
Rollforming
Magazine
EXCLUSIVELY DEVOTED TO CONSTRUCTION ROLL-F
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OCTOBER/NOVEMBER 2021
Vol. 4, No. 5
SLITTER LINES FOR HEAVY USERS
EMERGING INDUSTRIES
LGS/CFS
STOCKING SCREWS?
WHAT YOU SHOULD KNOW

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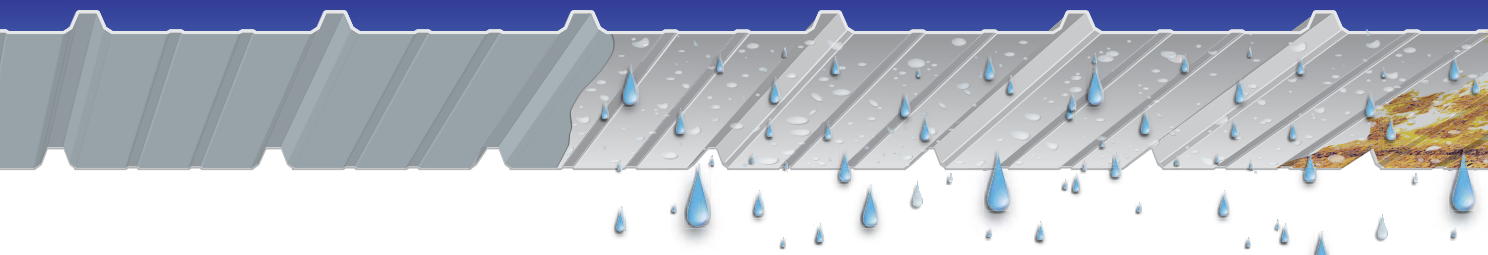
Condensation Control

Fight Condensation Without Insulation



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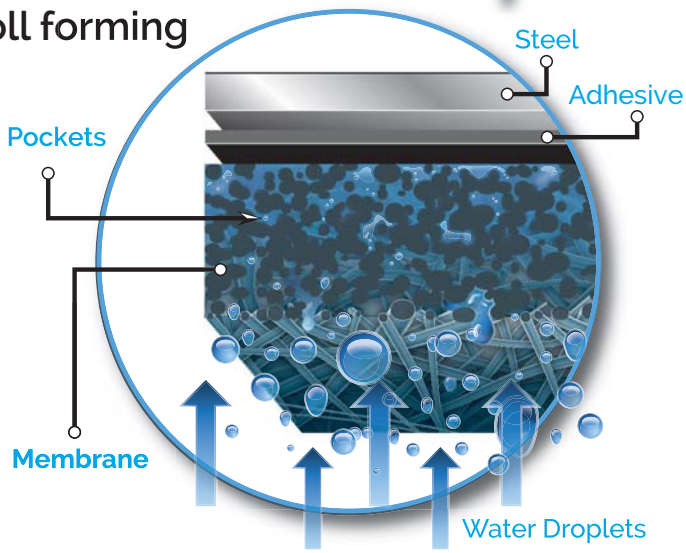

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Options

By Sharon Thatcher

This issue of *Rollforming Magazine* is all about options. Are you located in an area where the competition is tough and you want to look at options other than panels, or perhaps recognize a new opportunity? Light-gauge steel (LGS) (also called cold formed steel-CFS) is an emerging industry in the U.S. deserving of a closer look (p. 18).

Do you need ideas on how to accommodate equipment when space is a problem? Your supplier most likely has the expertise to tailor an option (p. 32).

Is a small slitter not able to cut it for your high-volume slitter line? There's an option for that (p. 34).

Want to provide more than panel to your customers so you can offer one-stop-shopping? Screws are a common option and we have information on what to look for (p. 12).

Are trade shows back on your agenda this fall and winter? There are many options (p. 45) and Publisher Gary Reichert has suggestions on how to make the most of your attendance (p. 42).

In each issue of *Rollforming Magazine*, I try to include a business profile. This time it is with a company excelling in the LGS/CFS market: Tober Building Co. of Ohio. I think you will enjoy reading about owner Todd Tober's successful journey. He started as the owner of one business with two employees in 2013, and has expanded into five related businesses now employing 53. Tober is someone who recognizes his options, and has the confidence to pursue them.

Enjoy!

Galvanic Action Revisited

Corrections and Clarifications

[The following is in response to the article *"Galvanic Action: Using incompatible metal components results in premature corrosion"* in August/September issue of *Rollforming Magazine].*

This article has some good information, but in total is a bit misleading due to not expounding the complete story.

It leaves one to rely 100% on the galvanic scale as the beginning, middle and end of the story. It isn't. It may be the beginning, but far from the end in many common applications. The bottom line is that while this scale is the first thing most people grab to rely upon as a technical resource, it does not tell the whole truth and therefore can be very misleading.

The galvanic scale gives the order of electro-chemical behavior and therefore compatibility—but of the parent (or base) metals only. It does not consider metal oxide layers, and because all metals form oxides … well, that's the rest of the story. The oxide is a different material than the parent metal that created it and often behaves as an insulator, preventing (or retarding) electron exchange (galvanic action) and NOT necessarily reflecting galvanic compatibility of the parent metals.

The galvanic scale reflects electrolytic behavior solely of the parent metal, so it only tells the whole truth when oxide layers are not involved-and that only happens when the electrolyte is very aggressive (acetic; e.g. sea water). For these reasons, it should not be relied upon as a sole information source. In fact, one could say that it only tells the complete truth when in the presence of salt spray or other chlorides.

By way of example: Aluminum forms a durable oxide very rapidly in the presence of air and humidity. This is also sometimes induced by a chemical process (anodization), but it also happens naturally just with exposure. Aluminum oxide is a barrier material coating the aluminum, and it is electrically non-conductive, so electrons are impeded from passage through it from anode-to-cathode. One can use anodized, or just aluminum that has oxides formed on a bare copper roof, without incident in most environments. Those two metals are very distant on the scale, but compatible owing to the aluminum oxide layers.

I also read in there that dissimilar metals in direct contact always result in corrosion. Not true. Moisture is needed to establish an electrolyte. If the connection is kept dry, there is no electrolytic contact and no corrosive effect. Understanding corrosive behaviors of metals requires a much deeper dive than the galvanic scale because various metal oxides in varying environments all behave differently.

Incidentally, the Metal Construction Association publishes a Fastener Compatibility guide that takes into consideration oxide layers and also longevity/durability considerations. It is a metal roofing industry consensus document (as opposed to what one single company or another has to say on the subject) and therefore one of the best practical resources out there."

Rob Haddock
Metal Roof Advisory Group
Metal Construction Association

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On The Cover:

A residential building made with cold-formed steel. *Photo courtesy of Steel Framing Industry Association*

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- State of the Industry
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Tennsmith Acquires Roll Former Corp.

Tennsmith has announced its acquisition of Roll Former Corporation of Chalfont, Pennsylvania. Finalized on August 19, Roll Former Corporation is now part of Tennsmith, joining Roper Whitney of Rockford, Illinois as one of the Tennsmith brands.

Roll Former Corporation is a leading manufacturer of roll-forming equipment for the sheet metal forming industry.

"This acquisition made a lot of sense for Tennsmith as roll-forming equipment is a natural extension and complement to the sheet metal-forming equipment our company manufactures," remarked Mike Smith, one of the Tennsmith owners. "With this product line, our organization can provide one of the most comprehensive lines of forming equipment and solutions to the metal-forming industry."

Roll Former Corporation was established in 1982 designing and building machinery for roll-forming applications,

such as metal roofing, garage door panels, sky lights, swimming pool components, and more. It was the first company to produce and market portable roll-forming machines for the standing seam metal roof industry.

Tennsmith, based in McMinnville, Tennessee, purchased Roper Whitney in 2011, including owned brand names such as Pexto and Connecticut. Together, Tennsmith and Roper Whitney now offer the most complete line of American-made metal-forming tools and machinery on the market. Product lines include automatic folders, hand brakes, shears, slip rolls, cleat benders, notchers, rotary machines and more.

Since 1910, Roper Whitney has been manufacturing high-quality sheet metal-forming tools and equipment from basic punches and hand tools, to sophisticated, automated equipment designed to streamline the fabricating process. RF

METALCON Announces Top Products Award Winners

Accessories: S-5! for the GripperFix utility mounting system;

Alternative Energy: ATAS International for InSpire® HP, a high-performance solar air heating wall panel;

Insulation and Weather Barriers: Bay Insulation Systems for Bay Runner Insulation Systems™;

Rollforming Equipment: New Tech Machinery, UNIQ® Control System;

Roofs: S-5! for WindClamp2X to improve wind uplift performance;

Technology: RoofersCoffeeShops;®

Walls: ATAS International, Omawall™ architectural back-ventilated rainscreen wall panel.

The products will be showcased at METALCON 2021 Oct. 6-Oct. 9 in Tampa Bay, Florida.

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Attendees will be invited to vote onsite for their top three choice products. Special recognition for the METALCON People's Choice Top Three award winners will take place on the show floor.

This year's exhibitors were invited to nominate their top metal products in a variety of categories.

Products must have been introduced to the market after Jan. 1, 2019, and its manufacturer a 2021 METALCON exhibiting company.

Exhibitors were eligible to nominate more than one top metal product but not more than one product per category. Winners were determined by an electronic vote. RF

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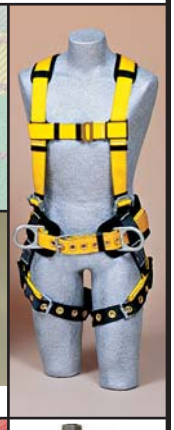

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AkzoNobel Names "Bright Skies" as Color for 2022

In announcing its Color of the Year for 2022, AkzoNobel is predicting a trend in lighter more cheery colors. Bright Skies™ is the company's color to watch in coatings for building and construction metal.

Bright Skies is described as a "light and airy shade" with four complementary color palettes beyond the usual mainstream shades. "The Studio palette offers soulful, warm and modern tones; the Salon palette embraces artful qualities; the Greenhouse palette revels in nature's influence; and the Workshop palette creates flexibility in multifunctional spaces," the company reported.

Where lies the logic beyond the selection? The color trends team at AkzoNobel explains: "After a spell of feeling shut in, people are craving expansion. Extensive global trend research conducted by a team of in-house paints and coatings color experts and international design professionals reveals that we want open air, connections to the great outdoors and a fresh approach to everything." RF

THE DM-ARM HAS YOUR BACK!

Drexel Metals Association of Regional Manufacturers (DM-ARM) is a comprehensive portable roll former program designed to help you meet building codes and build your brand locally. The Drexel Metals DM-ARM program allows installers and regional manufacturers to grow their businesses by offering better local control, greater profits, freight savings, less scrap, and the ability to provide metal roofing on-demand.

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2020 Dodge Roofing Industry Report Shows Increase in Metal Roofing Use for U.S. Residential

The numbers are in and it's good news for metal roofing. More homeowners are choosing sustainable, resilient metal for their re-roofing projects, according the latest 2020 Dodge Report that measures overall roofing demand and activity on an annual basis. The report reveals that the share of metal roofing used for residential re-roofing in the U.S. rose from 12 percent in 2019 to 15 percent in 2020.

"There's no doubt homeowners are getting the message: Durable, stronger and longer-lasting quality materials are a much better investment for your home over the long run, especially in light of climate extremes," said Renee Ramey, executive director of the Metal Roofing Alliance (MRA). "That mindset is reflected in the latest numbers and overall growth of the metal roofing industry."

The Dodge Report also reveals that while traditional metal roofing styles such as standing seam remain popular, homeowners also are gravitating to the wide variety of designs that metal roofing offers, including shingle, shake, tile and slate.

Steel remains the most common type of metal roofing for re-roofing projects, due in part to its affordability and strength. Like other metal alloys, steel also increases energy efficiency and can be 100% recycled at the end of its long life, making it a sustainable and better performing choice for even the harshest climate conditions, including high winds and hail, heavy snow and ice loads.

Importantly, the adoption of metal roofing rose in regions that suffered severe impacts from climate extremes in recent years, including the Mountain and Atlantic areas. Hurricanes and wildfires have intensified in those regions and affected more homeowners, causing them to gravitate towards resilient and protective products that can help better safeguard their homes.

Quality metal roofs, which carry the

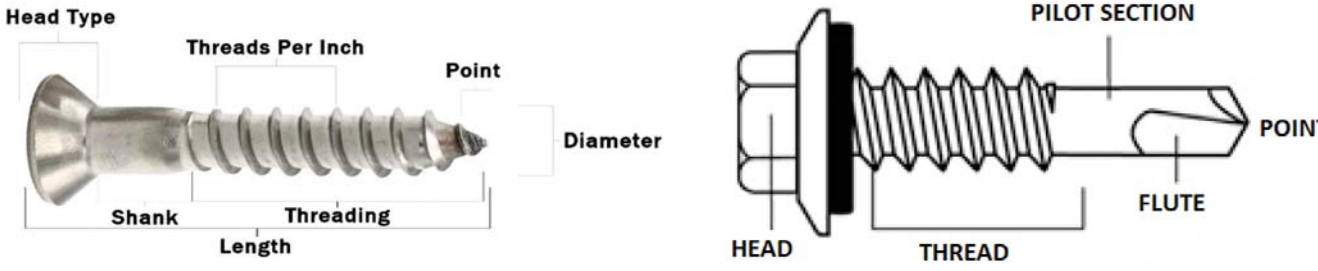
highest possible Class A fire rating and can withstand hurricane force winds, are an essential component in fortifying homes against the worst that Mother Nature can throw at them.

While not measured by the Dodge Report, the MRA also theorizes that homeowners are increasingly attracted to metal roofing's low maintenance and easy care benefits, based on the organization's own data and website that receives hundreds of thousands of visits from homeowners looking to learn more about metal roofing every year.

"It's clear homeowners don't need one more thing in their lives to worry about, and the fact that metal is exceptionally easy to care for and will outlast other types of materials while offering great peace of mind is undoubtedly a very strong selling point these days," said Ramey. RF

Stocking Screws?

What you should know about today's sophisticated fasteners



Screws are very basic in design, with a head, a shank, threads and a point. It's in the technical details where the science becomes mind bending. Engineers have created improved screw designs based on intended purpose, with hundreds of screw types now available. At right is a diagram of the ST Fastening Steelbinder screw for metal-to-metal applications.

Contractors are looking for one-stop-shopping to save time, so rollformers are increasingly offering not just the panel, but what goes through it to keep it on. Screws may look rather small and insignificant but in fact they are an extremely important part of future panel performance. Engineer Peter Graves, ST Fastening Systems, delved into the science of screws in his 2021 Construction Rollforming Show presentation.

Graves noted that screws are designed according to standards set by the Industrial Fastener Institute (IFI) and contained in their guidebook. "In there you can find just about everything you need to know," Graves explained: "what size head, what size threads… how to design a screw, everything from trouble shooting, quality control, how to sort them, how to finish them. It's considered the bible of the screw industry."

There are hundreds of screw varieties, so narrowing them down can get confusing. The first thing to look for is what is being screwed together. A screw best used for holding metal to wood is going to be different than the best for holding metal to metal. As well, there can be variations in the types of wood (southern pine versus OSB or plywood) and the types of metal (light gauge steel versus heavy gauge steel) being adhered.

ANATOMY OF A SCREW

There are four basic parts to every screw: the head, the shank, the threaded portion, and the point. Engineers at fastener companies have taken this basic design to amazing levels, enhancing the performance of screws in various substrates. This is done by redesigning a screw's parts.

Head Styles

The head prevents the metal from pulling over the top of the screw in uplift conditions such as a windstorm. For metal, Graves said, "Most steel binding screws are hex head. Even wood binding screws have a hex head with a built-in washer."

Wafer heads and pancake head screws are used on clip screws for a standing seam roof panel because of the low profile.

A *truss head* that gives a very smooth profile is usually for walls and should not be used for roofing because it can fill up with water and rust.

Thread Styles

"There's as many thread options as you can imagine," Graves said.

For metal to wood, screws are typically 7-14 threads per inch (tpi). "The harder the wood, the more screw threads you need," Graves said, explaining that an incorrect selection will "tear up the screw or tear up the wood."

The need for more threads holds true as well for metal to metal. Said Graves: "If you drill a steel screw into a steel substrate, you're going to want 14-24 threads per inch." The thicker the steel, the more threads per inch are needed. "If it starts going in too fast, it will bind up," he explained. "We call it galling. It will seize itself into the metal and you'll twist the screw off in torsion."

The study of threads per inch was conducted by now-retired ST Fastening

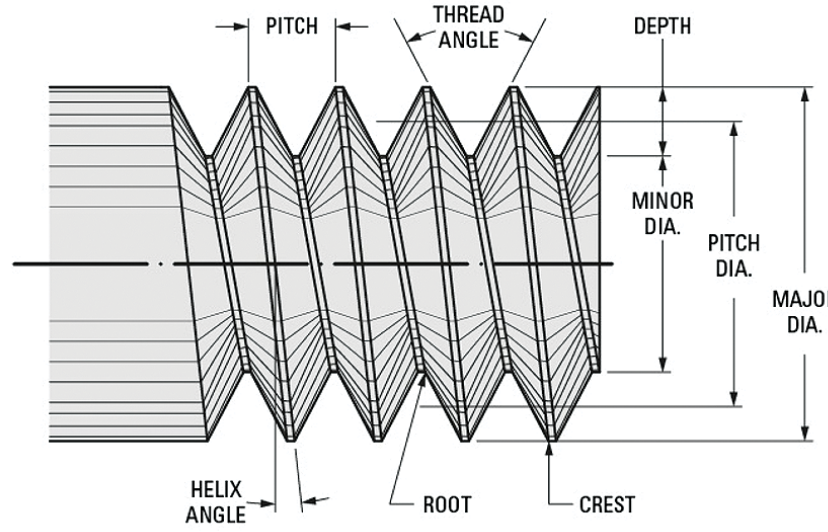
engineer Tom Hulsey. "He went through and determined how long the threads need to be to get through thicknesses of material," Graves said.

Point Styles

The points of a screw help determine how a screw approaches and drills into the substrate. "There's a cutting edge on the point, and if that cutting edge goes too fast, it will actually burn that screw up and it'll melt the cutting edge," said Graves.

Today's screw points have transitioned from simple points to fluted to maximize the ability of that cutting edge.

Points and threads are the workhorses of the screw and need to work together for effectiveness. How effective is often



Think screw threads are simple? Here's how an engineer sees them. Angles, pitch, depth, crest, root, and diameter all play a role in how screws perform in various substrates.

dependent on the person behind the screw driving tool.

An example Graves provided was for a 16-12 gauge purlin or girt. "You need to drill all the way through the back side of the bottom of the substrate before those threads engage," he said. "If you spin it too fast, it's not going to drill."

Beware of impact drills that can now run at 4000 rpm. "The only thing you can put in with a 4000 rpm is a really small #10," he said. "If you try to put in a steel screw going that fast, you're going to burn the tip."

It was again Hulsey who figured out the math for how much speed a particular drill point can handle. Graves said there is a way to tell if the tool is at the proper speed. "You can usually tell when you've got the proper speed on the screws going into the steel because it'll keep cutting those chips out … it's what causes the drill point to go through. If you spin it too fast, you won't see any chips coming out, so you either need to slow down or you may have already burned the screw tip off," he said.

What The Callout Numbers Mean When Ordering Screws

Examples
A) #4-40 x 0.5 HWH square drive drill point
B) 1/4-20 x 5/8 Phillips Truss Head driller
C) M3-0.50 x 10 Pan Head type AB

The first number in the callout indicates the major diameter. Unified threads (in inches) express diameter as a fixed number #0 through #10, like example **A** listed above. When threads get to ¼" it gets confusing. For instance: a #14 is 0.248" – 0.254" but a 1/4" is 0.237" – 0.246" like example **B**. Then a #17 is 0.273" – 0.280". After that then they go to the nearest fractional dimension. Metric threads express diameter with M followed by the diameter in millimeters, like example **C**.

The second number in the callout indicates the distance between threads. It can be expressed as the number of threads per unit or as the distance between identical threads (the pitch). Unified threads measure threads per inch. In example **A**, the screw has 40 threads per inch. Metric threads measure millimeters per thread. In example **C**, the screw has threads every 0.50 millimeters.

The length is the number that follows the x. Unified threads measure the length in inches, expressed as a decimal or a fraction interchangeably. In example **A**, the thread length of #4-40 x 0.5 is 0.5 or 1/2 an inch. Metric threads give the length in millimeters, example **C**, is 10 millimeters long.

What Screws To Use

The screw description provided by the manufacturer should dictate their use and ease your purchase decisions, but it pays to have some basic knowledge.

Threads on wood screws are farther apart than on steel drilling screws, that's necessary for the screws to bite into the wood and not just act like a drill bit.

A steel drill screw will not work well in softwood. The threads are too close and the ratio of major to minor diameter is smaller than that of a wood screw

Common steel panel-to-wood screws have 7-8 threads per inch (tpi); they advance 1" with 7 or 8 turns. For screwing into softwood, the 7-8 tpi is fine; for harder wood, a higher number of threads per inch should be considered to prevent splitting.

The embedment length contributes to the resistance to pullout; the longer the screw, the more threads are engaged in the wood fibers, therefore more resistance to pullout. On thinner plywood or OSB, the screw length only needs to penetrate the back side of the wood. Longer screws protruding out the back don't give more resistance, only the portion in the wood resists the forces applied.

Threads on steel screws are closer together to prevent them from advancing faster than the threads can cut into the steel. If they advance too fast, they will bind up in the hole and break in torsion. Steel screw threads for panel 16-12 gauge secondary purlin and girt members will have around 14 tpi, while steel drilling screws used for thicker steel ¼" or thicker should have 20-24 tpi to prevent binding (galling) from advancing too fast.

The head of a screw prevents the steel from pulling over the head and through the panel. The larger the head, the more spread out the pressure is, and will result in a higher resistance to pullover. A washer helps a little, but it has to be thick or it will create a cone affect and pull through at less force. Washers are used to seal the head/washer to the panel as the head clamps the panel to the substrate. The substrate is the nut, so stripping out the substrate causes the pullout to drop to almost nothing, and the screw will back out of the substrate as the head moves back and forth when the panel heats up in the day and cools down at night (thermal expansion). RF

What Screws And Accessories To Stock

What kind of screws to stock depends on what markets you serve. "Barn people don't want to stock a lot of steel screws and metal building people don't want to stock a lot of wood screws," Graves said. "If you're going to stock screws you should probably get a couple of the colors of the panel you plan on selling and the different length screws."

Here are more specific guidelines for what a rollformer might stock. Where brand name products are cited, comparable brands may be used.

Steel panel to wood substrate:
1.5" and 2" metal to wood screws
¾" side lap stitch screws

Steel panel to secondary steel purlins and girts:
1-¼" metal to metal screws

10 boxes of each color and 18-20 of your more popular-selling panel colors for each size

Closure:
R-panel closure - (10 boxes) inside closure and (10) boxes outside closure
Ag Panel closure - (10 boxes) inside closure and (10) boxes outside closure
50 rolls - 10' long Multivent

Standing Seam Roof:
(5) boxes of clip screws

Structural Jobs:
Heavy gauge drillers for connecting panel to structural members

Additional accessories:
3 boxes each of MF #3, #4 and #7 Master Flash roof boots
Sockets
Tacky tape
Emseal (both sizes)

EXPANSION AND CONTRACTION

Metal panels are constantly under stress from expansion and contraction. "At night the panel cools off and during the day it heats up," Graves explained. "As the panel works back and forth, sometimes that panel will work the screw out. The only thing holding that panel on is the screws.

"That's a huge problem with inexpensive wood, OSB and thin plywood," Graves continued. "Sometimes those screws will back out, especially if they're over-drilled."

The problem probably won't even be noticeable until the screw starts to back out due to expansion and contraction. Graves designed a screw with a wider pitch that helps to resist torsion and allows the user to feel when the screw has been clamped snuggly, but over-drilling remains a problem in the metal industry.

Clip screws are a popular choice for dealing with expansion and contraction for metal. "A lot of clip screws nowadays have a shoulder that kind of fits in the slot so the clip can move with the standing seam roof as you get expansion and contraction," he said.

OTHER ENVIRONMENTAL FACTORS AFFECTING SCREWS

Wind events

Just as important as the selection of screws for a particular job is how, where, and how many to use. That changes on every job. "Every roof has different uplift pressure areas," Graves noted, pointing out that for a building exposed to windstorm events, "each one of these panels will have a different screw spacing, and that screw spacing gets closer for more holding resistance."

Too many screws, however, can also be bad. "Having too many screws in one location will affect the wood pullouts," said Graves.

The project architect should provide the necessary direction on placement.

Corrosion

Screws that have been electroplated and mechanically plated help prevent corrosion as well as provide lubricity to improve driving.

Color degradation

Matching screw color to panel color is a science all its own. "There's as many colors out there as you can imagine," Graves said. "Everybody is trying to match their screw to the panel color. The problem with that is the panel color will drift from one end of the coil to the other end of the coil."

He explained the process: "Powder coating or paint is made up of resin and then they add fillers—pigment or ground up particles that are dispersed throughout the resin—to make the color. Those resins carry that color throughout the panel or the powder. As the ultraviolet light hits those pigments, they'll start to fade the intensity of that color …. As that color starts to fade it looks different than when you first installed it."

Matching colors is quite a challenge. "Everybody knows that a shade off here or shade off there can make a big difference," Graves said.

ST Fastening now uses a Spectrophotometer to analyze color to determine the drift of that color away from the standard. It can determine color from three different light settings: fluorescent light, sunlight, and candlelight.

"The Spectrophotometer will actually detect how close to a known standard we have in our library," Graves said. Usually the human eye can detect between .5 and 1.0 difference in color, but the Spectrophotometer can detect to a tenth of a Delta E.

Being able to "dial in the color" as needed has become an industry game changer.

The company has also started putting a clear coat over electroplating to further resist some of the fading and corrosion. RF

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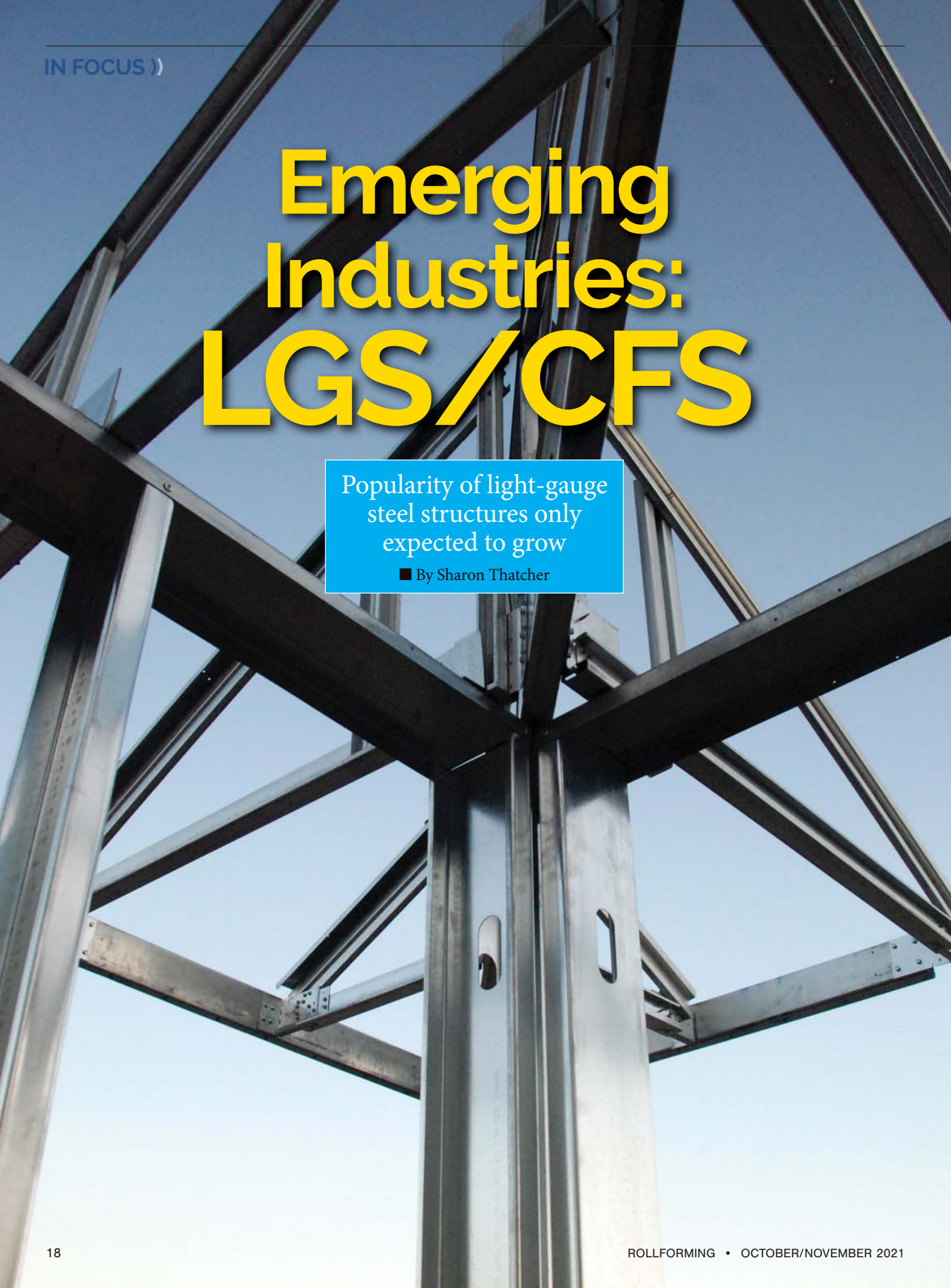


Emerging Industries: LGS/CFS

Popularity of light-gauge steel structures only expected to grow

■ By Sharon Thatcher

Most readers of this magazine are dedicated to either roll forming panel, trim, or gutter. As the popularity of those machines continue to increase, so will the competition. Some day you may be looking for an escape into a new area of metal fabrication still dedicated to the construction trade. One such niche expected to grow significantly is light-gauge steel (LGS).

LGS is also commonly referred to as cold-formed steel (CFS) because it can be shaped without heat. It is much lighter than its counterpart—hot-rolled steel—which is heavier and thicker and requires heat to bend the metal by which traditional steel-framed buildings are made.

The terms light-gauge steel and cold-formed steel can mean many things in a vast industry. For the purpose of this article, we have narrowed the focus to the manufacturing of wall panels, floor joists, and trusses for the prefab and modular industries, as well as small non-structural units or 'pods'. Early adaptors are contractors looking to save time by manufacturing their own components, and in some cases regional fabricators stepping in to supply those contractors. It is an emerging market in the U.S. and Canada, already having established deep roots elsewhere in the world.

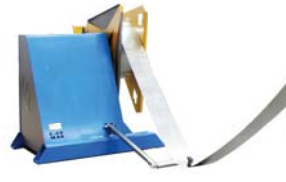
HOW IT WORKS

On a roll former, steel coil is guided through a series of rollers that incrementally change the shape of the steel into a C or S shaped member. Buildings manufactured with LGS/CFS are very similar to wood-framed buildings, only using light-gauge steel instead of wood.

These are used to create pods or panels that are assembled in a shop and transported to a job site where they are quickly installed with bolts and screws in predrilled holes, a system often compared to an erector set.

On the small side, builders are using the system for sheds, garages and homes, but there is also a high demand at this time for limited-service hotels (such as Hampton Inns, Holiday Inn Express, Hilton Garden Inn Express), student housing, assisted living, memory care, and nursing care facilities.

Some roll formers, however, specialize in building non-structural pods—units such as bathroom pods—that are set into a building.



The advantages typically given for LGS/CFS buildings are speed of construction, less job-site labor, less scrap, durability (steel won't shrink, bend or crack) and the resistance to fire, pests, insects, moisture, and weather.

In fairness, steel has traditionally cost more than wood. It is also more efficient in conducting thermal energy so may need some additional insulation or a thermal barrier. And, there's reduced flexibility on site: if there's an inaccurate measurement, it mostly likely will need to be sent back to the fabricator rather than fixed with hammer and nails.

Pros and cons aside, it is an industry on the rise.

The KFS-1420E is Knudson's flagship machine. It can be set up for a variety of sizes standard in the light-gauge market.

ROLL FORMER MANUFACTURERS

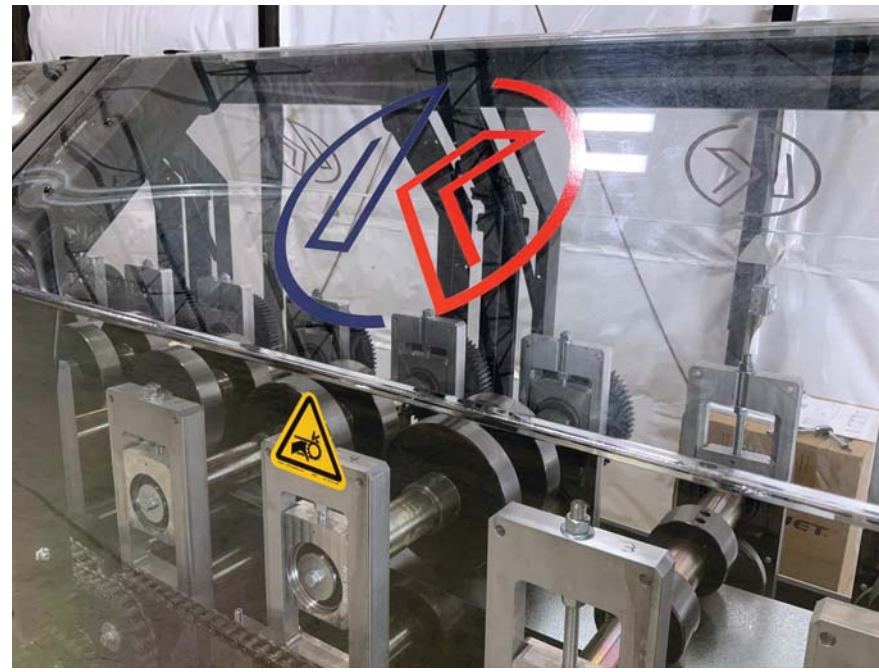
There are two types of fabricators operating in the light-gauge steel industry, but they are very different in what product they provide. Machines made by such companies as Bradbury, Samco, and others, are targeted for high-volume production of single-length steel that are shipped to builders for construction of very large multi-story buildings needing large quantities of steel members in certain thicknesses and sizes.

It's for smaller more customized projects where the emerging LGS/CFS framing market excels.

Currently there are few companies in North America mak-

The go-to Howick workhorse for standard framing requirements is the FRAMA 3200, dedicated to frame and truss component manufacturing.

ing roll formers for this customized light-gauge steel user space. U.S. manufacturer, Knudson Manufacturing, Broomfield, Colorado, has set its sights specifically on the stud and truss sector which doesn't restrict itself to LGS/CFS framing market. Overseas companies actively courting the entire framing package market for trusses, floor joists, and wall and roof panels include Howick Ltd, and FrameCAD, both New Zealand companies with U.S. offices, and industry pioneer, Scottsdale Construction Systems, originating in Australia. Pinnacle LGS, out of Dubai, also has a presence in the U.S.



A closeup look at the rollers in a Knudson LGS/CFS roll former. *Photo courtesy of Knudson Manufacturing*

LGS STUDS AND TRUSSES

That Knudson Manufacturing should be pioneering the domestic industry for LGS/CFS is not a surprise. The late Art Knudson is credited with building and marketing the first portable seamless gutter machine in the U.S. in 1957. His son, Gary, now company president, helped to develop a successful market around those machines.

While gutter machines were their bread and butter, Knudson engineers continued to innovate. They manufactured panel roll formers for many years, and also took a look at the prefab and modular markets. A three-machine, trailer-mounted system for doing framework on top of flat roofs—with a zee, a cee, and a hat section—was their first venture into true framing members. Discovering potential there, in 2019 they decided to discontinue gutter machines altogether in favor of catering to the emerging market for their light-gauge machinery line.

Patrick Flood, Executive Vice President, has seen the company's evolution first-hand. He worked for Knudson on the engineering side for 16 years, left to help start an LGS/CFS wall panel company, then returned three years ago to help Knudson with the transition to light-gauge.

Due to the changing nature of prefab and modular they decided to promote multi-profile, multi-gauge machinery. "We started off with a machine that basically made dimensional lumber sizes," Flood said.

The steel-framing industry itself began to evolve and change. Currently, in the commercial world, the primary LGS stud sizes are 3-⅝" and 6" sizes, while in the residential and multifamily worlds 3-½" and 5-½" are prevalent. In the public storage industry, 4" studs are common.

"The KFS-1420E has been our flagship model for several years," Flood said. "For web sizes it forms 3-⅝, 4, 6, 8, 10 and 12. And flange heights include 1-⅝, 2 and 2-½. The machine can be set up for all of those sizes."

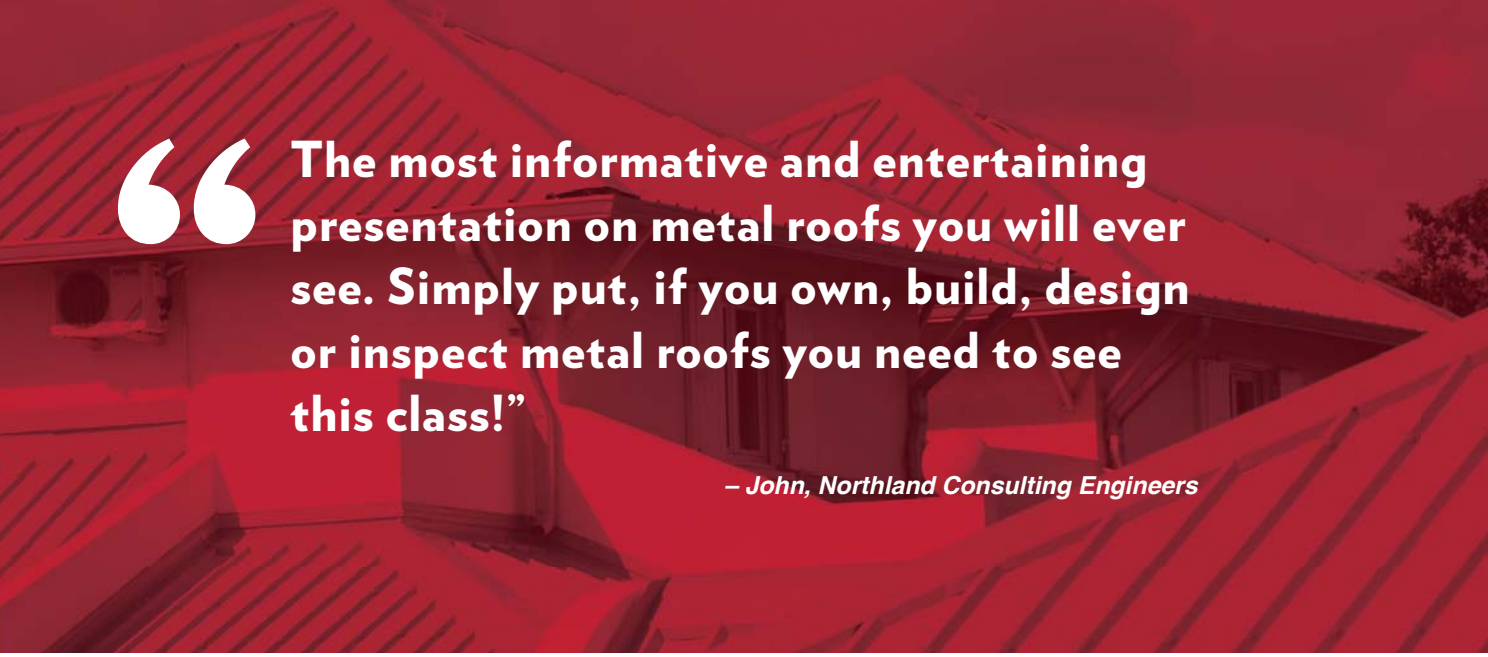
Those sizes have become standard, Flood noted, "because of code requirements. There's typically very specific code requirements in place for non-combustible framing."

Flood said the multi-profile approach is ideally suited for the owners of new roll formers in the light-gauge segment.

"Companies starting out tend to not be entirely sure what range of profiles will best suit their business, so they usually want to keep their options open. That really speaks to having a machine that forms multiple sizes and runs through a range of gauges," Flood said, adding: "once people have been in the business for a few years, they tend to start finding their legs; they find what markets they like selling into and they develop strong reputations with certain builders. Typically, after they've been at it for a while, then they tend to become far more consistent in what products they're making."

At Knudson, customers have the option of having controls from either AMS Controls or BECK Automation. "In our business, if a customer already has roll-forming equipment they tend to want their entire factory setup on either BECK or AMS; they tend to not mix," Flood said. "Part of this is because, once you start networking all your controllers, it's more straightforward if you use the same ones."

Flood said their primary customers are shops already fabricating for prefab and modular. Another category is 'contractor manufacturers' —LGS framing specialty contractors or subcontractors who make their own components. A smaller segment is someone who fills a market for what Flood calls "boutique produc-



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tion," where customers require custom runs of high accuracy, low-waste components not available from the big suppliers. "When you're supplying bails of 10' or bales of 12', if you're plus or minus 1/8th of an inch on your cut lines it's not a big deal because people are typically cutting those parts any way," he said, "whereas, with our equipment you can maintain cut lengths plus or minus 0.030 inch instantly. The larger manufacturers do not want to make adjustments for a custom run of 50 parts—not when you're making thousands of parts every hour … so some of these component suppliers want to have the ability to address some of these boutique orders."

Smaller, under-served rural areas are also where some of Knudson's business comes from. "There's several areas—rural Texas for example—where it's both expensive and problematic to get supplied by some of the larger manufacturers," Flood explained. Filling the niche are typically smaller contractors who already have a thorough knowledge of the local market.

LGS/CFS FRAMING

Framing systems that include trusses, floor joists and wall systems using LGS have their deepest roots in Europe. Both FrameCAD, and Howick Ltd. pioneered single-component systems that use studs for both horizontal and vertical members. The two companies dominate the foreign market where light-gauge steel systems are more widely understood and accepted by architects, engineers, and building code inspectors.

Tom Reed, Howick's sales representative at Howick's Pittsburgh office, said "We have a variety of clients that use [our equipment] for all different aspects. I have a [shed building] client in Georgia… he started with our [older] technology to integrate [their business] into steel; they did about 10 percent in steel, 90 percent in wood. Now using our 4th generation machine, they do nothing but steel, 50-60 sheds every single day."

Reed explained that the LGS/CFS industry for framing is growing in popularity in the U.S. but does have obstacles to overcome. "The United States has the largest GDP in the world but we're very traditional in how we do our work," he said. "We tend to fight change and automation."

He said he believes that resistance is changing and must change. "New revolutionary ways of doing automation have to be embraced by the market because it's being embraced around the world and by the competition," he said.

The dwindling supply of skilled labor is one reason why panelization systems like LGS/CFS work. "It's very easy to snap together … it's really about speed. There is a huge hurdle with skilled labor, so what technology does is enhance our skilled labor today and brings non-skilled labor up to speed very quickly," Reed said.

Reed offers an example of another client, a general contractor, who struggled to find consistency with his framers and subcontractors. "Nothing was ever being done the same," he said. With a controlled framing system everything can be done the same way consistently. "They've really created the automations, from the front end to the back end. So when that HVAC system is being run, it's being run the exact same way by each subcontractor because the plans and the manufacturing of that house is always being done the same. Where your electrical switches are going, where your receptacles are going, it's standardized. When you educate everyone that's involved in the collaboration of that building, they learn to do it the same way, and that brings about speed." A house can be ready for drywall in 10 days.

Framing stacked and ready for assembly. *Photo courtesy of SFIA*

Buildings can still have any exterior elements desired by the customer: Hardie board siding, vinyl siding, metal siding, metal roofing, shingles are all viable options.

Recent spikes in steel supply and pricing have resulted in challenges for the LGS/CFS industry, but the wood industry hasn't fared much better. With labor-savings factored in, the gap between light-gauge steel and wood has closed quickly. According to Larry W. Williams, Executive Director of the Steel Framing Industry Association (SFIA), a cost study in 1999 showed a $2.43 per square foot difference for cold formed steel framing compared to wood, "but by 2007 that cost have been squeezed down to 18 cents per square foot," he said.

For Tom Reed the long-range advantages are clear.

What the end customer of an LGS/CFS building gets, he advocates, is resiliency. "In the United States alone, we have over $5 billion damage annually from termites," Reed noted. "Those little critters don't eat steel. Fire insurance? Steel doesn't burn. The typical house fire is about 800-1,000 degrees. Steel doesn't start melting until 2,700 degrees." RF

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The future of prefab and modular in the U.S.

BuildSteel.org, a Steel Framing Industry Association (SFIA) website, reports that cold-formed metal is being increasingly selected as a rebuilding alternative following natural disasters. A case in point can be found in Panama City, Florida, which is still rebuilding from the destruction of Hurricane Michael in 2018. City leaders there decided to rebuild using panelized cold-formed metal framed homes, swayed by the speed of construction—30-45 days—and its strength to withstand 167 mile-per-hour winds.

LGS/CFS is also finding converts in Napa Valley, California, which saw major destruction in the 2017 Tubbs Fire.

Leading the trend in the U.S., however, is Hawaii. According to SFIA's Larry Williams, 70% of all new construction in the state are now using light-gauge steel.

The popularity of prefab and modular LGS/CFS is based on many factors; for consumers the noncombustible and recyclable qualities are appealing. Engineers like it because much of the building is assembled in a highly consistent and controlled environment. For contractors it can mean massive reductions in on-site building time, with the domino effect of decreasing labor expense.

Due to its environmental advantages, light-gauge steel is increasing in popularity in the U.S. Opportunities are growing for smaller rollformers looking to enter this industry. *Photo courtesy of SFIA*

"You can typically set panels with a crew of five, whereas you'll see as many as 20 guys in a stick-framing crew," Flood noted.

And finding good crew is getting more difficult.

"The modern labor force is not well suited to the historical labor requirements of past construction practices," he said. "The labor community has shrunk dramatically, and available labor in the field is a massive problem … More and more people are saying 'I'm going to do more [of the work] in a factory somewhere under terms that are more favorable for me in terms of running a business.

"There's a lot of terms being thrown around these days in reference to off-site construction or prefab," Flood added, "but one thing I deeply believe in is that the trend towards prefabricated products will continue. As the exposure to BIM, solid modeling, and technology becomes more ubiquitous and more available to smaller contractors, and as the entire building community is increasingly rehearsed in the use of these technologies, I really believe we're heading for a world that is going to be prefabricated. There is going to be very little on-site taking place."

LGS/CFS roof trusses. *Photo courtesy of SFIA*

ADVICE TO LGS/CFS NEWCOMERS

It is a challenging business even if you are knowledgeable. Flood tries to educate newcomers before they invest $50,000 to $225,000 on machinery.

"Be very clear about what your costs look like before you take a dive," he added. "Be very clear for what you can sell those products for. If you don't understand your cost and your pricing structure it can be problematic especially in the context with what we're facing now with the insane steel pricing fluctuations." It is a challenging business even if you are knowledgeable.

Flood tries to educate newcomers before they plunk down $50,000 to $225,000 just on machinery.

"One of the things we try to coach people on, if somebody decides they want to get into this business, is making sure they understand the differences between construction and manufacturing. A lot of guys that get into the smaller-scale roll formers come from the construction world rather than the manufacturing world…It is a much different world to go from buying things that get delivered to a job site that you then put together, versus taking on the burden of your own manufacturing, your own stock supply, your own quality control, your own deliveries," he said.

CFS is more common in overseas countries. These before and after photos are from a building project in South Africa: a polo club and farm stay called Oaklands Farm Stay. *Photos courtesy of Howick Ltd.*

ADVICE ON COIL PURCHASING

Regarding steel purchasing, Flood says Knudson advocates clients align themselves with reputable steel suppliers. "That is the critical component of making money in this business—knowing how to buy steel," he said.

Knowing steel is tricky business. A supplier routinely working with coil for LGS/CFS customers are the best prepared to steer users in the right direction; they will have the answers even before you ask. Not all steel suppliers have that experience.

"If you just go to someone in the coil business, maybe they're supplying painted aluminum for gutter companies, painted steel for roofing contractors, and bare metal to the stamping industry … those guys may or may not know the intricacies involved in LGS framing."

On a positive note, there is relatively little concern over aesthetics when it comes to LGS/CFS: studs, track and framing are typically hidden. The galvanization process, however, does matter. A poor galvanizing process can lead to peeling or flaking. "That's more of an issue for our guys in terms of sourcing," Flood said.

Regarding steel purchasing, Knudson Manufacturing advocates that its clients set themselves up with reputable steel suppliers. "That is the critical component of making money in this business —knowing how to buy steel," Flood said. RF

Roof trusses production at Rollforming Services, Auckland, New Zealand. *Photo courtesy of Howick Ltd.*

A Snapshot of LGS/CFS History

An excellent article on the history of cold-formed steel by Don Allen, P.E. for STRUCTURE Magazine, can be found on the BuildSteel.org website (direct link provided below). For *Rollforming Magazine*, Larry Williams, SFIA, provided a condensed version, noting that cold formed steel has been used in one form or another for about 125 years. "Originally, you'd have thin pieces of steel that would be put into a brake press, and hand formed into the shape of a steel stud. That was done to replicate the new wood studs that were coming into fashion about then. It was labor-intensive and not very common," he said,

Demand increased in the 1940s and 50s, first driven by WWII demands. Companies such as Bradbury, Marion, Samco and others began producing machines to manufacture steel studs.

But light-gauge steel got its strongest foothold in Queensland, Australia, Williams noted. "They had an enormous problem with termites on the Pacific Rim, in particular the Formosan termite. They are probably the most voracious little bugs out there. … in Queensland, they had a real problem because of cargo ships from Southeast Asia basically leaving bugs in the soil. Queensland is a tropical area, so they thrive there."

With buildings collapsing from Formosan termite damage, steel studs were an obvious problem solver.

The trend spread to other areas. "It became a little bit more common in other parts of the world. You had some builders in the U.S., like Stran-Steel and Lustron Homes, who had much larger manufacturing facilities and home building operations in the 1950s and 1960s," Williams said.

"Then, in the late 1960s, the process became even more automated with the development of a machine where you could plug in what you wanted: 'I want X many pieces of steel that are this wide and this long, and maybe they have holes punched in them for screws or conduit.

"Since then," he added, "a number of companies have developed their own version of this automated roll former that have become increasingly sophisticated and a lot more user-friendly."

These are the LGS/CFS machines making their way into the smaller, customizable building spaces in North America today. RF

Additional Resources: "History of Cold Formed Steel" by Don Allen, PE: "https://www.structuremag.org/wp-content/uploads/2014/09/C-BB-History-Allen-Lowndes-Nov061.pdf

Taking the Plunge to LGS/CFS

Ohio company one of a hand full of trail-blazing pioneers

By Sharon Thatcher

Transitioning to light-gauge steel construction is not a decision to be taken lightly, but Todd Tober, owner of Tober Building Company [www.toberbuilding.com], Richfield, Ohio, is glad he did. His more traditional construction GC company was started eight years ago with two employees and is now one of five interrelated companies he owns employing 53 workers. Much of his growth can be attributed to incorporating LGS/CFS into his list of building options.

EARLY CAREER

Tober started his career in construction as a union carpenter. "My background is with traditional metal studs," he noted.

He opened his own general contracting and real estate development company in 2013, focused primarily on the multifamily housing market. "We were doing well, but the question was always, how do we do better," he said.

He had the opportunity to renovate a modularly-built building that was originally completed in 1980. He liked the concept and decided, 'let's find a way to do modular ourselves.'

They first experimented with wood. "We started with wood, and I just didn't like the quality of the product we were producing. Wood is wood and it shrinks and warps and cracks, and it's inconsistent, so we scrapped the wood idea and started building with steel," he said.

ToVee modular units being craned into place. They were being used to create an addition to an existing building. *Photo courtesy of ToVee*

Once in place, the modular units blend with the existing building design. *Photo courtesy of ToVee*

THE JOURNEY TO LGS/CFS BEGINS

Meeting Tom Reed, the U.S. sales representative for Howick Ltd., was a game changer. After discussions and sleepless nights, Tober subsequently purchased two Howick machines for the construction of new modular apartment buildings under his development business. Using the standard 3D software, REVIT, his slowly growing company was able to incorporate detailed plans into their production. One of the machines produces 3.162" metal studs ranging from 16-gauge to 20-gauge coil; their larger Howick 7800, the only one in North America, produces five profiles in 6-, 8-, 10-, 12-, and 14-inch metal studs from 12-16 gauge coil.

"From the 3D software we were able to produce a CNC machine file that would be fed into the roll former to produce our

> "We were doing well, but the question was always, how do we do better."
> Todd Tober
> owner of Tober Building Company

metal studs to be installed into the modular apartment units," he described, adding, "These are custom-made studs, with labelling where the track and the studs meet. Connections are very easy."

But Tober's development projects aren't back-to-back and leaving his roll-forming machines dormant didn't seem very efficient. "So, the plant manager and I came up with a way to generate income in the factory as we were waiting for the next modular project to begin," Tober said. The idea was to provide material for their general contracting projects.

Tober uses this Howick roll-forming machine to create 16 gauge 3-5/8" studs and track for framing out of REVIT design software. Steel coil is sourced from several U.S. vendors. *Photo courtesy of ToVee*

Wall studs and track ready to be assembled. *Photo courtesy of ToVee*

Their first test case was a historic preservation project in Canton, Ohio, turning a 1910 block and concrete school building into affordable senior housing. The building, dormant for about 20 years, was gutted to create a clean slate. Tober's new spin-off company, Atlas Framework, was tasked with producing the metal studs. "We went out and laid out all the apartment walls in the 3D software," he described, and then sent what we call production packs—just bundles of wall panels—to the job site." The software was essential in determining how to deal with the aging building's many measurement variations that were created through years of weathering, wear, and settling.

As construction of the new interior began, the success of the LGS/CFS framing became quickly apparent. "What we saw was this tremendous labor-savings because the production of this type of framing with custom studs is a lot faster than what you typically have in traditional metal stud framing," Tober said.

> "Anybody in the construction field knows that once you learn how to make money with a certain method you are hesitant to change…
> Todd Tober
> owner of Tober Building Company

Unlike traditional metal framing that is cut on site, Tober's team used the LGS/CFS system to premeasure, precut, and predrill for bolt placement. On the job site, pieces were simply bolted into place like an erector set. The speed of construction alleviated concerns over the price of metal, with one counterbalancing the other.

Training a construction crew accustomed to more traditional building techniques was not a major problem but it did take buy-in from the crew.

"We had to send a new thing out to the job site and hope that the crew—used to doing things one way—would embrace the new process," Tober said, "and literally within an hour they understood how to read the drawings and how to snap things together. It was a very quick, quick

learning curve."

He has crunched the numbers and discovered that their LGS/CFS method of construction is 400% faster than traditional framing.

ONE BUSINESS, NOW FIVE

Today, Tober operates five businesses: Tober Building Company, his general contracting company that operates mainly in Northeast Ohio; Tober Development Co., the land development side of the business; ToVee, a modular manufacturing company operating in Ohio, Pennsylvania, Indiana, and Michigan building complete units shipped to job sites; P&G Electric, a commercial electrical company; and Atlas Frameworks, producing framing packages that can be shipped anywhere. Atlas framing packages were being used for a hotel project in Canada at the time of this interview.

VIEWS ON THE FUTURE OF LGS/CFS

Tober is one of a hand full of contractors nationwide using LGS/CFS but feels it is only a matter of habit that prevent others from joining him in what he finds a lucrative field.

"It's tough to convince people to change," he said. "Anybody in the construction field knows that once you learn how to make money with a certain method you are hesitant to change… They invented the air nail gun and it took a while for people to change from hammers to nail guns, but you know, it's a no-brainer, it just takes time to change."

He gives a lot of credit to his employees for making change easier. The past year they have seen their largest growth with the addition of 30 employees. On staff are six BIM modelers for project design.

"We have a really, really awesome team," Tober said. "People make the business and I think our people are the best in our business. They have made the process more fluid and have made it easy to transition from one construction method to this one."

Tober has also gone through the hurdles to get ICC certification. "That's the governing body for the metal framing industry so we comply with all their specs. We go through a very rigid quality assurance process to make sure that every piece of steel we send out is to the standards that we laid out in our certification process."

Tober said he still uses wood but is increasingly finding ways to incorporate LGS/CFS. "I think the challenge is to figure out what works and what doesn't," he said, adding, "The name of the game is to be creative and to be flexible and that's what we're trying to do." RF

Space a problem?

Your machine supplier just might have the answer

Typically, a forklift driver must approach a coil car perpendicular to line flow, but in this situation existing facility constraints offered no room for traditional maneuvers. When The Bradbury Company got the call seeking a solution, they created this custom rotating coil car. The forklift driver can now load a coil parallel to line flow. PHOTO COURTESY OF THE BRADBURY COMPANY.

Ben Schmidt, Industry Sales Manager for The Bradbury Company, said part of what he enjoys about his job is helping roll-forming companies overcome unique challenges.

"That actually makes it interesting for us. It would get boring if we just made the same machine all the time," he said.

Space restrictions that won't allow standard-designed machines do their jobs is a frequent problem faced. That happens especially when trying to retrofit an existing factory.

One example Schmidt shared was a customer with two roll forming lines side by side, but there was no room to navigate the forklift on one side. "So we built a coil car for them that rotated, and they could load from the backside of the line."

Another example of tight space called for embedding the I-beams of a coil car into the factory floor, allowing the forklift to drive over the I-beams undeterred.

Schmidt encourages customers to talk to their equipment dealers if looking to solve a problem. "Whomever you're working with, let them know your goal, because there are ways to be creative," he said. RF

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Small slitters are fine if you don't have a large trim volume, but they just don't cut it for roll-forming businesses with high-volume needs or plans to sell slit coil to other companies. If your business is *in* or *approaching* either category, it pays to look at a high-volume slitter line. The decision then is whether to choose a manual or automatic machine.

The Evolution of Slitting

Slitters have been around in some form or another for many years but have seen a myriad of advancements as the industry continues to evolve. They began as manual machines, meaning that the operator had to manually make all the necessary sizing adjustments to the machine prior to cutting. Unfortunately, operator error resulted in wasted product when the blades were not set correctly, or parts were not nested in an efficient manner.

Another disadvantage was safety as the operator was open to injury while making those manual adjustments.

Manual Slitters

Manual slitters have improved and, because they are less costly, still very popular today. SWI Machinery is dedicated to the larger-volume slitter line industry and designed their manual Marxman S1220 and SS1220 based on industry feedback and improved technology. According to Jason Smoak, Sales Engineer, the machines can be integrated with the same software technology as SWI's more expensive automatic Marxman Plus and Marxman Pro. This integration allows for automatic part nesting to ensure minimal waste.

Added as well are safety features, such as remote control of the machine and safety switches that do not allow for operation while the doors are open.

Automatic Slitters

While technology has helped to make manual machines more desirable, you can't beat an automatic slitter for the highest level of accuracy. Automatic blade set-up greatly reduces incorrectly cut parts and wasted product.

That efficiency is particularly important as steel prices increase, noted Smoak. "There is little that an operation can do to counteract the rising prices of materials, largely steel, right now," he said, "however, what we can help operations control is waste production. The

Marxman SS1220 Manual Slitter

increased accuracy and advanced operating software (allowing for automatic part nesting even between multiple jobs and coil management so you know exactly how much material you have at any time) of an automatic slitter ensures your operation can run efficiently and cost effectively."

While operator safety has been enhanced for manual slitters, greater safety is achieved with an automated slitter as there is no need for operators to have their hands in the machine during any part of the setup and changeover processes.

An added plus for automatic slitters is labor. Said Smoak, "Across the industry, finding workers is becoming increasingly difficult and keeping them on staff even more so. Automatic slitters require less time to train, saving you money, and they require less experience so the need to find 'qualified labor' is diminished. When we deliver a new machine at a facility we can have the machine installed, operating, and all staff trained on how to independently operate it within 48 hours."

SWI uses Team Viewer to troubleshoot software issues remotely and schedules a service visit when hands-on assistance is needed. RF

Slitter Accessories

Beyond the slitters themselves, slitter accessories take the industry to another level entirely. Uncoilers, recoilers, automatic coil farms and more are revolutionizing and automating the industry at a rapid pace.

When set up in a complete slit line of uncoiler, slitter, and recoiler an operation can uncoil, cut, and recoil the material needed for a specific job in a fraction of the time.

"The time and middleman costs saved by processing your own coils in house go right back to you, allowing you to run more efficiently," said Jason Smoak, Sales Engineer, SWI.

At the peak of the slitting industry accessories are the Automatic Coil Farms. These top-of-the-line machines are becoming a must-have for high volume operations. Automatic coil farms integrate directly with your software and slitter so when a job is received the coil farm can automatically pick up the appropriate material, load it on the uncoiler, run it through the slitter and then unload and deposit the coil back into storage—all with minimal operator input.

Marxman Pro Automatic Slitter
PHOTOS COURTESY OF SWI MACHINERY

Shortages in Workers, Supplies Primary Sources of 3Q Slow-Down

In talking to rollformers recently, we have detected some slowing of activity, but it is unknown if the slow-down is part of the typical fall transition, or something more long term. Here is a glimpse at what market experts are reporting.

From the U.S. Chamber of Commerce: Almost all (92%) contractors report some level of difficulty finding skilled workers, but in the third quarter, 55% indicated high levels of difficulty—a jump of 10 percentage points from Q2. The lack of workers has caused 42% of those contractors reporting difficulty finding workers to turn down work, up from 35% in Q2.

Also, a record 93% of contractors report they are facing at least one material shortage. Prices are also a worry: An all-time high of 98% of contractors say building product cost fluctuations are having an impact on their business, up 35 points year-over-year.

Contractors do see improvements over the longer term. 90% of contractors report a moderate to high level of confidence in the market's ability to provide new business over the next year, up one point from Q2. Project delays due to the pandemic also continue to improve: 60% are experiencing delays (down from 72% in Q2), with an average share of 15% of projects delayed (down from 17% in Q2).

Reversing a year-long trend, the product which most contractors are experiencing a shortage in is steel (34%), followed closely by wood/lumber at 31%. Since Q3, lumber had been the

most often reported shortage. Last quarter, 33% of contractors reported a lumber shortage, 29% reported a steel shortage.

As steel shortages worsen, 46% of contractors say steel and aluminum tariffs will have a high to very-high degree of impact on their business in the next three years, up 11 points from 35% in Q1 2021.

More contractors report pulling back their machinery purchasing plans this quarter: 40% say they will increase spending on tools and equipment over the next six months (down from 44% who said they would increase spending in Q2).

Contractors are less confident in their revenue expectations. The percentage of contractors who expect their revenue to increase (37%) is down two points from last quarter, while more contractors (10%) expect their revenue to decrease, up from 6% in Q2.

From the Associated General Contractors:

Construction employment in August remained below the levels reached before the pre-pandemic peak in February 2020 in 39 states.

"Construction employment slipped or stagnated from July to August in half the states as the delta variant of COVID-19 affected workers and caused some owners to delay projects," said Ken Simonson, the association's chief economist. "In addition, more than half of the respondents in our latest workforce survey reported experiencing projects that have been canceled, postponed, or scaled back."

Utah added the most construction jobs since February 2020 (7,400 jobs, 6.5 percent), followed by North Carolina (4,500, 1.9 percent), Idaho (3,700 jobs, 6.7 percent), and South Carolina (3,700 jobs, 3.5 percent). The largest percentage gains were in South Dakota (7.1 percent, 1,700 jobs), followed by Idaho and Utah.

From July to August construction employment decreased in 22 states, increased in 25 states and D.C., and was unchanged in three states. The largest decline over the month occurred in Kansas, which lost 2,400 construction jobs or 3.7 percent. Georgia lost the second-most jobs (-2,300 jobs, -1.1 percent). The second-largest percentage decline since July, -2.1 percent, occurred in Alabama (-1,900 jobs) and Wyoming (-400 jobs).

From the Equipment Leasing & Finance Foundation:

Results of its September 2021 Monthly Confidence Index for the Equipment Finance Industry reports overall confidence in the equipment finance market is 60.5, a decrease from the August index of 66.6.

"The market for the equipment and event rental industry remains positive, but there definitely are signs that the U.S. economic growth is slowing and this projected slowdown is reflected in our latest forecast," says John McClelland, Ph.D., ARA vice president for government affairs and chief economist. RF

Our New Digital Magazine Websites

www.ruralbuildermagazine.com

www.framebuildingnews.com

www.readmetalroofing.com

www.rollformingmagazine.com

www.garageshedcarportbuilder.com

www.roofingelementsmagazine.com

The Customer Wants White, but What Color of White?

Custom Painted Coil Samples

By the Metal Construction Association

OVERVIEW:

One of the most enlightening comments made regarding custom color samples was from a paint supplier who, when asked to supply a sample of a white finish, said: "You don't understand, there are over 200 shades of paint that are referred to as 'white'." Custom color is commonplace in today's construction and coil coated metal is no different than many other materials. No matter how many versions of a color are available, the designer is searching for something unique and different.

The difficulty is what the architect or designer wants to review is often outside the ability of the coil coated material suppliers to provide.

DISCUSSION:

Visual appearance of the final, installed product is critical to the successful completion of the project and enabling the architect to make color decisions is critical. One very important tool to make that important decision is the color sample. The typical specification will have a requirement for the color sample to be in the range of 12" x 12". When calling for a standard color, this size request is generally reasonable since the sheet manufacturer often has standard colored coil available, however, it is generally not possible to create a custom color sample (on metal) of this size.

To create a custom color sample, three key elements are required: paint formulation, paint application thickness, and curing of the painted surface.

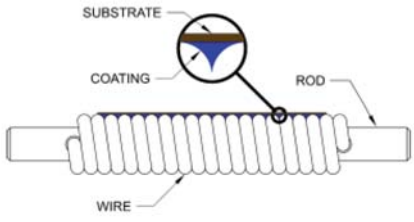
ROLLFORMING MAGAZINE PHOTO

Paint Formulation: It is very common for a paint company to create several different options to meet the final appearance desired by the designer. In general, there are solid, mica or metallic colors available to the designer. The paint is a formulation of binders, pigments, additives and solvents that may require as many as three different layers to get the precise color and gloss level desired. It is a good recommendation to provide a paint chip or sample to match a custom color otherwise it is a guessing game to determine the look required.

Paint Application Thickness: Due to cost and equipment limitations, most paint samples are not created on the actual production paint line. These samples are often created in a paint manufacturer's laboratory by hand with special tools used to obtain the desired paint thickness (and therefore the correct color and appearance). Layer thickness is critical to color development and visual appearance. Nearly all of the metal coil coated paint performance characteristics are defined in either AAMA 2605 or AAMA 2604 (depending on the finish type) and

are impacted, in one way or another, by finish layer thicknesses.

In preparation of a color sample, the various layers are typically applied using drawdown rods (a.k.a. Mayer Bars).



Drawdown rods (a.k.a. Mayer Bars)

The drawdown rod is manufactured using a steel shaft wrapped with a specific gauge of wire as shown above. The wire diameter controls the film thickness when the rod is pulled across the metal substrate. This is a manual operation and the best way to control finish thickness which in turn affects the visual appearance. Note the "V" shape area that is filled with paint when the rod is pulled along the metal. While this "V" shape will subside somewhat, this is the cause of the drawdown lines often seen on paint samples. While not perfect, samples with "drawbar lines" are considered the standard for coil coated custom paint samples used to judge the overall appearance of a finished project.

The actual finish is applied by a smooth roller for coil coated metal so drawbar lines are not created anywhere in the coating process.

Curing of the Painted Sample

After each layer of the finish is applied, the coil sample is inserted into a custom lab oven to cure the paint layer. This oven is precisely controlled in temperature and duration to cure the paint and provide the appearance and paint performance that will be seen in the finished coil. Not only is the ability to apply the coating evenly (using the drawdown rods) critical, but the size of the oven to cure the sample is also often very limited.

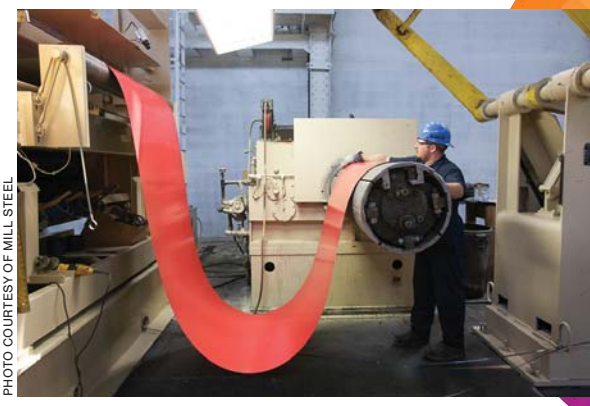


PHOTO COURTESY OF MILL STEEL

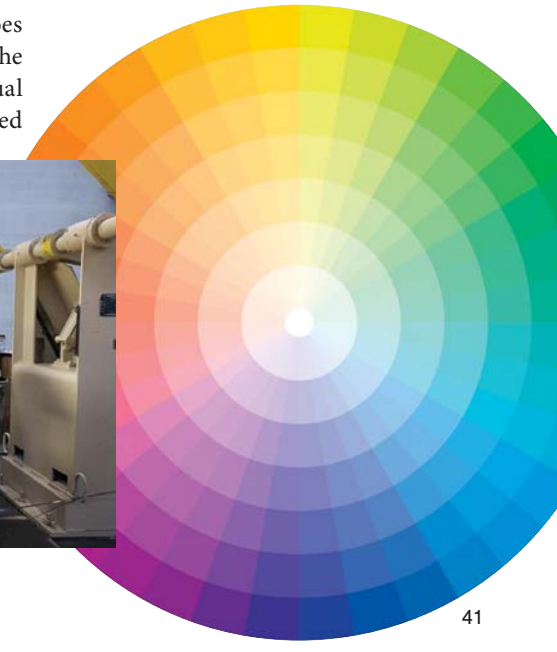
PHOTO COURTESY OF MILL STEEL

Obviously, the larger the coil sample, the more difficult it is to ensure that the entire surface experiences the same temperature for the proper amount of time. For these reasons, the maximum size of a custom color sample is often limited to about 3" x 4". While not ideal as a visual sample it does provide a realistic color sample showing the general color appearance expected in the finished product.

SUMMARY:

While not an exact duplication of the true coil coating process, the custom color sample production process does provide a representative sample of the finished color appearance. The actual paint application is often accomplished using a reverse roll-coating process and does not include any draw down lines that may be shown in the custom sample, however this is the best technology available to create accurate thickness layers of finish. RF

Founded in 1983, the Metal Construction Association brings together the diverse metal construction industry for the purpose of expanding the use of all metals used in construction. For more information, visit the MCA web site at www.metalconstruction.org



Making the Most of Trade Shows

Establish Clear Objectives To Capitalize on Trade Shows

By Gary Reichert

Fall has arrived. That means it's time for the construction-related trade show season. Most big shows traditionally fall in Q3 or Q4 to avoid the active building season. It has been an interesting year for events in general; attendance is usually down and the organizations putting them on have difficulty planning because the situation can change in a day. This creates challenges for management, exhibitors and attendees.

Until the world returns to normal, I strongly recommend that you have a way to communicate with show management. We have had to postpone two shows. One of our biggest concerns was notifying potential attendees. Shows have contact information for exhibitors and attendees who pre-register. If the dates change and you have registered in advance, you should be notified of the change.

If you plan to attend and pay at the door, the show has no way to know that; they can't contact you. Advertising in print and most media is placed and cannot be changed approximately a month before you receive it. If there are changes in mask requirements or lock downs in the weeks preceding the show, it may not be reflected in the advertising.

With the current rapidly changing landscape, pre-registering is more important than ever. Mandates and social requirements provides the show a reason and the information necessary to notify you of changes.

You should not have to worry about your payment for the show. Exhibiting or attending a trade is a pre-payment for a service. If the service is not provided, a reputable show will refund 100% of your money. In most states keeping money for services you were unable to provide is illegal. In all cases it is unethical.

As with most things, the first step in your planning process is to establish clear objectives. Why are you going to the show? How will you judge the outcome? Ideally you had objectives before arriving. The objectives are important in choosing which show to attend.

FIND THE 'RIGHT SHOW'

Companies attend shows for different reasons. Define your reasons.

- Are you looking for new products or business opportunities, or different sources for products you already use?
- Are you looking for Continuing Education or training for yourself or your crews?

• Are you looking to network among peers?

• Why are you going to the show?

Determining what you want to get out of attending a show will help determine which shows you should attend. This will affect the type of show, the size of show and the location, but the size and nature of your business also impacts the type of show that will meet your needs.

If you are a small contractor looking for new sources of building materials, you should look at small shows. National shows will have manufacturers, but most manufacturers are not set up to sell in small lots. If you can buy in pallet, container or truckload quantity, then talk to the manufacturer. If you buy in relatively small quantities you may have better luck at smaller or regional shows.

It you are looking at Continuing Education Credits, crew training or certifications then look to national shows. Many national shows are associated with trade associations and place an emphasis on education.

ATTENDEE DO'S & DON'TS

You have found a show, the sun is shining, your travel goes perfectly and you arrive at the show. How do you make the show a success for you and your company?

Here are five ways to make the show a success for you plus five pitfalls to avoid.

Top 5 Success Factors

#1 Focus on your goals.

One of the current buzz words in the event industry is User Experience. Happy hour, keynote speakers, panels, contests and a host of things happen designed to make the event fun. Take advantage of all of them and enjoy yourself. But, complete your objectives first. If you are there to find suppliers, work the show floor first. Your show can be a win if you miss a happy hour; it can't be a win if you don't fulfill your reason(s) for going.

#2 Work the Show Floor.

At national shows there are often too many exhibitors to see in a single day. If any of your goals include exhibitors, make a hot list before you go. These would be the exhibitors most likely to provide the product or service you want. See them first. If you can, try to schedule appointments prior to the show. The first day of a show is the busiest day. You may have better success prospecting on the first day and scheduling a time to meet later. The last day of a show is usually slow. Use Day 1 as a quick introduction and qualifying day, then schedule appointments for a slower time when you will have the rep's undivided attention.

#3 Be observant and prepared for opportunities in strange places.

Most shows have print badges. These typically have the company name, the person's name, and whether an exhibitor, presenter or attendee. No matter your objective, you need an elevator pitch. You need to communicate why the person should be interested in you in 15 seconds (how long you have between floors in an elevator). You also need a way to provide information to them, or exchange information, so they can follow up. This means ALWAYS having a pen and business cards. I also make certain our business cards are blank on the back so you can add notes. If the person does not offer a card of their own, you can write "Bob from XYZ Fasteners" on the back of one of your cards and it will help you follow up.

#4 Have a "Why I'm a big deal" 10-second pitch.

The great thing about trade shows is they condense a month of people, businesses and opportunities into a few days. This is true for the presenters and exhibitors, as well as attendees. When you are meeting new contacts, you need to be able to communicate who and what you are succinctly. A sales person working a booth is hunting for existing customers and potential future customers. If they do not see you as a viable prospect and an existing customer comes up, it is perfectly natural and reasonable for them to find a way to move on. If you are a legitimate potential customer, they will appreciate knowing and devote the time you deserve. If you are just shooting the breeze, have the courtesy to allow them to do their job and move on if it is busy.

#5 Be aware of the schedule.

Certain times are busy and some are slower. With trade shows there is a pattern. Think about the pattern and use it to your advantage. When the show first opens, a huge influx of traffic occurs. Ninety percent of attendees start at the front of the show floor. If you have a hot list of exhibitors, start with the ones at the back of the show floor and move to the front late in the day.

The first day of the show is the busiest and the last is the slowest. Attendees leave the floor late in the day. Often the first hour of the show is slow on days following social events. Take advantage of the natural ebb and flow.

Top 5 Pitfalls to Avoid

#1 Travel problems.

I recently missed a trade show because of flight issues. That is a normal part of travel, especially in light of worker shortages and Covid. Spirit Airlines canceled my outbound flight twice, so I opted not to go because I would have missed the appointments I had scheduled during the one-day trip. The hotel charged me a night because I did not cancel 24 hours in advance. Mostly because the flights were not cancelled 24 hours in advance. The customer service for the airline is horrendous and after a month I have not received a refund for either leg of the flight. Other than saying unkind things about Spirit, there is a point. Consider travel insurance if it provides a refund. The travel insurance gives you a dedicated contact when challenges occur and it may be worthwhile.

#2 A contact doesn't follow up with you.

Plan to follow up with everyone that is valuable after the show. Often waiting for a sales person to chase you may be a negotiating strategy, but at a show it is likely to backfire. In the old days sales people would sort through collected business cards at the end of the day. If they were valuable there would be a brief note. Often just a card. When they see 100 people in a day it is not reasonable to assume they will remember every detail about every person. If they are related to your objectives, get contact information so you can follow up with a call or email after the show. Many shows are getting away from badge holders. Mine usually holds my cards, the cards of people I spoke with and a pen. If the contact is important, take control and get what you need to follow up.

#3 Lost business cards or contact information.

Trade shows have many moving parts. People collect cards, literature, swag and a flood of impressions. Make sure to sort and categorize everything while it is fresh in your mind. You will remember the conversation for a few hours. If I wait a week, I can guarantee I will forget the person's name and what we discussed. Write a follow-up report for yourself every night. If you have a cell phone, take pictures of each business card. Cards are easy to misplace, or get stuck inside literature or free magazines and discarded.

#4 Carrying 30 pounds of magazines and literature you will just throw away.

Shows are great for landfills. Tote bags or backpacks are one of the more popular items of swag. Unless you are exhibiting, don't bring literature. As someone who has stood in trade show booths, I can tell you with certainty, any paper literature you give them will not make it home. The person will also be reluctant to tell you they threw it away. If you have information you need to communicate, follow up and send it after. Then they receive it, and will actually have time to review it.

#5 Getting ejected from the show.

Please be considerate and do not try to sell things on the exhibit hall floor unless you exhibit. Networking is great. Introducing yourself is great. The companies that exhibit are there to sell. It is why they paid for the booth and supported the show.

Some companies are unable or unwilling to exhibit, but everyone is capable of being considerate. If it is one of our shows and you are selling as an attendee (not an exhibitor), you will be required to stop. Please do not put yourself or show staff in an awkward position.

There are many do's and don'ts for trade shows. The one line to summarize a lot of rambling is: Pick the right show for you and remember why you are there. Everything beyond that is mechanics.

Hopefully I will see you on the exhibit hall floor. RF

Calendar of Events

OCTOBER

Oct. 5-8
Building Component Manufacturers Conference (BCMC). Omaha, Nebraska. www.bcmcshow.com.ng, Isle of Palms, South Carolina. www.buildershardware.com

Oct. 5-7
Builders Hardware Manufacturers Association (BHMA) annual Fall Meeting, Palms, SC http://buildershardware.com

Oct 6-8
METALCON, Tampa Convention Center, Tampa, Florida. www.metalcon.com

NOVEMBER

Nov 4-5
Garage, Shed & Carport Builder Show, Century Center, South Bend, Indiana. 715-252-6360 (to exhibit); https://garageshedcarportbuilder.com/2021-gsc-builder-show/

Nov. 9-11
Midwest Roofing Contractors Association (MRCA) Con Expo. Milwaukee, Wisconsin. www.mrca.org

JANUARY 2022

Jan 18-20
Frame Building Expo, Gaylord Opryland Resort & Convention Center, Nashville, Tennessee. nfba.org

Jan. 24-26
Metal Construction Association Winter Meeting, Scottsdale, Arizona. www.metalconstruction.org

FEBRUARY 2022

Feb 1-3
International Roofing Expo, New Orleans, Louisiana. theroofingexpo.com

Feb 8-10
National Association of Home Builders (NAHB) International Builders' Show (IBS), Orange County Convention Center, Orlando, Florida. www.buildersshow.com/

OCTOBER 2022

Oct. 26-27
Construction Rollforming Show, Ernest N. Morial Convention Center, New Orleans.

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Preparations Underway for GARAGE • SHED • CARPORT BUILDER SHOW

The first Garage, Shed and Carport Builder Show is scheduled to take place November 4 and 5 in South Bend, Indiana. With a month to go at press time, here is a snapshot of who and what is on the agenda.

EXHIBITORS
as of 9/22/2021

ASC Machine Tools
Asta America
Borkholder Buildings & Supply
Capital Forest Products
Central States
Dripstop / Filc USA
Free State Lumber
Graber Post Buildings
IdentiGrow by Blue Ridge Impressions
Kevmar Manufacturing
Midco Products
New Found Rentals
Paragon Computing Solutions
PPG
Presto Tape
ProMark
Quora Cladding by Arcitell
Ramco Supply
Richland Laminated Columns
Safeway Door
Shed Hub
Shed Pro
Shed Windows & More
SmartBuild Systems
The Bradbury Company
Tough Trade Tools
Trac Rite Door
Tuftex

EDUCATION SESSIONS & TRADE SHOW HOURS

Thursday, November 4, 2021
Continental Breakfast: Thursday Nov. 4, 7 a.m.-8:45 a.m.

Education Classes: 8 a.m. to 5 p.m.

Exhibit Floor Hours: 11 a.m. to 5.30 p.m.

At the conclusion: Mixer in the entryway in front of the Exhibit Hall

Friday, November 5, 2021
Continental Breakfast: 7 a.m.-8:45 a.m.

Education Classes: 8 a.m. to 11 a.m.

Exhibit Floor Hours: 8.30 a.m. to 1.30 p.m.

WHERE TO STAY

Hotel: DoubleTree by Hilton Hotel, South Bend
Rooms starting at $99

REGISTRATION

Register online: https://gargeshedcarportbuilder.com/show-registration/

WHY ATTEND:

Do you build or sell small, special use residential buildings?

Whether garages, sheds, gazebos or carports, sales of these residential buildings are heavily influenced by affordability and perceived value.

Whether you are looking to minimize unit cost or see the latest ways to increase functionality and desirability, the task is related to products and best manufacturing practices.

There is one place where you can see the new products and be introduced to best practices. This place is the **Garage, Shed & Carport Builder Show**.

Because we publish six construction related magazines and another trade show, we can bring manufacturers from many diverse categories relevant to this niche.

This show is for more than just garden sheds.

BRUSHLESS CORDLESS GRINDER AND CUT OFF TOOLS FROM DEWALT

Designed to power through heavy-duty grinding jobs with ease, DEWALT's new 60V MAX Brushless Cordless 7" FLEXVOLT® Grinder with Kickback Brake™ features up to a 7" grinding capacity and a no-load speed of 6,500 RPM. The grinder is ideal for wire brushing as well as general grinding and cutting during metal and concrete applications.

The new 20V MAX XR® DeWalt Brushless 3" Cut Off Tool is designed to cut a variety of materials such as metal, drywall, fiber cement, plastic, tile and stone. With 550 max watts output, a no-load speed of 20,000 RPM, a 3/8" arbor and 0.79" max depth of cut, the cut off tool is ready to handle many applications across the trades.

Information: www.dewalt.com

DISPOSABLE HARD HAT LINERS

NoSweat has created the first disposable performance liners specifically for hard hats that absorb sweat instantly while preventing odors, stains, acne and the constant need to stop and wipe up sweat with a germ-infested sweat towel, shirt sleeve or dirty hand.

NoSweat® is a disposable moisture wicking performance hard hat liner. Patented

SweatLock™ Technology is engineered to instantly absorb sweat, keeping sweat off your eyes and allowing you to focus on your work. NoSweat is made with hypoallergenic materials that are thin, soft and lightweight.

Information: https://nosweatco.com

CUTTING-EDGE COIL FARM FOR HIGH-VOLUME SLITTER SYSTEMS FROM SWI

SWI Machinery has been producing an automatic decoiling and storage system for years with great success. Always striving to be on the forefront of technological advances, however, they recently launched a new cutting-edge coil farm, the CoilXpress CX5, designed for high-volume slitters.

The CoilXpress boasts all the perks of an automatic coil farm, directly integrating with software and slitter so that the coil farm can automatically pick up the appropriate material, load it onto the uncoiler, run it through the slitter, then unload and deposit the coil back into storage with minimal operator input.

But it also boasts additional benefits. The CoilXpress features a mandrel-less design which translates into less cost, easier integration for your operation, and quicker coil changes—typically less than three minutes from job load.

Plus, the CoilXpress features a smaller footprint with a more customized capacity. It has been designed for set ups as small as 12 coils and as large as 36 coils, allowing you the ability to buy what you need and add-on as your operation grows.

Information: https://swimachinery.com

MORE AESTHETIC OPTIONS FOR STEEL DOORS

Haas Door's 9600 Series popular steel garage doors are now offered in expanded options. It is available in a maximum width of 18' 2" and maximum height of 16'. Thickness of the base door is 1-3/8"; when adding 5/8" overlay boards, the total thickness is 2".

The woodgrain embossed door is available in eight solid colors as well as four woodgrain finishes. The series allows customers to mix-and-match woodgrains together or with a solid color. Powder coatings are available for hardware, track, springs, end stiles and struts.

Lites are now available in the top two sections. For double doors, both single and double arch window options are available, as well as specialty and impact glass.

The 9600 Series has wind load and impact options that meet code requirements in both Florida and Texas.

Information: www.HaasDoor.com

GET MORE INFORMATION ABOUT PRODUCTS & SERVICES SEEN IN THIS ISSUE. HERE'S HOW:

If you are looking for more information from companies featured in this issue, fill out this form.

Mail the completed form to us, and we will have those companies get in touch with you. There's no need to fill out multiple forms; we'll do the legwork for you.

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