial technology (fintech) processes, the platform's technology streamlines the buy-sell process, thus creating more value while taking less time. For example, a buyer can submit an RFQ and receive multiple quotes less than two hours later. The full purchase process can take less than 24 hours, from creating an RFQ to receiving quotes to credit approval to finalized purchase. The software uses its BryzosPay aggregator to process cards, ACH, wire transfers, and checks and offers free Net 60 payment terms to its buyers while guaranteeing Net 30 payment to sellers.

For more information, visit www.bryzos.com.



Efficiency through Panelization

The last two years have been a pressure cooker.

In an environment that includes COVID, skilled labor shortages, supply chain problems, and cost challenges, we've all felt a need for solutions that make our efforts better, faster, and more efficient. That need is recognized by construction decision-makers around the world. A recent McKinsey study called *The Next Normal in Construction* shows 60% of executives believe major shifts will occur within our industry in the next five years and claims that "those willing to innovate and disrupt have \$265 billion in annual profits awaiting them."

One of the most beneficial improvements in steel construction is panelization, a process designed to increase speed and safety. The term is usually defined as a prefabrication technique that allows for the offsite assembly of wall panels or roof panels in a controlled manufacturing environment. The finished panels are then shipped to the building site for installation.



BZI (Building Zone Industries) is taking panelization further. We use onsite assembly to mitigate the costs of freight that are incurred with offsite work, which drives a faster and safer manufacturing assembly production workflow. Most importantly, our panelization innovations and process improvements significantly reduce the amount of aerial time on a project, effectively engineering out fall hazards associated with roof, floor, and wall installation.

We have developed specialized equipment that improves the panelization process, enabling onsite production and efficiency gains—all while improving project delivery timelines, safety, and financial risk. Here are three of our patented innovations:

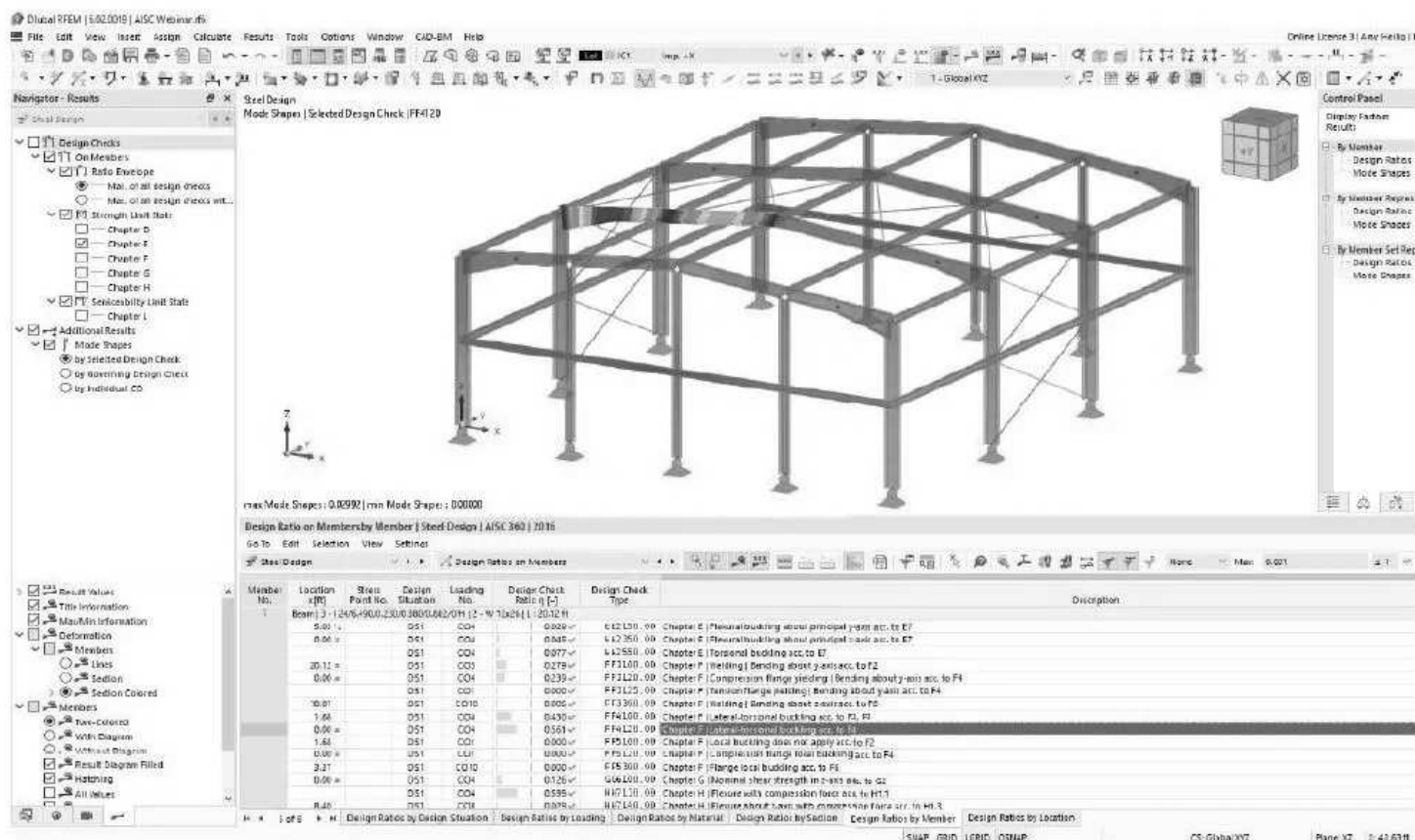
Panel Table. Consists of two work platforms below 6 ft that allow workers to quickly assemble wall and roof panels on the ground. These modules can then be transported or lifted into place to complete the structure. A self-contained unit while in transport or stow mode, the Panel Table system is much safer than working in the air and can be deployed anywhere in the nation.

MezzMaster. With the panelizing activity completed at the table and ready to be placed within the building structure, the MezzMaster enables teams to safely lift and install completed wall or roof panels directly from the table—rather than assembling them in the air, one piece at a time—providing faster results while increasing safety.

Wall Master. The Wall Master builds on our existing panelizing technology and processes to handle and transport large wall panel assemblies from the table to their wall installation locations.

With these panelization technologies, we have reduced onsite labor hours by up to 40% and are continuing to make improvements daily in terms of design, delivery, and safety.

For more information, visit www.bzisteel.com.



Analysis + Design = Speed

Dlubal's recently released RFEM 6, along with the Steel Design add-on, is a 3D finite element analysis (FEA) program that combines steel analysis and design into a single workflow. This new version uses the computer's multi-core processor to simultaneously solve hundreds of load combinations for an efficient calculation process, potentially cutting design and analysis times in half.

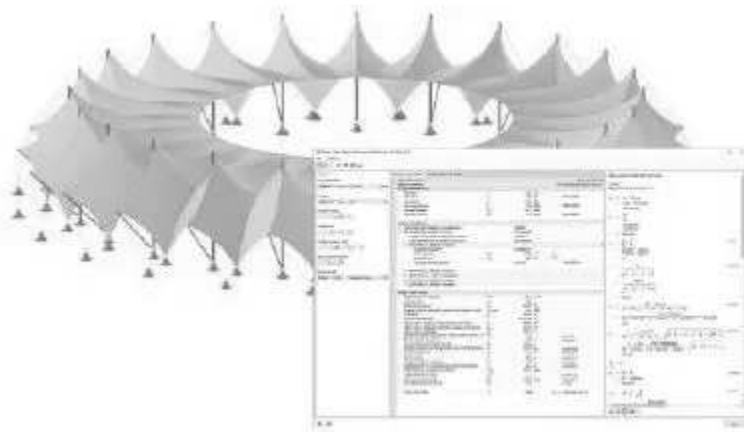
Incorrect input for a member's unbraced length considering flexural buckling, torsional buckling, and lateral torsional buckling could drastically affect the design output. While this information is rather straightforward for cantilevers or simply supported members, many members fall outside these simple applications.

RFEM 6 can automatically detect intersecting nodes along the member length. At each node is the ability to set intermediate restraints based on four independent degrees of freedom (DOFs), including eccentricity options for top or bottom flange bracing only. These settings will directly calculate the unbraced lengths for the member stability checks. The assigned intermediate restraints are also graphically displayed along the member for clarity.

AISC's Direct Analysis Method requirements, such as member stiffness reduction, are automatically calculated and applied based on the member's axial force and provisions for slender vs. non-slender sections. Member imperfections such as out-of-plumbness or out-of-straightness can also be included in all analysis conditions.

The RFEM steel design results include detailed output such as all variables, formulas, and code references directly from the AISC *Specification for Structural Steel Buildings* (ANSI/AISC 360, aisc.org/specifications) used in the calculation. These detailed results provided in RFEM can be

efficiently and easily followed for transparency avoiding the “black box” methodology. Additionally, the table result output includes all applicable chapters from the AISC for each member or member set beyond displaying only the controlling chapter provisions. Table output can be filtered or directly exported to Microsoft Excel for further postprocessing.



Lastly, the program printout report is completely customizable with default or user-defined template options. Quickly add or delete relevant model data, analysis result information, or design output. Insert external PDFs internally in the report or add photorealistic renderings of the structure geometry or results. The ability to work concurrently in the program is available, with all printout report data and graphics updating in real-time with any model modifications.

The result is a program that can reduce data input by 25% compared to similar packages—and by 50% or more when it comes to results interpretation, since the new version now outputs all design equations, code references, variables, and complete step-by-step formulas, eliminating the need for engineers to go through the results in detail and trying to determine how the program came up with the values.

For more information, visit www.dlubal.com.



Boosting Barcoding

Working towards the goal of increasing the speed at which a steel project can be fabricated and erected, P2 Programs' newest product, STSX, is revolutionizing the steel industry!

STSX provides fabricators, painters, galvanizers, and erectors with extreme mobility in barcoding using phones, tablets, and other devices. STSX is a web-based application that brings instant, real-time tracking information to your fingertips to significantly reduce decision-making time.

Barcoding with STSX increases the speed of your existing processes and negates the inefficiencies that have been accepted as standard operating procedure (SOP) for far too long within the steel fabrication industry. The benefit is clear: STSX will improve production by reducing decision-making time and errors while also providing a reduction of needed manpower and manhours. All the above leads to a decrease in hours and an increase in productivity.

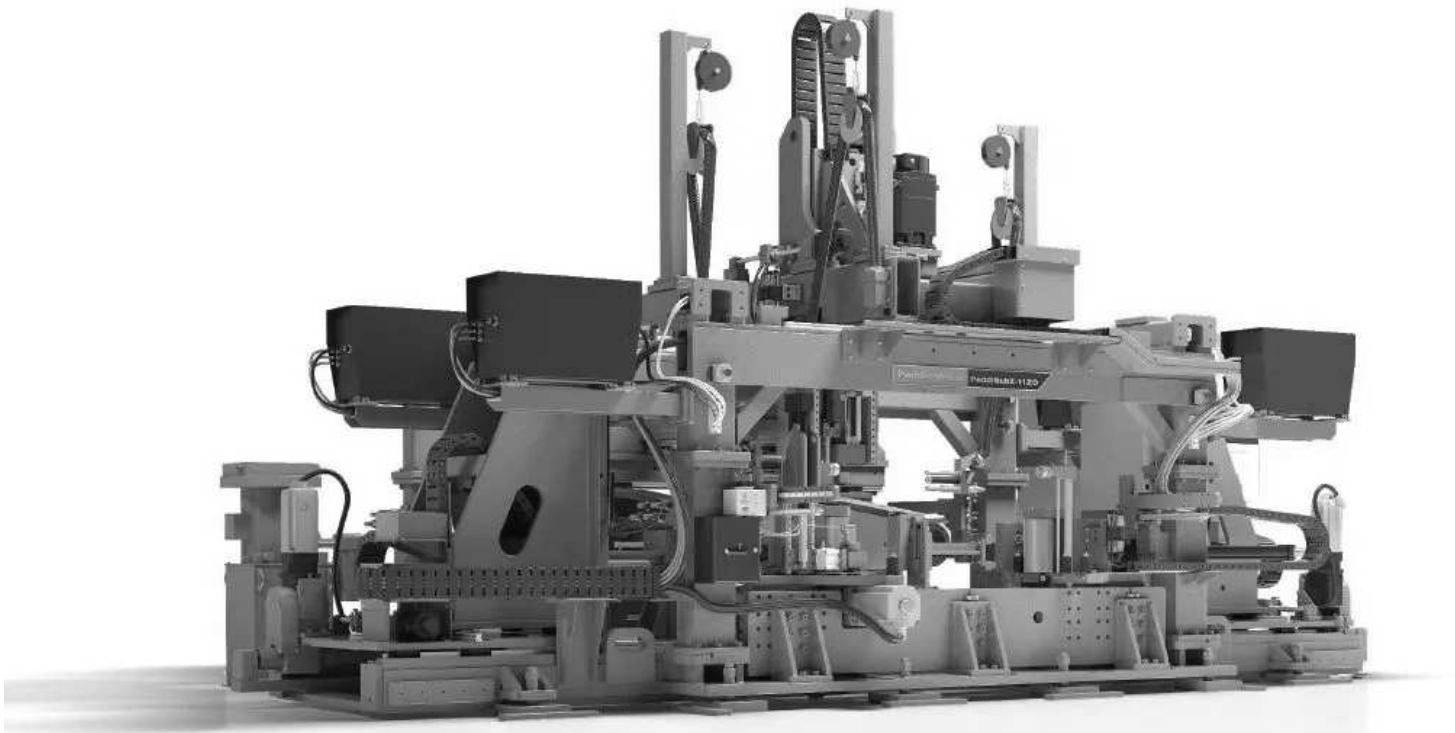
Starting with your raw material inventory, STSX can help you with the receipt of that material, its heat traceability, and its location in the yard. The speed at which you can process a cut list with full heat traceability from the raw material to the final piece mark is unmatched. When it comes to inventory audits, these become simple and fast. Instead of a biannual or yearly audit of your inventory, it can be

accomplished in minutes so you can “audit” sections of your inventory more often. This inventory traceability alone can cut many hours and even days out of the manufacturing process because you now have confidence in your inventory!

We have all experienced delays in trying to determine the location and/or status of a piece mark on the shop floor. Hours are spent looking through paperwork to determine if all the piece marks passed quality control (QC) before being loaded. And what about the hours spent double-checking that the required piece marks made it onto the load? Hours upon hours are spent on these activities and others on a weekly basis.

Using STSX barcoded steel provides for a virtually error-free data collection environment while saving money and employee time with a return on investment of approximately one year.

For more information, visit www.p2programs.com.



Multitasking to the Max

What motivates a steel fabricator who's already heavily vested in current machine technologies to invest in a new fabrication system that promises unlimited potential?