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UPDATE**

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AIR-OVER-HYDRAULIC FOLDERS

**STATE OF THE
INDUSTRY**

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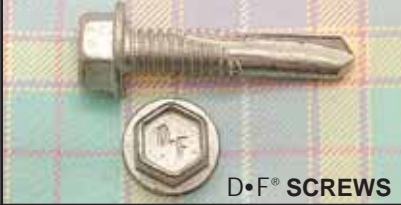


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Experts Wanted

■ By Gary Reichert

It is December, which usually results in looking back at the year. 2023 has been exciting at Shield Wall Media. We announced a new annual the Construction Survey Insights — Annual, from our data collection efforts (sending in April). We announced the Post Frame Builder Show this coming June in Branson, Missouri. And as I write this we are putting the final touches on BuildMyBarndo.com, our first digital consumer publication. It only seems fitting to end the year by announcing one more new project.

Too many business owners don't understand the actual nature of their business. The purpose of all business and most human interaction is to solve a problem or help solve a problem. The purpose of our magazines, shows, sur-

veys and books is to help our readers by providing the information you need to solve the challenges yourself. Some of this comes in the form of knowledge about products and procedures. The survey and data generation helps you predict challenges coming in the future.

There is a saying "You don't know what you don't know." To remedy that, we are announcing the formation of the Shield Wall Media Advisory Board. What we don't know, our readers do. I have done this unofficially for years. Some of you have received calls or emails from me saying, "I am thinking of doing this; tell me why it is a bad idea." My editors have their sources and routinely ask subject matter experts to write or review articles. We have grown to the point we want to make the Advisory Board official.

A corollary to "not knowing what you don't know" is "not knowing *who* you don't know." With 100,000+ subscriptions, it is impossible to know every individual. Whether a builder, roofer, roll former, engineer or manufacturer there is a wealth of knowledge and expertise who know us, but we don't know you.

If you would like to have input into the editorial and strategic future of Shield Wall Media, this could be your chance. We are looking for 12 board members (two from each of the markets we serve). Details on how to apply, the benefits and responsibilities are available on page 16.

Thank you for helping Shield Wall Media continue to grow.

*Gary Reichert, Publisher
gary@shieldwallmedia.com*

Editor's Note))

New Products, Shows in 2024

■ By Karen Knapstein

It's hard to believe. We've turned the page to a new year. (Do I say that every year?) New from Shield Wall Media this year: The Construction Survey Insights — Annual. You'll find a bit of State of the Industry coverage in this edition, but the standalone CSI—Annual will be filled cover-to-cover with industry insights.

Also new this year is the Post-Frame Builder Show taking place in Branson, Missouri in June. If you're one of the many metal shops that has added (or is looking to add) post-frame kits to your product line, you won't want to miss

this show June 19-20 at the Branson Convention Center. Exhibitors include window and door manufacturers, equipment manufacturers, component suppliers, and more.

Now on to what I'm most excited for in this edition: air-over-hydraulic folders, which I'm told can produce trims as accurately and as quickly as computer-operated brakes. I didn't know they existed until the last Summer. With everyone's busy schedules, it took some time to connect with everyone to get the story. But we got the story for you.

"The driving force was to make an

alternative bending option available to people who choose to avoid the use of computers," said developer Ray Wagler, who now operates Elite Metal Sales. It's an exclusive for Rollforming Magazine readers. I do hope we've done it justice and that you find it of value. The article begins on page 20.

No one knows exactly what the year will bring; but I do hope you make the best of it and we wish you a happy, healthy, and prosperous new year.

*Karen Knapstein, Editor
karen@shieldwallmedia.com*

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The newly available Star 1 Trim folder.
Photo courtesy of Star 1 Products LLC.

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Next Issue:

- Cleaning as Preventive Maintenance
- Low Carbon Steel: Why It Matters

Steel Market Update

Courtesy of Majestic Steel USA

Each week, Majestic Steel USA [majesticsteel.com], a steel service center that distributes prime, flat-rolled galvanized steel sheets and coils to industries across the United States, compiles the Core Report from . The Report is “an in-depth look at key indicators and trends driving the steel market. Market volatility demands your attention about what’s driving prices, when and why.”

Majestic Steel has granted Rollforming Magazine permission to publish information excerpted from the Report for its readers. The information included here is from the Core Report for the week ending January 5, 2024.

DOMESTIC STEEL PRODUCTION

According to the American Iron & Steel Institute’s Weekly Domestic Steel Production report dated Jan. 3, 2024: Domestic raw steel production ended 2023 down significantly due to the shortened holiday week.

U.S. mills produced an estimated 1,680k tons at a 73.1% utilization rate; this is down from 1,693k tons and a 73.7% rate previously.

- This is the lowest weekly tonnage output since April and the lowest utilization rate since January of last year.

Production decreased in four of the five regions, with the largest drop (in tons) coming from the Great Lakes region.

- Production from the Great Lakes region slipped from 551k tons to 545k tons.

Raw steel production ended the year at 88,730k tons, up 0.2% from 2022 raw steel production of 88,530k tons, but down from 91,632k tons in 2021.

STEEL PRICE INCREASE

According to a Mill Price Increase Letter from Cleveland-Cliffs for the week ending Jan. 5, 2024: Cleveland-Cliffs kicked off the new year with a price increase for all hot rolled, cold rolled and coated products, effective immediately with all new orders.

Cliffs set minimum base price for hot rolled at \$1,150 per net ton (\$57.50/cwt).

- This is the sixth published price increase since September.

Hot rolled prices have increased 64% since hitting a low of \$670/ton in mid-September. Further increases by other domestic steelmakers are expected to keep momentum through the first quarter.

SPOT IRON ORE

According to Platts, Spot Iron Ore, Jan. 5, 2024: Spot iron ore pricing started off the new year strong, increasing for the second consecutive week to a multi-year high.

Spot iron ore pricing ended the week at \$140.75/mt, up from \$136.16/mt a week ago.

- This is the highest level for iron ore since May 2022.

Heavy restocking by Chinese mills ahead of the new year along with a new round of interest rate cuts by Chinese state-owned banks in the last weeks of 2023 boosted market confidence.

ZINC PRICING

According to London Metal Exchange, Weekly Zinc Price and Inventory Report and the Shanghai Futures Exchange, Weekly Zinc Inventory Report, both dated Jan. 5, 2024: Zinc pricing softened after ending 2023 with four consecutive weekly increases.

Zinc pricing ended the week at \$2,519/mt (\$1.143/lb), down from \$2,640/mt (\$1.197lb) previously.

- This is down 4.5% after hitting the highest price since April 2023.

The International Zinc Association expects a bullish year for zinc, as the global economy returns to more normalized levels and as U.S. interest rates remain steady.

Global zinc inventory came in relatively flat to start the new year.

- LME warehouse inventory dropped slightly, slipping from 222,125 metric tons to 221,775 metric tons.

- Shanghai warehouse inventory increased slightly, climbing from 21,215 metric tons to 21,814 metric tons.

To sign up to receive the full Core Report from Majestic Steel USA, delivered weekly via email as a PDF, visit <https://www.majesticsteel.com/majestic-insights/core-report/>. RF

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Safe & Efficient By Design

Material Handling Improves Roll Forming Efficiency & Safety

■ By Noli Cusi, Samco Machinery

Every year, it seems roll forming manufacturers are being asked to improve turnaround, speed up roll forming capabilities, using heavier and high-strength materials while still focusing on safety.

No problem, right?

Well, there are solutions, improved equipment, larger equipment and better technology. Material handling equipment in front of and at the end of a roll forming line, can increase production and meet the demands of today's customers as well as tomorrow's customers.

OUT FRONT

Front end decoilers certainly can help speed up operations. A decoiler — or

uncoiler — feeds the coil into the next station of the process. Decoilers can be single-ended or double-ended, handling coils up to 40,000 pounds.

A decoiler can be used to change over coils as material is used. The single-ended decoiler is slower, but requires less space on the floor. Decoilers can

also be designed to hold multiple coils of different gauges or color, allowing operators to quickly switch coils and keep the roll forming lines running.

A coil car and upender allows for coil to be safely moved, lifted, turned into position and loaded on the coil car while the decoiler is still running. The coil car



Upender and coil car. PHOTOS COURTESY OF SAMCO MACHINERY



Spot welder.



A stacker prevents the need for humans to pick up long, heavy parts. Since components are handled by machines, it's less hazardous for humans.



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and upender can also unload partially used coils.

Coil coming off a decoiler may feed an end shear and a pre-cut operation at the front end of the roll former. An end shear welder allows the operator to join the leading edge of the new coil to the trail edge of the running coil to save time feeding new coil through the entire line. It not only saves downtime, it limits damage due to manual feeding, thereby reducing scrap. Using an end shear welder allows for an uninterrupted feed, increasing up time by 96 percent.

There may also be an accumulator, where coil is accumulated and then fed into the roll former. Once the entire coil is in the accumulator, new coils can be loaded on to the decoiler without stopping the roll forming line, saving anywhere from 10-15 minutes per coil change. Coil is automatically fed into the roll forming machine.

OUT BACK

Various end-of-the-line material handling options are also available to increase efficiency with finished products at the end of the roll forming process.

A nester collects and nests a bundle of finished products and sets them up for shipping. Bundlers automate the handling of mini-bundles and



A nester collects and nests a bundle of finished products and sets them up for shipping.

automatically build pre-programmed master bundles ready to be shipped based on orders. A stacker gathers finished parts and stacks them for movement with a forklift. Instead of humans picking up long, heavy parts 20-25 feet long, they are handled by a machine which improves safety and assures products are packed in correct quantities.

Once parts come off a roll former and are bundled or stacked, proper packaging is needed to ensure parts arrive safely without damage. Packing systems include shrink wrapping, strapping or bubble wrapping to protect products being loaded and unloaded from a truck.

NEW WORLD

In a post-Covid world, a roll forming line with material handling equipment will allow workers to work safely, 6' or more apart. Without material handling, more workers are needed to do the job and those workers more likely will be required to work in a closer proximity to each other to complete their jobs.

It's also important to note that an experienced roll forming manufacturer will train operators. Customers should be encouraged to send an operator to the manufacturing plant to observe the machine being tested and have an opportunity to check out different challenges and gain an understanding of the machine or line, helping the operator get things up and running safely, as soon as possible. **RF**



Bundlers automate the handling of mini-bundles and automatically build pre-programmed master bundles ready to be shipped based on orders.

Noli Cusi is the Vice President of Operations at Samco Machinery (www.samco-machinery.com).

Samco manufactures roll forming machines, uncoilers, roll tooling, presses, and material handling solutions servicing a multitude of customers worldwide in varied industries.





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Exit Planning

Is an ESOP a good fit for your business?

■ By Karen Knapstein

After investing a lifetime building a business, it's disappointing to turn over a large portion of its value to the IRS upon exiting. Fortunately, if a business meets certain criteria, an employee stock ownership plan (ESOP) can provide the exiting owner with attractive benefits. It can also provide the new owners (employees) with benefits that make the business more successful. Here, we'll take a look at what an ESOP is, the benefits of the plan, and what makes a company a suitable candidate for an ESOP.

The ESOP, as defined in the IRS code, is a structure that allows employers to share ownership in a company with employees. The ESOP can purchase any percentage of the business.

Scott Eichler, an investment advisor with Standing Oak Advisors and author of *Don't Play Chicken with Your Nest Egg*, explains the benefits of opting for an ESOP plan upon exiting a business: "If a business owner chooses an ESOP, the IRS offers attractive benefits. For example, it allows the business owner, when selling the business internally to employees, to defer taxation of the sale of the business."

If the business owner's intention is to sell the business and invest the money earned from that sale, the immediate benefit is the tax deferral on the sale. "There's more to the sale of a business than how much you sell the business for," Eichler continues. "The more important question is: How much do you get to keep after the sale of the business? There's a time value of money. If you lose a big chunk [of the sale amount] to taxes, the time value of money is greatly diminished; you don't have as much to build a retirement income."

Rather than paying the taxes on the earnings from the sale, when the business is sold to an ESOP, the money is invested, it grows, and is reinvested. Taxes are paid on the income from the investments. By deferring tax payments, it gives the former business owner the opportunity to build wealth faster and the chance to take a bigger income throughout retirement.

There are additional benefits, too. "ESOP is conjoined with a lot of agreement pieces and protections in case something happens," Eichler adds. "This is making sure that 1) You get bought out, and 2) your family is taken care of in case something happens to you."

BENEFITS FOR EMPLOYEE-OWNERS

Often, a construction business is all about relationships, so a lot of business owners have a hard time selling their business to a third party. "You have to find someone with synergy who

knows the existing clients and have a reasonable degree of trust." Just because you're doing a certain level of business each year doesn't mean that will continue after the sale. Most companies don't have proprietary construction techniques — they have relationships. It's those relationships that are the foundation on which a business's ongoing success is built. Being able to transfer those relationships takes time and is not easy. "It's an easier transition if you can sell to an employee who has the same business relationships that you do."

Once ownership of a company is transferred to an ESOP, employees now working for themselves. If employee-owners understand how the company makes money, and their individual role in making that happen, they have a real buy-in in the success of the company. According to the NCEO, "Companies that have these high-involvement, idea-generating cultures, generate an incremental 6% to 11% added growth per year over what their prior performance relative to their industries would have predicted." Therefore, the ESOP-owned company is more successful and the employee-owners reap more rewards.*

VALUATION

Valuation in the feasibility study is for the owner.

Valuation for the company stock is for the future owners (ESOP).

IS ESOP AN OPTION?

First and foremost, the corporate structure must be considered. According to the IRS, for companies to be ESOP eligible, they must be C corporations, S corporations, or LLCs taxed as a C or S corporation.

Even if a company has one of these structures, there are situations when an ESOP is not a feasible option. Companies must have sufficient profitability to pay the added expense of buying out one or more owners. Eichler said if the company isn't generating at least \$1.5 million in EBITDA, it's not a viable option.

Because of the substantial setup costs, ESOPs generally don't work for companies with fewer than 15-20 employees. According to the National Center for Employee Ownership (nceo.org), ESOPs generally cost between \$100,000 and \$300,000 to set up. Fees include feasibility studies, plan documentation, valuation, trustee fees if using an outside trustee, plus any corporate legal fees and personal financial advisor fees for the seller. The cost can increase in larger and complex deals.

Another thing to consider is the leadership structure. There's a good chance the seller(s) holds a key corporate role, so the business must have a management team in place. "There needs to be a group of two or three people that can do sales and operations, and essentially manage the business the way the owner does,"

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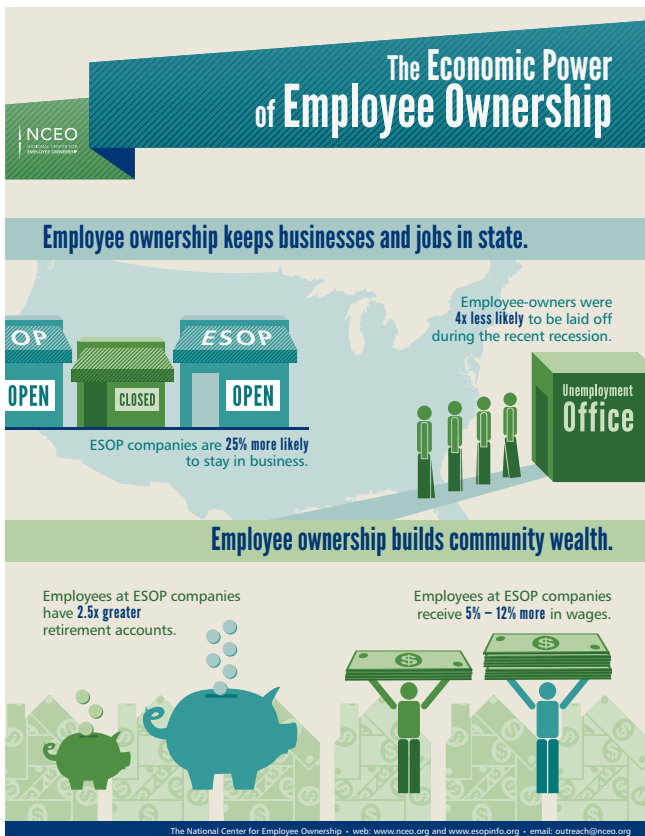


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explains Eichler. “They need the ability to manage people.”

PLANNING FOR SUCCESS

An ESOP requires a lot of planning. “If you’re going to retire, and your plan is to sell your business in 20 years, you don’t have to do anything right now,” Eichler says. “But it’s a good thing to start the discussion. The more time you give a financial planner, the better. Don’t put it off. Have a discussion and decide at a very basic level if it’s an option for you.” A 30-minute conversation with a financial planner “can be a really good use of 30 minutes.”

He says an ESOP can be achieved in five years, but there is little room for error. “This is not a quick-buck strategy,” he says. “This is time, thought, and work.”

Eicher notes there are six overview steps for setting up an ESOP:

Step 1: Make sure all the owners are on board or at least open to listening. “Someone who is very resistant in the group really puts a fly in the ointment,” Eichler says. “You have to make sure everyone is willing to discuss ESOP as an option and the waters are smooth before jumping into the pond.”

Step 2: Feasibility study. “I recommend creating a feasibility study for the current owner. It can be done in-house if you have a quasi-CFO, CFO, or controller getting up to the CFO level. But the recommendation I make to a lot of my contractors (ones who have 50-60 employees) is that they find a firm that that’s what they do.” That firm can, with impartiality, compare and contrast

different options (i.e. ESOP, private equity, merger & acquisition) to determine the best exit strategy for the owner. “As much as ESOP is a great tool, it’s a tool so it has to be applied precisely in the right place.”

Step 3: Valuation of company stock. “Whoever does the valuation for feasibility should not do the valuation for company stock,” Eichler advises. “A trustee of the ESOP should value the company stock because they’re doing it on behalf of the future ESOP owners.”

Step 4: Attorneys draft a plan. It’s up to the attorneys to draft a plan between the current owner and future owners. “No one but an attorney who has experience drafting ESOP plans should do it,” Eichler cautions. “If something goes wrong, the attorney’s Errors & Omissions insurance plan would cover it.”

Step 5: Fund the plan. An ESOP can be funded through traditional banks, loans for the purpose of establishing an ESOP, private parties, or even income from the company itself. “When you get to this step, you’ve already decided how to fund the plan – it’s just a matter of doing it,” Eichler says. “After the first five steps, you have an ESOP.”

Step 6: Maintain the plan. This step is the most important. “Maintaining the plan includes oversight, compliance with the IRS and reporting to the IRS. You have to do this to maintain your preferential treatment as an ESOP.”

WHAT COMES NEXT?

“I always encourage my initial owners (selling owners) to make sure they’ve got a plan for what to do with the money they receive from their business. You want to design something,” he advises. “If you’re going to retire, what are you going to do next? You want to make sure you’ve got something going for your next phase of life.”

“I’ve seen people who don’t have a plan,” he continues. “Their health degrades quickly and they pass away sooner than they should. And a lot of people end up not doing fun things because they’re worried about running out of money. Have a plan.”

CONCLUSION

ESOP is a very structured yet flexible system to get wealth to transfer with a minimal tax effect. Over the last 20 years, they’ve become much more known in the financial industry. However, Eichler estimates only about 11% of contractors use ESOPs. You may ask, “If ESOP has so many benefits, why isn’t it used more by companies that fit the profile?” Eichler explains: “ESOP requires some forethought. Valuation metrics and factors need to be looked at to make sure this tool applies. If something is a little more difficult, it gets used a little less.” **RF**

**Preparing the employee-owners shouldn’t be overlooked. “You have a whole bunch of employees becoming owners and they’re not really aware of how to do that. You want to make sure they’re well prepared for this chapter of their life,” advises Scott Eichler, investment advisor with Standing Oak Advisors.*

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Pass-Through Entity Taxes May Require U.S. GAAP Considerations

■ By Jeff Fitzgerald and Ryan Odom, CliftonLarsonAllen LLP

Pass-through entities electing to pay tax at the entity level may now need to consider U.S. GAAP implications. Learn certain considerations and complexities that could surface.

REACTION TO THE DEDUCTION LIMIT

In 2017, the Tax Cuts and Jobs Act added a limitation on the deductibility of state and local taxes for individuals of \$10,000 annually (\$5,000 in the case of a married individual filing separate). This limitation is effective for tax years beginning in 2018 through 2025. In general, this limitation does not apply to state and local taxes imposed on entities — e.g., a business tax imposed on a pass-through entity that is reflected as a reduction of an individual owner's distributive or pro-rata share of income or loss.

Certain states have responded to the state and local tax deduction limit for individual owners of pass-through entities (generally, Partnerships or S Corporations) by enacting a pass-through entity-level income tax (either elective or mandatory). In most instances, the state also provides owners (shareholders or partners) of pass-through entities a state tax benefit in the form of a full or partial credit, deduction, or exclusion.

IRS Notice 2020-75 was issued on November 9, 2020 (the Notice), and states the Treasury Department and the IRS intend to issue proposed regulations in connection with a tax deduction related to amounts "... paid by a partnership or S corporation to a state, political subdivision of a state or the District of Columbia (domestic jurisdiction) to satisfy its liability for income taxes imposed by the domestic jurisdiction on the partnership or S corporation" (pass-through entity tax or "PET").

The Notice defines these payments as "specified income tax payments," which are deductible by the pass-through entities in computing their non-separately-stated income or loss. Further, the Notice clarifies that a PET can either be mandatory or elective and include a deduction or credit to the owners of the pass-through entity. To date, the proposed regulations mentioned in the notice have not been released, nor has there been any further guidance issued.

INCOME TAXES ATTRIBUTION

Management of pass-through entities need to analyze whether a PET is attributable to its owners or the pass-through



entity. If the PET is attributable to owners, it is accounted for as an equity transaction pursuant to the implementation guidance contained within ASC 740-10-55-226 through 55-229.

Notably, if a PET is determined to be attributed to owners, a disparity between the treatment for financial reporting purposes and tax return purposes could arise. That is, for financial reporting purposes, the PET could be treated as a distribution/equity transaction, and for tax return purposes, the pass-through entity may be able to take a deduction against federal taxable income for state and local taxes imposed on the entity pursuant to the Notice.

On the other hand, if a PET is determined to be attributable to the entity, the PET is accounted for in accordance with ASC Topic 740, Income Taxes.

Some factors management of a pass-through entity might want to consider when determining whether a PET is attributed to the entity or its owners include:

- Are the pass-through entity owners permitted to file a tax return and claim the payment(s) of tax by the entity against owner income taxes?
- Is the tax base of the PET computed by income or loss of the entity or the attributes of its owners?
- Is the PET liability joint and severally liable by the owners of the pass-through entity?
- Are the laws and regulations such that the taxes paid by the entity are on behalf of its owners?

OBJECTIVES AND SCOPE OF ASC 740

ASC 740-10-10-1 provides two main objectives related to accounting for income taxes. The first is to recognize the amount of taxes payable or refundable for the current year (current taxes payable). The second is to recognize deferred tax liabilities and assets for the future tax consequences of events that have been recognized in an entity's financial statements or tax returns (deferred taxes).

ASC 740-10-15-2 states “the principles and requirements of the Income Taxes Topic [ASC 740] are applicable to domestic and foreign entities in preparing financial statements in accordance with U.S. generally accepted principles (GAAP), including not-for-profit entities (NFP) with activities that are subject to income taxes.”

ASC 740-10-20 defines “taxable income” as the “excess of taxable revenues over tax deductible expenses and exemptions for the year as defined by the governmental taxing authority.” It is implied that a tax based on income includes a tax based on a measure of revenue or gains less expenses or losses and should generally be accounted for under the provisions of ASC 740 (i.e., current and deferred income tax accounting).

Management of pass-through entities must use judgement determining whether a particular tax is within the scope of ASC 740, as there are taxing jurisdictions that compute tax due on a wide variety of bases that could be less than a comprehensive measure of income, but still fall within the scope of ASC 740.

COMPLEXITIES OF ASC 740 AND PETS

If it is determined a taxing jurisdiction's PET is attributed to the entity, and therefore within the scope of ASC 740, entities should evaluate the requirements for related current and deferred tax effects recognized within the financial statements. Management should also evaluate whether there are factors that could impact the timing of recognition and measurement — including whether the PET is mandatory vs. elective, if elective, for what period(s) of time, and requirements for revocation of an election, among other factors.

In accordance with ASC 740-10-45-15, if an income tax is mandated by statute, the related tax effects should be recognized in the period that includes the enactment date. Any relevant deferred taxes should be measured at the enacted tax rates at which they are expected to reverse.

Additional complexities may arise if the PET is an election.

Certain jurisdictions permit entities to elect to be subject to a PET for certain period(s) — typically a single annual period. The PET election is generally effectuated with or by the timely filing of the entity's tax return, and typically does not require approval or review of the relevant taxing authority. In these instances, a question arises as to the proper timing or tax year to account for the PET within the financial statements.

One view may be that the PET is a change in tax status by analogy and, in accordance with ASC 740-10-25-33 and 25-34, should be accounted for when the PET election is filed (if no tax authority approval is necessary). This view may preclude an entity from recognizing deferred income taxes if the election is on an annual basis (i.e., the effective date of the election does not exceed one year).

Another view may be to account for the PET election within the financial statements once management has developed and can support its intent and ability to do so in accordance with ASC 740-10-55-23. This view would also contemplate future intended elections of management with respect to the PET.

Other complicating factors might include:

- PET regimes that are only in effect when an entity is in a taxable income position
- Accounting for estimated tax payments made by an entity prior to the effective date of accounting for the PET as an income tax of the entity
- Jurisdictions that compute PET based on the income attributable only to owners who have elected to be subject to the PET
- Realizability of any deferred tax assets, if applicable
- Certain PET regimes that permit loss or credit carryforwards that may only be realized by an entity's current or future taxable income under the PET regime
- Election and revocation requirements as enacted by each taxing authority

HOW CLA CAN HELP

PET elections can create a wide variety of complexities within financial statements. Our dedicated team of ASC 740 professionals can work closely with you to assess your facts and circumstances and further analyze the potential financial statement impacts of PETs.

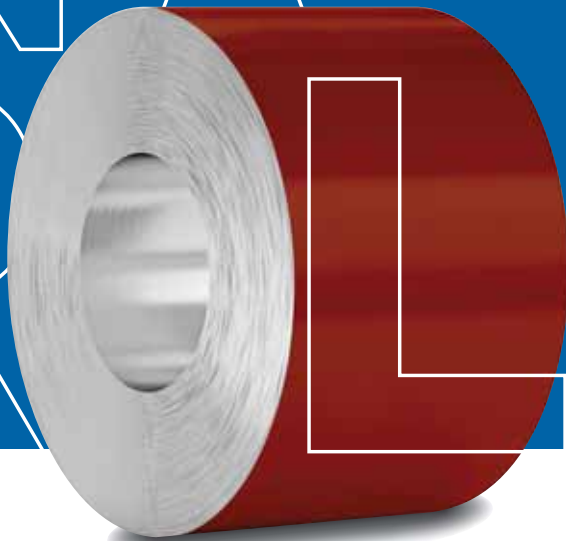
For more information on pass-through entity taxes for construction entities, contact Craig Olsen at craig.olsen@CLAconnect.com or 715-852-1150. RF

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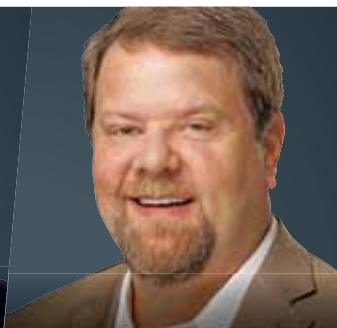
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The 21' Star 1 Trim Folder uses a templated air-logic system to help the operator make accurately folded trims while only handling the piece once.

PHOTOS COURTESY OF STAR 1 PRODUCTS.

No Computer? No Problem

Air-over-hydraulic folders support quick, accurate, repeatable trim production

■ By Karen Knapstein

Improvements in manufacturing technology to make production faster and more accurate doesn't necessarily mean the advancements are about faster computers and software. Star 1 Products, LLC in McBain, Michigan, which specializes in supplying businesses that forgo the use of computerized equipment, is now manufacturing an air-over-hydraulic folder that enables the user to make trims at a speed that was not thought possible without computers. In fact, some users say the speed at which a trained worker makes trims using the air-over-hydraulic folder is on par with machines that are computer controlled.

Nelson Miller of Star 1 Products says the air-over-hydraulic concept has been used for about 10 years. His company has only recently started making the

machines, so they've only been available commercially for about a year.

The Star 1 Trim Folder is a low-tech option for those who choose to live without computers yet want a high-quality folder. It's made using a U.S.-assembled, German-made brake. Nelson said they chose this particular brake because the apron sweeps back to home position at an angle, making it easier for the operator to place the trim piece into the machine. Star 1 buys the brake and adds the pneumatic and hydraulic control system.

AIR LOGIC & TEMPLATES

Powered by an outside power source such as a diesel power unit, air-over-hydraulic brakes use a template system to repeatedly produce the same piece of trim quickly and accurately. Once

the template is set, switching profiles is a matter of switching out templates. A different template is used for each profile.

"The way the machine works is you position the metal up against the backstop and push the pedal to start the cycle," Nelson explained; "the clamp will close and the apron will make the bend that the template dictates. The apron will then go to the home position, the clamp will open, and the template will move forward one step. The back gauge will then move forward or backward (as dictated by the template) until it comes to rest against the next stop.

The machine will then wait until the operator pushes the foot pedal to activate the second bend. Holding the trim piece against the back gauge, the operator presses the start pedal and the sequence repeats. This continues until the part is

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Cover Story))

complete, at which point the template resets itself automatically

“For every bend you make, there’s one row in the template,” he continued. So if you need to make three bends in the trim, the template will have three rows of stops. The top side of the template controls the bend angle while the bottom side controls the back gauge.

Nelson said the metal trim market started out with the basics like J’s, Corners, and Ridge Caps, but now there are different rakes and specialty trims, which can make for some complicated bending. The template system allows operators to make complicated trims with multiple bends efficiently and accurately. Since the template can include up to 18 lines, the folder “can bend a piece of trim that has 18 different bends or hems or different things like that,” he said.

Nelson’s brother Robert, who works

on design and manufacturing at Star 1 Products, described the technology: “Templates are the ‘computer chip.’ The operator sets up the template with the Bend Angle, Back Gauge, Open Hem, and Clamp Only. The machine then ‘reads’ the template. Templates are fully adjustable for each profile.”

Before this type of equipment, Nelson recalled, if you needed 40 pieces of a specific trim, you’d make the first bend on all 40 pieces, setting each piece aside as you did it. “Then you’d reset the back gauge and bend the next angle and do all 40 pieces again,” he said. You might end up handling each piece multiple times, depending on the number of bends needed.

The template system speeds up production significantly. “Before, they may have had to move a piece five times (or more). But with the template system you only handle the piece once and do

all the bends before placing it into the completed rack,” Nelson explained.

The Star 1 Trim Folder also comes with a custom template that enables the user to set the stops for any trim piece that a customer may order. The custom template has a measuring tape embedded alongside each slot on the bottom side. The tape measure is used to set the stops. “It’s fairly simple,” said Nelson. “Using an allen wrench, you loosen, move, and tighten it back up. On the top side you have the degrees marked from 30° through 130°. These are reference points. If your first bend needs to be at 90°, you move the bend stop in that row to the 90° mark. You repeat this for each bend in the part.”

Robert added: “Templates can be set up for custom orders for the day by someone other than the operator so the operator simply grabs the appropriate template and doesn’t need to slow production.”



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The next day somebody may want something else. The same custom template can be reused. “Or, some shops may want extra templates so they can set up a template to do a custom trim again and again,” Nelson said. “For one-off projects you use the custom template.”

“The speed is comparable to the CNC versions on the market,” added Robert. A computer-aided machine has the ability to store unlimited custom trims in memory. With the template system you have a few custom templates that you readjust each time for your one-time custom trim orders. It requires more template setup and brain work than a computer (which is actually good for your health).”

The air logic controls are by Telemechanique, which is a division of Parker. The controls are very dependable. “It seems to be a very good quality of air

logic,” said Nelson. “It works well. But it’s always important that there’s no contaminants like moisture or oil going into the air line. Dry, clean air is very important with air-logic controls.”

Robert added, “The air logic system we use is a high-quality system that, when fed clean, dry air, is ‘bomb proof.’ They have been proven in heavy daily use for many years.

“While air logic may seem somewhat complicated at first, it is much simpler than computer systems and therefore easier for the operator to troubleshoot without outside help.”

Maintaining the hydraulics is also important for accurate bending. “Accuracy issues usually come from inconsistent hydraulic oil temperatures,” explained Robert. “We recommend installing equipment that will maintain a consistent oil temp, and therefore consistent accuracy.”

HOW IT BEGAN

Star 1 has been making the air-over-hydraulic trim folders for about a year, but the folder was actually developed about 10 years ago by Ray Wagler and his team at Royal Oak Metal Sales, which included Jerry Schrock, who was in the office doing sales, Jacob Mishler, who was running the roll form side of the shop, and Lavern Jantzi, who was their head trim man.

“The driving force was to make an alternative bending option available to people who choose to avoid the use of computers,” Ray said.

Ray, who first started in the metal forming business in 2010, said he made his first modification to a 10’ Roper Whitney hand brake. “I wasn’t in [the business] very long before I built a back gauge on it,” he recalled. “That was my first try at building a brake with some form of back gauge.” Before that, they’d

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Operation is simple: Insert the template. Use the down pedal to clamp the work piece, and press start to bend. The up pedal is used to open the clamp, if needed. PHOTOS COURTESY OF STAR 1 PRODUCTS.

have to get a tape out and make marks on the trim flat. “We would have to measure where each bend would go on each piece of trim. It was very time consuming and not accurate enough.”

In the winter of 2011/spring of 2012, his company bought a used 16 ft. Chicago brake. “We automated it with 12-volt DC over hydraulic,” Ray recalled. “It was our first attempt at building an automated machine. We used that particular machine for about three years. We learned a lot with it.”

In the Fall of 2013, they bought a new 21’ Bradbury folder. “The four of us spent many hours discussing different aspects of the machine as we worked on the project,” recalled Ray. “Lavern

and I worked on the Bradbury machine that whole winter; probably from the beginning of January until the middle of April.

“Learning to do air logic was a big part of the journey. It was our first venture that we used air logic as a control medium.

“We developed a template system because we wanted the consistency of a mechanical stop,” he continued. “A mechanical stop does not change when hydraulic oil temperature changes. Unfortunately, the bend angle does change if there is a large fluctuation in oil temp. It is important to maintain a fairly consistent hydraulic oil temperature.

“We used an aluminum template that slides into a template envelope on the machine.” To change profiles, the template is simply removed from the envelope and replaced with the one that’s needed. “Each template is clearly marked. What it makes is stamped on the template: Regular Corner, Mini Corner, Ridge Cap, etc. Now, within 30 seconds, we can go from making one profile to another. After the initial learning curve, setting up a template for a normal custom trim can be done in a matter of minutes,” explained Ray.

At the end of the 2016 season, Ray bought a German-made Variobend brake on which to build an air-over-hydraulic setup. “I like how the apron tilts back at 45° instead of being vertical. It makes it easier to insert the workpiece,” he said.

When in use, the template “tells” the machine what the next step in the sequence is and the back gauge advances or reverses as dictated by the template. In a matter of seconds, the operator is ready to make the next bend.

“And we can repeat the piece dimensionally every time. I would say it compares favorably to a computerized machine in speed, in smoothness of operation, and in accuracy,” Ray said.

Ray feels blessed with the machine development experience and at the outcome. “With everybody pooling their ideas and talents, and with God’s blessing, it worked out well.

WHAT OTHERS SAY

Lamar Miller purchased Royal Oak Metal Sales from Ray in 2018 and moved it to Tustin, Michigan. But the Bradbury folder didn’t go with the business. “I bought the company from Ray. I bought some of the machines but not all. Ray kept the Bradbury folder,” said Lamar.

Lamar later acquired an air-over-hydraulic folder; he bought the one that Ray built on the 21’-long Variobend frame. He, too, says that since the apron goes back at a 45° angle, it’s easier to insert the stock.

When asked how using an air-over-hydraulic folder has affected the way they make trims in their metal shop, Lamar responded: “There’s no comparison. It’s way more accurate and probably three times faster than [it would be] without those controls. Maybe even more than that. We’ve got that template and that’s the key. The repeatability is invaluable. You can slide the template in a week later and the next piece you make will match dimensionally with the last piece that you made [with that template].” Whereas if you have to reset the stops every time, the repeatability is hard to achieve.

In addition to speed and accuracy, using the brake that has templated controls can make it easier to teach someone how to bend trim. Lamar explained: “He just has to know when to flip end-over-end and all that. It’s a

lot easier [than using a manual brake]. But it still takes more brain work than a computerized controller for a custom piece of trim.

“Once the person that runs the brake knows what he’s doing,” he continued, “it takes about the same amount of time to set up a custom trim as a computerized controller. It runs smooth and fast. You can get a lot of speed out of it because the cam action drives the apron. On a computerized machine the oil flow is slowed down at the end of the bend to smooth out the transition into reverse. On our machine, the cam automatically slows it down as it goes from forward to reverse.”

Lamar said they added a counter about a year and a half after they got the machine. As a testament to the speed and reliability of the folder, he shared his numbers: From April 20, 2021 to the

morning of Nov. 29, 2023, the machine has made 486,611 bends.

The importance of quality, speed, and repeatability can’t be overstated. Lamar said the air-over-hydraulic folder “has enabled us to compete with a computerized machine. If you’re going to do high-end residential trimmed out in metal, you need the quality that a machine like this can provide.”

FIRST MACHINE STILL RUNNING STRONG

In 2020, Ray sold the original Bradbury folder with air logic controls to Stephen Zook at Windy Hill Metals in Fountain City, Indiana. When asked how the folder is working for him, Steph said, “We really do like it. It’s one of the better investments we ever did in a trim line. For custom trims, it’s easy to set it and it doesn’t take long. We

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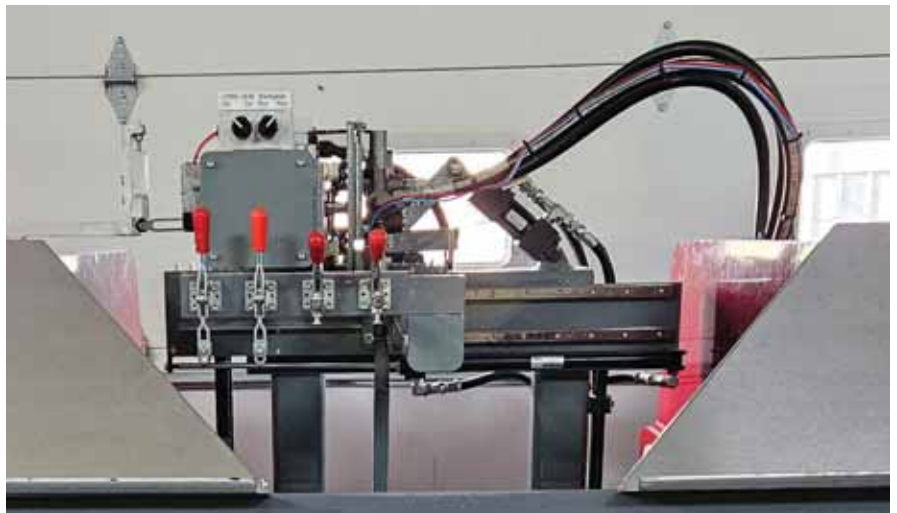


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are actually pretty much computerless, and one nice thing about [this folder] is if there is something a little bit off we can fix it ourselves. We don't have to wait on a technician. We can fix it and keep going." And the settings are easy. It doesn't take long to train someone to use it: "Just a short period of time."

The first air-over-hydraulic folder is now 10 years old and keeps working hard every day. "That machine, as long as you work it, will keep rolling," said Steph. "We've used it for a number of years. We've changed some parts out here and there, but that's it. Any brake will wear out. But if it were computerized we would have had to go through a lot more than that." Because it's not computerized, the controls don't have to be updated and will work the same in the future as it does today.

"We're ready to get another one," Steph continued. So they're getting a new Star 1 Trim Folder for the shop in Fountain City. "I wouldn't buy another



The template system with pneumatic controls makes bending quick and accurate.

machine if I wasn't happy with it," he mused.

The templated folder has made life a lot easier and has allowed the metal shop to be competitive. "If you're doing high end residential trimmed out in metal, you need the quality that

a machine like this can provide," said Steph.

"Star 1's people are awesome people to work with," he said enthusiastically. "Even their other equipment works well. We have a Felt Applicator. We're getting a new one of those, too. That was one of the better investments that we ever did for the shop."

IT'S NOT FOR EVERYONE

Ray, who now operates Elite Metal in McBain, said that an air-over-hydraulic machine isn't for everyone. "Whether or not you need a machine like this depends on the level of production you need." If you are making only a few trims, you probably don't need a high-volume, high accuracy machine. However, with the increasing popularity of barndominiums and residential metal roofing, more metal shops are finding it necessary to improve the quality and speed of their trim manufacturing.

Which means there's a growing interest in brakes that are capable of quickly producing high-quality components. Not everyone is interested in turning to computers to achieve accuracy and volume, so that's where Star 1 fits in. Ray said he wasn't interested in making the machines as a business. "Nelson and Robert Miller [at Star 1] are young entrepreneurs who took interest in the machine and



Each template holds the key to creating a different trim profile.

we worked out an agreement on how we could work together to make this machine available to whoever has a need for one like it,” he explained.

AIR-OVER-HYDRAULIC AVAILABILITY

Once Star 1 receives an order for the Trim Folder, they buy the frame and get to work on it. As of mid-November, there are two Star 1 Trim Folders that have been put into service. The first was delivered to Wagler Metals in Bloomfield, Iowa. The second was delivered to Countryside Metals in Updike, Illinois. The current lead time from order to delivery and setup is about 10 months.

Customer service is a top priority. Robert or Nelson take part in the delivery. One or the other goes out to the jobsite, where they set it in place, do

the hookups, and help the new owner get started on the machine. “Most times they’re comfortable within a day,” said Nelson. “It usually ends up being a short day. If we get there in the morning, by early afternoon the new owners are comfortable with it and ready to go.” Of course, the actual delivery depends on everyone’s schedules.

Another machine is currently being made for Windy Hill Metals, which, as mentioned earlier, has the original air-over-hydraulic folder that was built by Ray Wagler and his team. “The Bradbury is working good,” explained Nelson. “He just wants that curved jaw option to bend the specialty trims that are difficult to bend without the curved jaw.

“The curved jaw has more capabilities,” he continued. “With a curved upper jaw you can make a trim with a longer leg versus depth (i.e. J-Channel overhead

door, etc.) without distorting the finished product.”

The Star 1 Products equipment lineup also includes the Star 1 Felt Applicator, wide forks (including clip-on wide forks, adjustable wide forks), coil racking, coil pallets, and coil upenders. In case there are any questions, Star 1 only works on their own machines; they don’t work on any machines that have electronic controls. They’re also not yet building air-over-hydraulic machines on frames other than the high-quality, German-made/U.S.-assembled Variobend. “Using a Variobend frame allows us to offer a folder of the highest quality — not only in durability and precision, but also in service,” explained Robert.

The company has more products in development, so be sure to keep watch for updates here in Rollforming Magazine. [RF](#)

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Forecast 2024

Rolling Into A New Year!

■ By Linda Schmid

Shield Wall Media and METALCON conducted an industry survey that generated a lot of information, and we are providing a few of the basics here. Watch for our new Construction Survey Insights — Annual (a stand-alone magazine mailing in April) for more in-depth construction industry insights.

How did 2023 go for your business? Did you hit your goals in sales and profits? Do you know why or why not? The whys and wherefores can be complicated, of course, but beyond glitches in production, the unexpected obstacles in purchasing, and missed marketing opportunities, not to mention everything that went well, do you have any idea where the industry is headed in 2024?

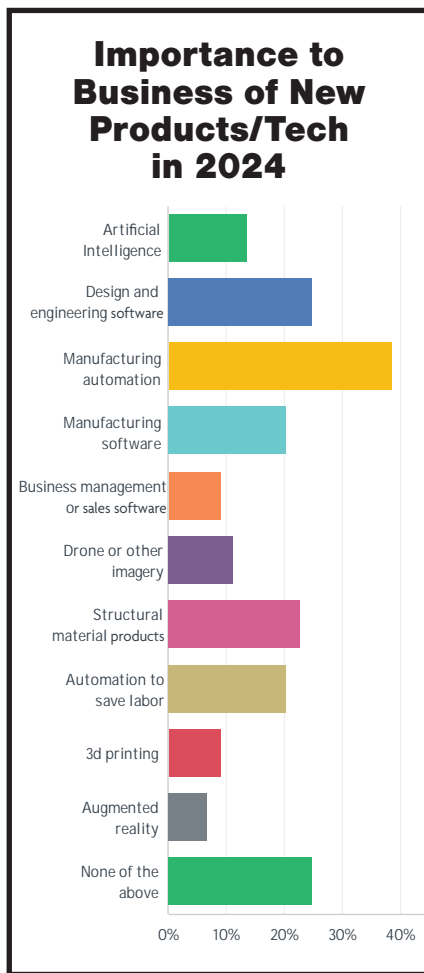
While no one knows for sure what is coming, taking a little time to size up where we are and what challenges are likely to present themselves can be helpful in planning.

THE CONSTRUCTION CLIMATE ACCORDING TO ECONOMISTS

To the surprise of economist Anirban Basu, the economy continued strong in the third quarter of 2023. Contractors, he said, are very busy, in some cases too busy, and expectations are up for sales and profitability in 2024.

Basu said that there are many risks out there including inflation and geopolitical situations. However, we've been navigating well.

Job opportunities are spurred by economic transformation, Basu said. That translates to the rise of AI (artificial



intelligence) creating the building of data centers, our e-com retail habits require warehousing, reshoring manufacturing to minimize the supply chain issues we've faced in the last few years requires manufacturing construction, and the infrastructure needs rebuilding and is now being financed. Therefore, there is a lot of opportunity out there, but alas, there is not enough labor to support all of it.

Youngsters, Basu said, are motivated less by money than previous generations. While they still have to pay the bills, they want more flexibility in their jobs and they want to feel like they are doing some good in the world. Give them a mission, Basu suggested. Whether it's that your company is strengthening America through rebuilding the infrastructure or bringing manufacturing back, or whether it's a focus on building safely or environmentally sound practices such as providing steel which boasts longevity and is recyclable — give them something to believe in.

Basu's final advice for navigating an economy with so many unknowns is, "Don't get complacent. Now is not the time to take a lot of money out of the business and build that \$1.5 million house," he added.

Ken Simonson believes that growth and job creation will continue in 2024, but at a slower rate than currently.

"I expect modest reduction in the inflation rate," Simonson said, "not enough to get down to the 2% range the Fed wants to see before lowering its short-term interest rate target.

Simonson continued, "Both short- and long-term rates are likely to stay close to current levels or move higher. I don't expect rates to end 2024 below current levels."

Simonson believes that most supply chain disruptions have been remedied with the biggest exceptions in switchgear and other electrical equipment. He has spoken to people in the industry and he expects the shortages to last through 2024, which combined with labor shortages is likely to interfere with

completion times on projects.

SHIELD WALL MEDIA'S CONSTRUCTION SURVEY

All of the graphs in this report represent the findings from the Shield Wall Media survey of industry insiders, which provides many interesting insights into the state of the industry.

For example, the “New Products/Tech” bar graph shows a breakdown of respondents’ expectations of being impacted by various new technologies. While it seems unsurprising that “Design and Engineering” and “Manufacturing Automation” would be important, “AI” is right up there, too.

CONSTRUCTION INSIDERS SAY:

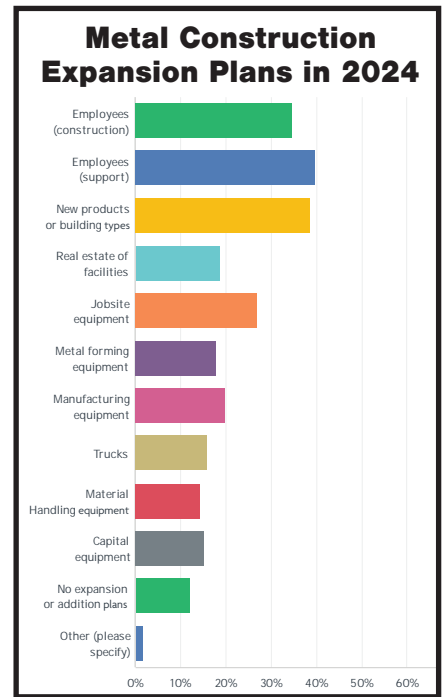
United Steel Supply’s Will Waldrip said, “We are very optimistic about 2024 being another great year for the

metal roofing industry. We think profits will be similar to 2023, but we expect industry growth overall which should result in a good year for most companies in our industry.”

From residential to agricultural, commercial, and industrial markets, Waldrip said that his team believes “all of these segments will be up for our customer base in 2024. The overall metal roofing industry gains market share every year,” which he added will create more demand for steel producers to supply.

Wayne Troyer of Acu-Form is also quite optimistic. “I am expecting our profits to rise at least 15% in the next year,” he said. He added that this will happen because he sees the prices of materials going down while efficiencies are going up.

However, he does expect a downturn



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in the residential market.

“Talking to builders in my area, including my son and son-in-law, all are saying that the only people having houses built are those that have cash because people can’t get loans. That’s a problem,” he said.

Troyer is expecting at least a 40% increase in agricultural work. He said prices are up for farmers right now, and with material prices coming down, lots of new agricultural builds will be going up.

The economy is trending upward according to Paul Zimmerman of Hixwood.

“We are seeing higher demand for our products and raw material,” he said. Therefore they expect profitability to be up in 2024.

Jason Smoak of SWI Machinery is

cautiously optimistic.

“I think that our profitability will rise slightly in 2024, but there are a lot of factors at play in this equation. No one knows for sure how sales will go in 2024 with inflation and interest rates on the rise.”

In regard to interest rates he went on to say that they “seem to have stabilized for the moment and could possibly drop in 2024. Once they stabilize, people can plan on what their payments will be and possibly move forward with their projects instead of the uncertainty of wondering if the interest rates will rise before the project is finished.”

At the same time, Smoak said, “SWI is expanding in 2024 with the addition of a new facility in Peachtree, Georgia.”

Plans to expand seem to denote confidence in the road ahead. According

to the CSI survey, at least 40% of metal construction businesses have expansion plans for 2024. Check out the bar graph titled Metal Construction Expansion Plans [previous page] for a breakdown of how they intend to expand.

ROUGH SPOTS AHEAD

Our survey found that the construction industry believes the top five challenges for 2024 will be:

1. The cost of materials
2. Finding employees tied with
2. Retaining employees,
4. Inflation
5. Rising employee costs

It appears that the major concerns are with rising costs and employees, and interest rates didn’t even make the top concerns. (It came in at #6.)



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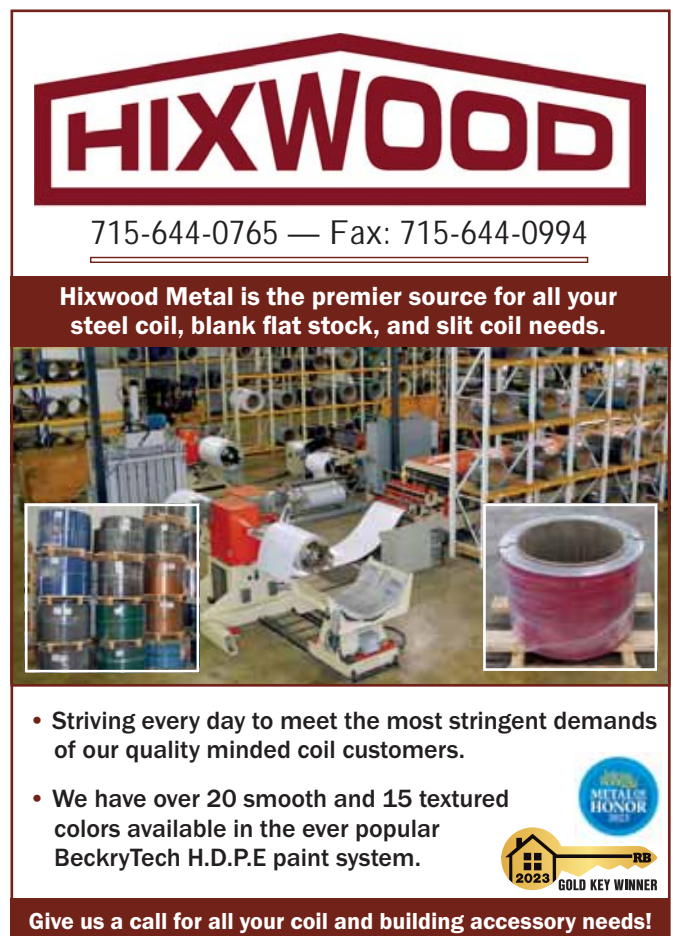
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Will Waldrip believes that supplies could be a big challenge in the first half of the year.

Wayne Troyer is concerned about interest rates and inflation.

Paul Zimmerman said that he believes that labor costs and interest rates will be the major concerns. Other concerns that he notes are that supplier confidence in the economy and that supply chains are not very strong.

“The supply chains are pretty good, but where I am seeing some change is that service centers and distribution aren’t as willing to stock as much inventory as they were pre-pandemic. I believe this is due to the high cost of interest rates,” he explained. “This makes downstream manufacturers need to stock more.”

Smoak said that inflation, the cost of materials, finding employees,

and interest rates are all likely to be problems in the coming year. He added, “Inflation and interest rates are they only two things you have no control over. Employees could possibly be replaced with automation.”

“I think automation will continue to grow for us in the future,” Smoak said. “This is due to inflation, cost of materials and how difficult it is to find employees. Automation is advancing pretty quickly these days and becoming more reliable, so if someone can automate a normally labor-intensive process it can help them stay competitive.”

Troyer said that automation is going to be very impactful in the coming year for many companies for that very reason.

“It can offset the lack of workforce, so if the process is fully automated, one person can do more. We won’t be impacted at

Acu-Form,” Troyer said, “because we are as fully automated as possible, and we have backlog to fall of 2025.”

THE FINAL WORD

Brian McLaughlin, National Sales Manager at Drexel Metals, said, “We see opportunity. The metal roofing industry is interesting as no manufacturer has market share. Instead, it is a fragmented, regional industry with many players. And while some are viewing 2024 as bearish due to rising interest rates (there may be some truth to that), activity in bid work and design work remains strong. This gives opportunity to metal roofing manufacturers to grow market share. Setting your company apart from the many competitors by providing the best service to customers will always be a winning strategy.” [RF](#)

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Color Concerns

How to Effectively Control Color in Coil Coating Production

■ By Manfred Binder, Sales Director, Inline Color Measurement, X-Rite

Coated steel and aluminum panels are an integral part of the construction industry, commodities, and other applications. As design trends expand to include custom color work with intriguing new colors, manufacturers must ensure first run accuracy and repeatability. Color must be constant throughout the façade and from one product to the other.

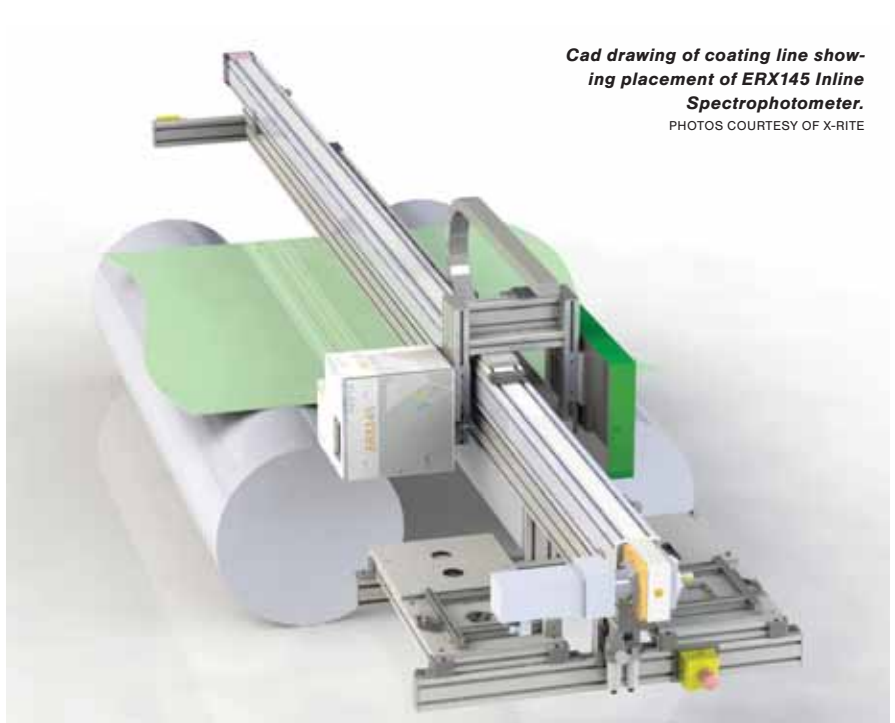
In this way, color has become a primary quality criterion. If color is not consistent, it is easily discernable. If one panel on a roof or building has a different shade, it is noticeable immediately. When color is not consistent, products need to be reworked, scrapped, or sold at a discount. Not only does this impact a manufacturer's bottom line, it can have significant impacts on sustainability efforts.

For coil coating, the challenge is identifying color drift early on in manufacturing. However, this is not easy for manufacturing processes. The speed of manufacturing means that operators cannot remember or identify the exact color coming off the line. If a coil is produced, the operator has no chance to see color shifts during the process, as they are slowly fading. The operator can only realize color differences when the samples are side by side, as if they were mounted on the façade.

Luckily, advances in color measurement technology can help coil coating manufacturers catch color drift immediately and avoid expensive waste.

MEASURING IN A LAB

Color measurement equipment measures color independent from light conditions and human judgement. Color measurement has become a standard for all laboratories because it provides



Cad drawing of coating line showing placement of ERX145 Inline Spectrophotometer.
PHOTOS COURTESY OF X-RITE

reliable data for incoming inspection of raw materials as well as final inspection of the produced coils. All data are stored and thus traceable. The laboratory is an important instance when decisions about color must be made. It is here that manufacturers formulate and define the coil coating color standards. These professionals need to answer questions like: "Can we ship this product in the specified color?" or "Did we ship the identical color to last month or last year?" or "Is our color consistent run after run?"

But how does this information help the operator run his machine? Very little! He produces a coil, which is rolled up at the end. After finishing one coil, a sample is taken and brought to the laboratory. Only then does the operator get the result about what was produced. It is like driving a car with your eyes closed and only occasionally glancing at the road to

correct your direction. Nobody would do this because it is too dangerous. So, why should we do this on the coating machine?

When it comes to quality control, there is a popular saying: "You can only control what you measure." If color is important for a product, it must be measured on the production machine to allow the operator the ability to make the right adjustments before color is out of specification.

PRODUCTION ENVIRONMENTS REQUIRE INLINE COLOR MEASUREMENT

Measuring color in a laboratory is very different than measuring on a production floor. In a laboratory, the spectrophotometer is in a clean and consistent environment. The temperature and lighting are constant, and there is very little dust. The sample is

cooled to room temperature and can be directly placed on the spectrophotometer for an easy measurement reading.

However, the scenario is completely different on the production machine. When measuring during production, the following need to be considered:

- Measurements must be taken without contact so the coil strip is not damaged or scratched.
 - Measurements cannot be influenced by the normal fluttering and ambient light on the production floor.
 - The temperature of the room and the coil strip can influence color measurements. If measuring a hot coil, the color values at room temperature must also be considered.
 - Measurements on the line need to be as precise as in the laboratory.
 - The production line moves fast.
- Measuring color during coil

production is no easy task. Luckily, advances in inline color measurement and software are making it easier than ever to control and monitor color during coil coating.

Today's inline spectrophotometers are mounted on a traversing beam to measure the color in cross direction, without contact, during production. With this information, the line operator can control the nip press of the coating line and the color kitchen operator can see how the color at the machine develops. If color starts to drift, immediate actions can be taken to keep the color within the specified limits.

WHERE TO MEASURE

When adding inline color measurement to the production process, there are two places where the color can be measured:

1. Directly after the water quench after the final coating. Placing an inline instrument here captures color information early in the manufacturing process to predict what the color will look like. One disadvantage is that the coil is still hot and color measurement readings will need to be recalculated to room temperature. However, QC software can be used to perform these calculations for an excellent correlation to the laboratory system. This is explained in the "Thermochromism" section below.

2. After the final accumulator. Here the temperature is cooler, but unfortunately not stable. Depending on the position of the accumulator, the temperature can change, so thermochromism control is required. Another disadvantage is the speed to the strip is not constant. It has no influence



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Measurement positions at the coil coating machine. 1) After water quench. 2) Before reel up.

on the quality of the color measurement, but the measurement spots on the stripe are not evenly distanced as the traversing beam has a constant speed.

All in all, the advantages for the color measurement after the water quench are higher. When possible, it is recommended to measure after the water quench. Measurement after the accumulator should only be considered when there is no space available before.

THERMOCHROMISM: How to Compare the Hot Coil to the Laboratory

Product specifications and color tolerances are often very tight for coil coating. Unfortunately, color can change with temperature. This is a reversible process and it is called thermochromism. For example, red, orange, and yellow colors can appear darker and less saturated at higher temperatures.

On the production machine, the coating is cured in an oven. After leaving the oven the strip is quite hot. Even the water quench will not decrease the strip to room temperature. If the inline color measurement is taken here, we need to consider this color shift and recalculate the measured values to room temperature.

Inline devices, like the X-Rite ERX145, have a built-in pyrometer to measure the current temperature of the coil right at the measurement spot. X-Rite ESWin QC software receives the color values with the real temperature and recalculates the values back to room temperature. Even when the temperature of the coil changes, the measurements are constant and correspond to the measurement in the laboratory at room temperature.

To specify the thermochromic effect, the same instrument is mounted on a heating and cooling table for use in the laboratory. Each sample is measured at different temperatures to calibrate the color shift. The values measured in the laboratory are transferred directly to the production machine and used as a standard. This requires all instruments to have excellent inter-instrument agreement and long-term stability.



Measuring color on hot coated surfaces. Inline devices, like the X-Rite ERX145, have a built-in pyrometer to measure the current temperature of the coil right at the measurement spot.

STAND ALONE OR FULLY INTEGRATED TO THE PRODUCTION SYSTEM

Inline systems can work as a stand-alone device or be fully integrated into

the Process Control System (PCS). In this case, the color measurement instrument is fully automated without any operator activity. As soon as a new production starts, the target is transferred to the color sensor and the inline measurement starts.

5 STEPS FOR CONTROLLING COLOR ON COIL COATING

Using color measurement in the laboratory, on the production line, and throughout final quality control reporting helps manufacturers achieve consistent color faster and easier. Here are the five steps successful coil coaters follow.

1. In the lab, a laboratory spectrophotometer mounted on a heating table helps the paint and coatings supplier formulate and define the color standards. The standard is measured while using a heating system to show how temperature changes will impact the color.
2. After the color standard is set, it is shared with everyone involved in the workflow, including the supplier, workstations in the production control booth, at the color coating line, and at client sites, so each user has access to the same color data.
3. Once the coil coating process begins, inline color measurement systems continuously evaluate the color quality of the entire length and width of each coil. The traversing beam holds and moves the inline spectrophotometer in cross direction so it can measure while the coil is moving.
4. Results are shared in real time, so anyone in the network can monitor color quality and consistency. If a color tolerance is exceeded, graphics and alerts will make everyone aware before color deviations turn into a costly mistake.
5. The inline color measurement system provides complete documentation in the form of color quality records based on international standards to ensure the integrity of the program and customer satisfaction.

CONCLUSION

In a modern production process, all important parameters must be measured and controlled. Color is one of the most important parameters, as everyone will notice a difference on the product. While a measurement in the laboratory is necessary, the information comes too late for the machine operator. Only inline color measurements can help operators identify color shifts early enough to adjust the coating machine and produce high quality, consistent color.

Adding inline color measurement to the coil coating process has a typical return on investment (ROI) of six



The ERX145 In-line Spectrophotometer for measuring color of coil coatings.

months. With automated real-time measurements during production, companies spend less time manually measuring strips, reduce waste, and save energy. Most importantly, inline color measurement improves overall product quality and customer satisfaction. **RF**

Manfred Binder is the Business Development director for Inline Color Measurement at X-Rite, the market leader for color measurement. He has 30 years of experience in the color measurement business specializing in inline applications across the paper, coil coating, plastics, textile, glass, and automotive industries.



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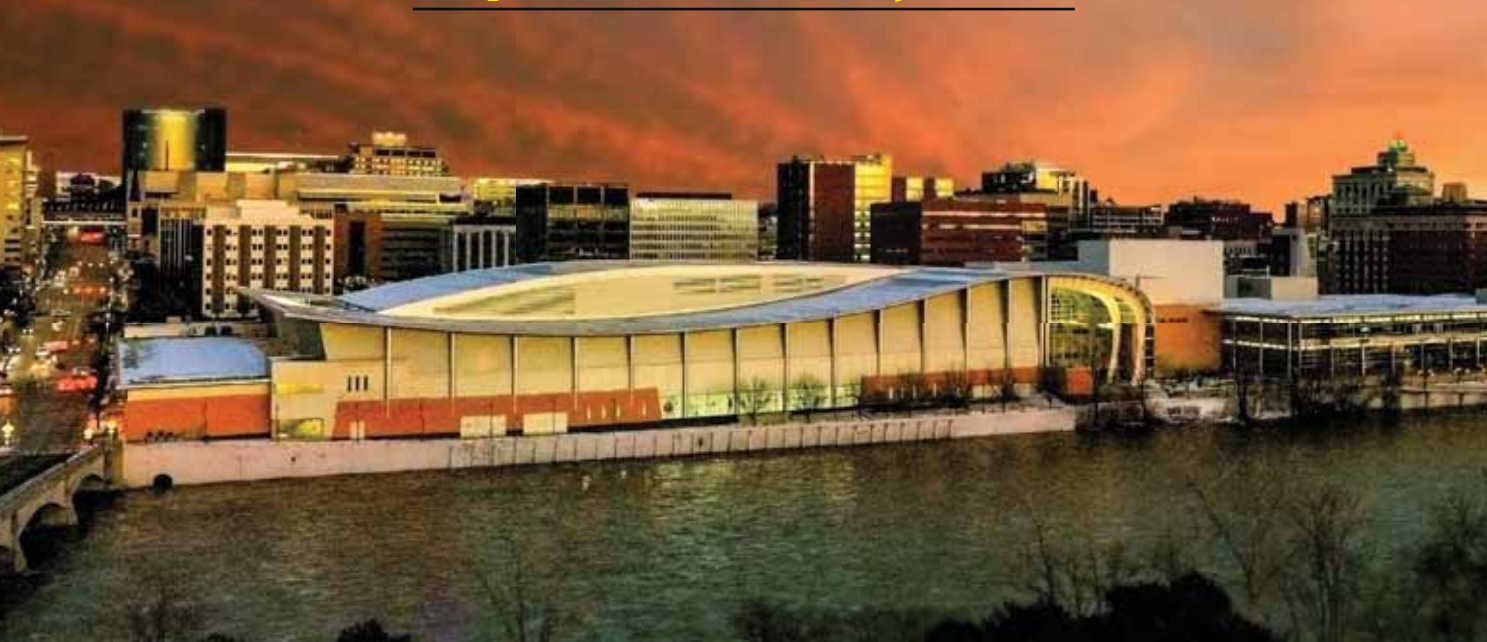
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Ideal Steel headquarters, Broussard, Louisiana.

AMBASSADOR SUPPLY ACQUIRES IDEAL STEEL

Ambassador Supply has acquired Ideal Steel, a highly regarded regional manufacturer of components and pre-engineered steel buildings. Located in Broussard, Louisiana, the manufacturer has over 20 years of experience serving industrial, commercial, agricultural, and residential markets.

“We’re thrilled to welcome Ideal Steel to the Ambassador Supply team. With an alignment of visions strengthened by our shared values, we know this strategic partnership will make a positive impact on the market,” said Ambassador Supply CEO Brad Crawford.

Ideal Steel is focused on providing customers with cost-effective, quality buildings in a timely manner. Founded in 2002 to offer ideal building solutions that meet and exceed industry standards and customer needs, Ideal Steel has become a

leading manufacturer and supplier in the industry over the past 20 years.

“Working with Ambassador Supply will provide our company with new opportunities for collaboration and innovation, as well as an expanded market presence — all while continuing to provide our customers with the same high-quality service they know and trust,” said Ideal Steel President John Tolson IV. “We believe this is a great opportunity to grow our business and create a lasting impact in our industry and in our community.”

With the addition of Ideal Steel, the Ambassador Supply portfolio continues to expand through strategic investments in residential and commercial construction, lumber and building materials, manufacturing, distribution, and building technology.

BRADBURY GOLF OUTING RAISES MONEY FOR FOOD BANKS

The Bradbury Group hosted the Annual Bradbury Golf Tournament at Hesston Golf Course in Hesston, Kansas, in late October, with the goal of raising money to help support local food banks. It was an opportunity to get employees, vendors and customers together to



The Marion, Kansas, food bank receives a check for \$2000, raised during a golf outing fundraiser by The Bradbury Group.

support a great cause.

High winds and cold weather did not stop the field of 70 golfers. The event raised \$10,000 for food banks in Hesston, McPherson, Moundridge, Marion and Reno counties. Each food bank received \$2,000 through generous sponsorships and donations at the door by each golfer.

CENTRAL STATES MFG. BREAKS GROUND ON NEW PLANT IN UTAH

Central States Manufacturing, Inc. has announced the ground breaking of its 12th manufacturing plant in Tooele, Utah, 40 minutes outside of Salt Lake City. Known for its high-quality metal products designed for residential,



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From left to right: Aaron Peterson (Peterson Industrial Group), Jim Sliker (Central States CEO), Tim Ruger (Central States President), Debbie Winn (Tooele City Mayor) and Jennifer Davis (Central States CMO).

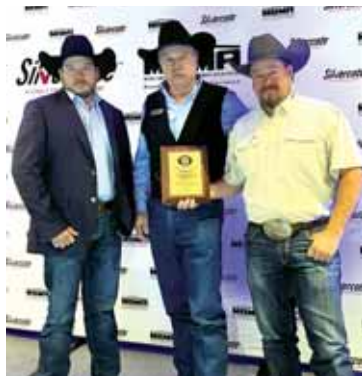
commercial, and agricultural customers, Central States is extending its footprint to the West to serve customers in Utah, Idaho, Colorado, and beyond. The ceremony was held November 2 at the plant site and included company executives and local officials.

“We could not be more excited about the ground breaking of our 12th manufacturing plant in Tooele,” said Tim Ruger, Central States Manufacturing President. “We are thrilled to be able to provide quality metal products and exceptional customer service to current and future partners in the West, as well as extend opportunities for new employee-ownership. We would like to thank the city of Tooele and our local partners who have played a crucial role in making this expansion a reality and we are eagerly looking forward to serving community.”

The new state-of-the-art manufacturing plant in Tooele is a significant investment in the local community. Central States is projected to add over 90 new employee owners, making a substantial contribution to the area’s employment landscape. Over the next five years, the company plans to invest over \$25 million in the facility, with the plant itself spanning over 100,000 square feet and carrying an initial price tag in excess of \$10 million.

S-5! RECEIVES 2023 INDUSTRY ADVOCATE AWARD

S-5!, the original inventor of engineered metal roof attachments, was awarded the 2023 Gold Level Industry Advocate Award for outstanding service, participation and support of the Metal Building Manufacturers Association (MBMA) at the MBMA annual meeting and awards presentation on Dec. 6 in San Antonio, Texas.



From left: Dustin Haddock, Rob Haddock, and Shawn Haddock accept the award from the MBMA.

Accepting on behalf of the S-5! team was CEO and founder, Rob Haddock together with his sons, Shawn Haddock, vice president of operations and Dustin Haddock, vice president of research and development.

S-5! earned gold recognition and was recognized for exceptional commitment to promoting and enhancing MBMA initiatives, including participation in MBMA committees, advocacy efforts to enhance the metal building systems industry, attendance at MBMA educational and promotional events, and participation in its safety program.

Rob Haddock, a well-known metal roof consultant, technical author, educator, and innovator is no stranger to the industry. With five decades in the business, his unwavering confidence in metal roof superiority helped build S-5!’s strong foundation.

“MBMA provides much-needed resources to those who work with metal building systems,” said Rob Haddock. “It provides exceptional programming, networking, support and mentorship opportunities for industry professionals who want to up their game. We are honored to receive this award and to be part of such a remarkable community of industry specialists.”

SAMCO SPONSORS SUCCESSFUL HIGH SCHOOL ROBOTICS TEAM

Samco Machinery played a role in the success of a high school team competing in the FIRST Robotics Competition. The Pink Titans robotics team of David & Mary Thomson Collegiate Institute in Scarborough, Ontario, earned the Autonomous

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Award Event at the Ontario District Humber College event and advanced to the playoff rounds.

“This is a unique worldwide competition that produces some incredible robotics,” says Bob Repovs, Samco Machinery CEO & President. “These dedicated students earned their award for demonstrating a Java-programmed robot that can carry out tasks without human control. It really is amazing!”

In addition to earning awards at events, FRC students can receive scholarships from colleges and universities. Scholarships are awarded for academic achievements as well as high leadership aptitudes demonstrated on the FRC team, including perseverance, determination, teamwork, time-management and communication.

Samco gave the Pink Titans full access to its manufacturing facility. Last year, Samco produced laser cut parts to assist



with the sturdiness of the robot, made from CAD files provided by the students. This year, Samco is looking to provide 3D-printed prototypes, laser cut and formed materials, machined components as well as the knowledge base on manufacturing techniques and manufacturability.

“As a high school team, the finances are very limited,” says Edmund Kim, Lead Mentor of the Pink Titans. “Thus, the Pink Titans are very grateful for Samco’s support to help ensure the team’s continued sustainability and success. The team is inquiring about opportunities to receive mentorship support where industry professionals can share knowledge with high school students. Robotics is hard, but the experience is very re-warding, especially when the students work alongside highly successful people and see their future in the industry.”

NIPPON STEEL CORPORATION TO ACQUIRE U.S. STEEL

Nippon Steel Corporation (NSC), Japan’s largest steelmaker and one of the world’s leading steel manufacturers, and United States Steel Corporation, a leading steel producer with competitive advantages in low-cost iron ore, mini mill steelmaking, and best-in-class finishing capabilities, has announced that they have entered into a definitive agreement pursuant to which NSC will acquire U.S. Steel in an all-cash transaction at \$55 per share, representing an equity value of approximately \$14.1 billion plus the assumption of debt, for a total enterprise value of \$14.9 billion. The \$55 per share purchase price represents a 40% premium to U.S. Steel’s closing stock price on December 15, 2023. The transaction has been unanimously approved by the Board of Directors of both NSC and U.S. Steel.

NSC’s acquisition of U.S. Steel will enhance its manufacturing and technology capabilities and enable it to expand the geographic areas in which NSC can better serve all of its stakeholders. The transaction will further diversify NSC’s global footprint by significantly expanding its current production in the United States, adding to its primary geographies of Japan, ASEAN, and India. As a result of NSC’s acquisition of U.S. Steel, its expected total annual crude steel capacity will reach 86 million tonnes — accelerating progress towards NSC’s strategic goal of 100 million tonnes of global crude steel capacity annually.

Decarbonization

NSC and U.S. Steel share a commitment to decarbonize by 2050 and recognize that solving sustainability challenges is a fundamental pillar of a steelmaker’s existence and growth. A key area of collaboration post-transaction will be to continue to advance this goal and drive alternative technologies in decarbonization. NSC is developing three breakthrough technologies to progress towards its goal of achieving carbon neutrality by 2050, including hydrogen injecting technology into blast furnaces, high grade steel production in large size electric arc furnaces, and hydrogen use in direct iron reduction process. U.S. Steel is similarly focused on reducing its carbon footprint, including continuously striving to use less energy in its existing operations, integrating electric arc furnace capabilities into its footprint, and is constructing a second state-of-the-art mini mill in Arkansas.

Transaction Details

The transaction is expected to close in the second or third quarter of calendar year 2024, subject to approval by U.S. Steel’s shareholders, receipt of customary regulatory approvals and other customary closing conditions. NSC plans to fund the transaction through proceeds mainly from borrowings from certain Japanese banks and has already secured financing commitments. The transaction is not subject to any financing conditions. **RF**

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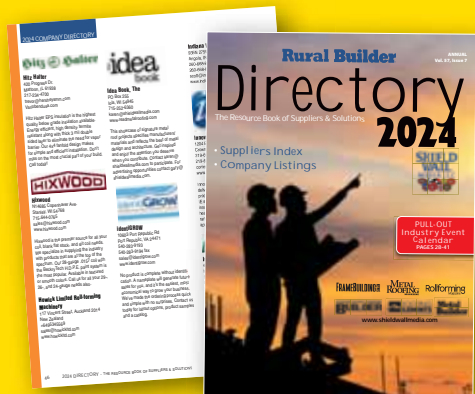
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NEW PRODUCTS

S-51 Unwells New Clamp for Riverlock Profiles

S-51, the inventor of engineered, manufactured, metal roof attachments, introduced its new S-5-RC™ clamp for attaching a wide range of rooftop accessories to the Riverlock™ metal roof profile. The two-piece design of the S-5-RC interfaces with the rib geometry and creates a mechanical interlock strong enough to mount most rooftop applications with certified holding strength, protecting the roof from corrosion and preserving the metal panels' thermal cycling characteristics. Applicable for small- and large-scale industrial, commercial and institutional projects, the clamp can be installed anywhere along the seam for placement flexibility. Installers can utilize the S-5-RC with rails or pair the clamp with the S-51 PVKIT™ solar solution for streamlined rail-less and penetration-free solar mounting to save time and money. Made of high-tensile structural aluminum to match Riverlock's long-lasting performance, the S-5-RC requires no maintenance or reinspection and is warranted for the life of the roof.

New Stanley's Control-Lock™ Tape Measures

Stanley has released the new Control-Lock tape measures that feature an integrated finger brake, providing users with maximum control and protection when extending and retracting the blade. Coming in lengths of 12, 16, 25, 26, and 30 feet, they're made to reach out to 12 feet. Features listed:

- An integrated finger brake that provides improved control of the blade when measuring and retracting

Malco Products Expands Line of C-REXEX Drivers

Malco Products, SBC, one of the nation's leading solution developers and manufacturers of a variety of high-quality tools for the building trades, today launched an extension of its line of award-winning, Cleasable, Reversible Magnetic Hex Drivers: the Building Construction Series, which features deeper sockets for installing fasteners with higher head heights such as concrete anchors, pole barn screws and other common fasteners for roofing, siding and gutter applications. The C-REXEX Building Construction Series models are available in six lengths from 2" through 12". Reversible 1/4" and 5/16" hex sockets allow for quick changes between sizes, and the Building Construction Series drivers are designed to work effectively with painted fasteners, as well as specialized polishes in the internal sockets prevents fastener sticking. End-users can save valuable time and effort by having access to two reversible hex sizes in one driver with color-coded grooves for easy identification. These drivers are built with S2 hardened steel

Bosch: New Cordless Rotary Hammer Has Corded Power

Bosch has released a new cordless rotary hammer that it says has the power of a corded tool. The concrete rotary hammer is called the Proxactar 18V SDS-max 1-5/8" Rotary Hammer (GBH18V-40C) and outperforms its corded counterpart, the Bosch 11264EVS, according to Bosch. Features listed:

- Cordless Design: Delivers corded hammer performance (EPTA) powered by a 4.0 Ah lithium-ion battery pack.
- KickBack Control: Reduces the risk of sudden tool reactions in binding conditions.
- Soft Start and Controlled RPM: Adjusts the tool rpm and bpm for more controlled drilling and chiseling applications when working with softer materials like brick and tile.
- Anti-Vibration System: Helps to reduce tool vibration, due to the longer air cushion built into the hammer tube and dampers added in the handle.
- Lock-On/Lock-Off Button: Keeps the tool running when locked on (hammer mode only) and helps prevent accidental activation of the tool trigger when locked off.

New Products))



CIDAN MACHINERY GROUP FORSTNER COILFARM

CIDAN Machinery Group has announced the launch of Forstner Coilfarm — a new, innovative, and adaptable solution designed to cater to the market needs of sheet metal working companies in architectural and industrial sectors.

The Forstner Coilfarm features:

- High capacity: With up to 75 coils, a wide range of materials, material thicknesses, and color variants can be accessed immediately. This means that even larger projects running at the same time can be managed effortlessly.
- Fast coil change: Thanks to a sophisticated system, coil change is quick, uncomplicated, and safe. This reduces set-up times to a minimum and significantly increases the overall production efficiency.
- Simple loading process: The sophisticated machine design makes the loading process of the Coilfarm very simple. The mandrels can be easily attached to the coil, and loading via the setup station increases productivity.
- Maximum precision: The integrated zero-line alignment (fixed edge) ensures that the materials are perfectly aligned every time. Errors and waste are thus reduced to a minimum.

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citrus smell.

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Further maintaining clear vision is the Vader’s reverse-engineered venting system, promoting directional airflow across the inside surface of the lens and further reducing the potential for moisture buildup. The durable polycarbonate lens provides 99.9% UVA/UVB/UVC protection to help prevent eye damage.

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Living With Metal

Residential Opportunities Abound as New Technology and Labor Shortages Converge

■ By Rocky Landsverk, managing editor, Metal Builder

Necessity appears to be once again mothering invention. And invention deserved better because it has been doing amazing things.

Improvements in both light-gauge steel (LGS, also known as cold-formed steel) and its engineering, plus fantastic new software that helps LGS manufacturing machines create ready-made metal walls and panels, have given builders and contractors the ability to erect an affordable residential building in half the time of a stick-built home.

The reasons why the US hasn't moved in this direction are part cost, part practicality and part stubbornness. But as the labor market continues to weigh heavily on building timeframes, and as labor costs start to outweigh materials, faster solutions like metal-framed homes are starting to become a more serious option for builders and home buyers.

THE DIGITAL FUTURE

Thomas Reed is a regional manager for Howick Ltd, which manufactures machines that create metal framing, or in

its own words from its website, "Precision light steel roll-forming technology framing modern construction."

There is a learning curve that we won't detail here, but a builder or contractor does need to first consider the investment into software and people who can run it. "A lot of my clients are using Revit through Autodesk, and use different software programs that have applications that sit inside of Revit," Reed said.

That investment will be supported by Howick and the other machine manufacturers and we won't detail its costs and

timeframe in this article. But once a company starts utilizing this kind of product, and starts sending finished framing to its builders, the benefits are significant.

It can involve complex computer programming, obviously, but the benefits aren't complicated: The machine creates exactly the metal parts that the software asks for, and the software also tells everybody working on the job exactly what their job is and how it's done, down to tiny fractions of an inch.

In the past and even sometimes today, the contractors and tradespeople don't know what each other are doing, or they're relying on a GC who better have incredible communication skills. "This type of software forces that discussion," Reed said, because the plans everyone receives are going to incorporate the necessary and proper measurements.

"If you have an HVAC contractor that has to run through a particular part of the building, these software applications can create that access way, and show how it could be framed," he said. "In contrast to somebody building a house out of stick, when they have an electrical contractor come in, the software can show where all service holes are to be, and the electrical contractor can even have input on the front end as needed so that the machine provides all those service holes for wire pulls on the front end. This saves time and money and is applicable to all the trades."

With software and programs like this, "All of the stakeholders — your owner and all your general contractors and your subcontractors — can come together and understand the design and learn what they own, in real time. And if changes are made, everybody is aware. That's the biggest thing that modeling and automation are helping to change the way business is done. You don't have a ton of change orders."

THE PRODUCTION PROCESS

So what does the machine do, exactly, and where does the metal framed panel get created and assembled? If you own



a Howick machine, that machine helps create the panels (you might call them frames) at the factory or in the warehouse, and those panels are then shipped for assembly on-site.

"The most efficient way is to create your panels — whether it's a wall panel, a roof truss, or an open web floor joist — in the factory," Reed said. "Those will get labeled according to the job and they come out with shop drawings, and it comes out as a totally assembled panel. I have some clients who install their windows, doors and sheathing on the panel and deliver it that way to site.

"Most of the time the insulation is happening on-site; some of our contractors actually just spray foam right on-site.

"I would imagine someday getting a true SIP panel done, where it's completely done with your electrical and everything done inside, and (in the future) some people will start insulating or spray foaming in the factory, as well."

COST OF METAL VS. WOOD

Keith Dietzen, the founder, CEO, and owner of software company SmartBuild Systems, remembers the 1990s when Hurricane Andrew caused a near-dou-

bling of wood prices. "There was a movement toward metal, but it didn't stick," he said.

As commodity prices and scarcity problems have wreaked havoc in the recent past, Dietzen has seen some builders attempting to move toward all-metal buildings in residential construction, but it's not a huge shift at this point. "Light-gauge framing is still largely commercial and isn't yet creating an impact in residential or high-end garages or sheds," he said.

Conditions are ripe for a change, though. We know a metal building will be worth more because it's going to be stronger and last longer. We also know that it will cost more, at least in terms of materials.

So how much more does this new way of building homes cost versus stick-built? In raw materials, 10% to 15% more than stick-built is Reed's estimate, though with raw materials fluctuating so much in recent years, that's hard to assess.

Central Steel Group creates metal buildings of all kinds and is moving more and more into residential. As opposed to a builder or contractor that uses a Howick (or similar) machine to

Closer Look))



A warehouse assembly like this photo taken from a Howick video would be perfect for a Lunch & Learn.

create a custom building, Central Steel Group is headed toward mass-producing metal homes. COO Jay Lara said that in their calculations, with the processes they're developing, the all-metal buildings they can produce will be less expensive in cost per square foot than typical wood-framed construction, in large part because the production labor is so significantly reduced.

LABOR CHALLENGES

Builders and contractors who have a long history and expertise in stick-built construction have not moved toward all-metal buildings in part because their crews have little to no experience in those areas. "The biggest problem that everybody has in post-frame, and in all-metal buildings, is getting help," Dietzen said. "They can't expand their crews."

That's where speed and ease of assembly come in. Reed said he has clients who can be ready for drywall in 10 days. Lara said "our house packages can be installed in under one week on a level concrete slab. Shorter construction time frames and erection time mean substantial labor cost savings to the homeowner."

And even when the commodity markets settle to normalcy, that labor shortage won't be solved, and it is increasingly going to affect home prices. Said a Central Steel Group flyer created for people considering an all-metal residence, "We are selling a solution to a problem and the problem is that housing is not

affordable for a large contingent of the population."

STORMS AND WOOD VS. METAL

Another reason that metal may have a strong future in residential and high-end outbuildings is its ability to be more



stormproof than wood. The big bad wolf apparently taught us little. In many areas of the country, we built with wood, and it blew down. And we rebuilt with wood, and it blew down again. And we rebuilt with wood ... you get the picture.

So regions like Florida, some of which are literally disaster areas because of hurricanes, have a strong future in stronger structures, whether that be metal, or SCIPS (Structural Concrete Insulated Panels), or something to be invented yet. Central Steel Group says its state-of-the-art steel tubular engineering allows them to offer Risk Category II buildings.

Reed knows of one company that's about to assemble literally hundreds of metal homes for a subdivision in Florida — and their construction is expected to take only a few months. They'll sell for a relatively affordable price of \$300k or so, and he fairly observed that you couldn't build 2-by-4 stick homes in that quantity in that amount of time, and even if you could, they wouldn't be storm-resistant.

DOES THIS TECHNOLOGY ELIMINATE JOBS?

Reed made an interesting point about the future of tradespeople and where the labor shortages are headed. Do these machines and their automation and pre-built-framing capabilities replace workers? Is this technology forcing people out of work?

Perhaps on the surface that seems logical, but in actuality, those workers aren't there to be replaced. They have been leaving of their own accord, and their children aren't going into the trades.

What these new systems and these machines do is enable forward-thinking builders and contractors who want to be great at the next big thing to take a leap forward. "We take this skilled labor that's out there today that is committed in their trade, and we enable them to look at projects in a much different way," Reed said. "And we're taking previously non-skilled labor and enabling them to adapt so quickly to digital fabrication. People are finding their way of erecting a building or

home much quicker, and so there's much more satisfaction in the end product."

LUNCH & LEARN

So how does the industry proceed to show builders and contractors this new way of doing things? "The best thing you can ever do is Lunch & Learns," Reed said. "Bring in the local code enforcers, general contractors, and subcontractors and walk them through a sub-assembly. I have one client that actually built a completely framed house in a factory and brought in the subs to show them."

Reed said the first step is to demonstrate the software and how it interacts with the machine, then take them to a warehouse build, where they can see how their jobs will be easier with metal framing and the software that goes with it, and the code officials can see firsthand why these are obviously ready for

approvals.

"I have one client down in South Carolina called Synergy Steel and they started out with residential," Reed said. "Now they're doing multifamily, hotels, and a variety of other buildings. They have eight of our machines. Lunch & Learn is how they did it. They brought in architects, engineers, code authorities, contractors, and general contractors, and educated them.

"The other thing they did, which was very important on their part and not everybody's going to do this at first, but they created their own internal university, where they not only train their employees how to erect the house right at their factory location, they would also bring all those other stakeholders and show them how it's done."

For some companies, the future is now. **RF**

Light Gauge vs. Structural Steel Construction

By Brett McCutcheon
Beck America & ET&F® Fastening Systems

Steel has an outstanding strength-to-weight ratio and flexes with force, which is why it's commonly used for large construction projects. Steel is the ideal material for high rise buildings because it can withstand high winds, earthquakes and other stressors. Due to its strength, steel frames require fewer vertical supports, which in turn makes them more cost effective. Steel is also considered an eco-friendly material because all steel products contain recycled steel, and in framing, they typically contain a minimum of 25%.

There are two options when it comes to steel framing: light gauge and structural steel.

[Ed. Note: Since most of our Metal Builder audience would only use light-gauge steel, we'll only include that section of this article here.]

Light-Gauge Steel

This steel is cold formed, which creates long, thin sheets that are then shaped into guided "C" or "Z" patterns capable of holding heavy loads. Light gauge supports come in a galvanized finish of zinc, aluminum or a combination of the two. For this construction process, a load-bearing wall is constructed first, then interior partitions and exterior cladding follow.

Light gauge is most commonly used in residential or light commercial construction as an alternative to wood framing. It's similar to wood in that little cutting and sizing is required on the job site because the studs are manufactured to precise lengths. However, light gauge steel won't rot, warp, burn or harbor insects like wooden frames. Due to their strength, light gauge steel frames also require less studs because they can be placed further apart. In general, light gauge will produce less waste, which is more environmentally friendly and more cost effective than alternatives like wood. Its main disadvantage is in case of fire, rather than burning, the steel structure will lose some of its stability and there is potential for collapse.

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The 2023 Survey Says ...

We have closed out our annual survey and are working on the CSI-Annual that will mail in April. Our efforts to improve our data collection seem to be working. We roughly doubled the total number of respondents from 2022 to 2023.

Our strong areas, like post-frame, remained constant, but we gained a significant number of responses in General Roofing, Metal Building and Wood Framed (Stick Built) construction. With the roll out of Metal Builder Magazine, the gain in “Metal Building” makes sense. The gains in General Roofing and Wood Framed construction should help act as a baseline or control group to measure against the specific markets we cover.

One of the interesting aspects comparing year over year are the changes in responses, hot markets, business climates and concerns. Going through the comparison from 2022 to 2023, this is what caught my attention.

MARKET PREDICTIONS

What Market Segments of construction do you build for?

No areas increased significantly. Agricultural, Commercial and Industrial all decreased as a percentage of respondents. Agricultural from 40% to 28%. Commercial from 67% to 30%. Industrial from 44% to 19%.

When combined with results from the question “Overall, across the industry will residential construction increase or decrease in 2024 to 2023?” the obvious assumption is the change in products is in response, preparative or reactive, to

the view of residential construction. In 2022, 47% predicted the market would decrease and 32% predicted the market would the same. In 2023, 37% predicted the market would increase and 47% predicted it would stay the same. The percentage predicting an increase grew by 16%, while the percentage predicting a decrease dropped by 31%.

The market predictions for Agricultural, Commercial and Industrial remained unchanged. This seems to indicate a shift in direction to take advantage of an increase in residential construction.

This is consistent with the level of concern regarding interest rates and inflation. In 2022, 58% of respondents listed Inflation as a major concern. In 2023 that percentage dropped to 27%. Inflation followed a similar path. In 2022, 67% listed it as a major concern and in 2023 that number decreased to 34%.

EXPANSION PLANS

In 2022, 18% had immediate expansion plans and 50% had future plans. In 2023, 28% had immediate plans and 29% had plans farther in the future.

The areas for expansion remained the same with adding personnel (both construction and support) and new products or building types leading the way.

The one interesting drop was in trucks. In 2022, 24% of respondents planned on adding trucks. In 2023 that number dropped to 14%.

FINANCIAL OUTLOOK

The predictions of gross sales

remained consistent. Units sold remained consistent as well.

Profitability remained consistent. The only significant change was an increase of approximately 7% predicting their profitability would increase by more than 25% in 2024.

CONCERNS FOR 2024

One bright spot is the level of concern across the industry seems to have generally decreased. The challenges still remain but respondents seem less concerned.

| Area of Concern | 2022 | 2023 |
|----------------------------------|------|------|
| Finding Employees | 65% | 39% |
| Cost of Materials | 59% | 43% |
| Material Availability | 45% | 24% |
| General Supply Chain Issues | 48% | 17% |
| Demand for Products and Services | 24% | 12% |

SUMMARY

Generally concerning issues seem down. Residential construction is expected to remain strong enough builders are shifting toward that market. Projections for gross sales, units sold and profitability remain stable. Which is extremely positive considering the industry is coming off of some record years.

The CSI-Annual will mail in April and should provide additional insight into the above topics and much more. We will be able to isolate regions, building types and specific market niches and examine our data and combine that information with input from industry experts and economists. The CSI-Annual is free to all subscribers to Shield Wall Media publications. **RF**

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