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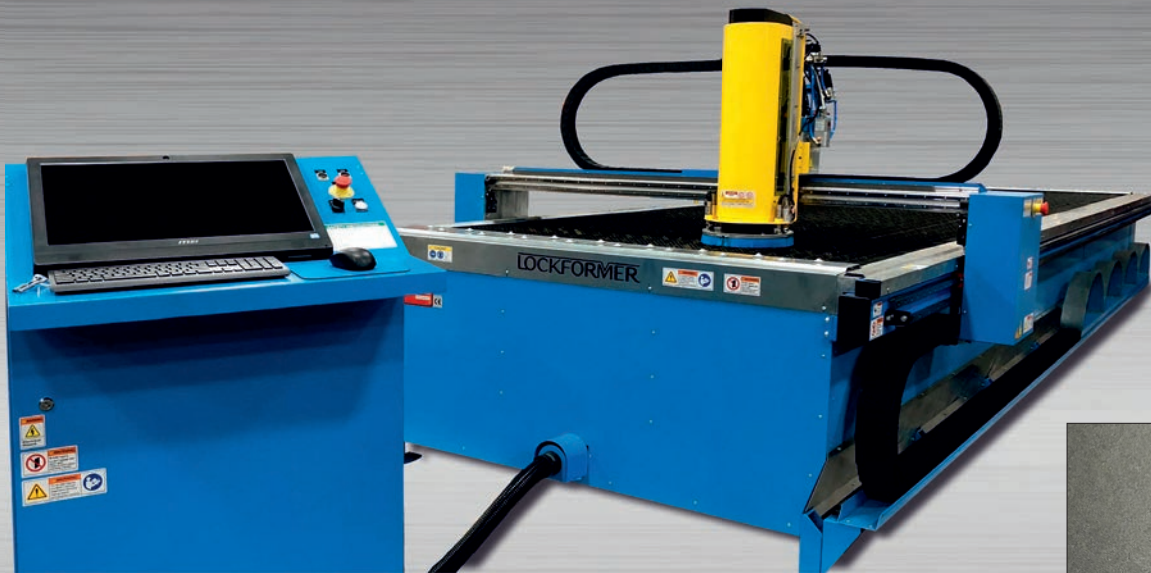
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EDITOR'S NOTE

Where credit is due.

**THE MOST OBVIOUS ANSWER TO A
MANPOWER SHORTAGE IN THE SHEET
METAL INDUSTRY IS 'WOMANPOWER.'
BUT IS YOUR SHOP READY TO LEAN IN?**

The sheet metal industry is in dire need of more women. That much goes without saying. But when you peel back the layers of such a statement, what are we really saying?

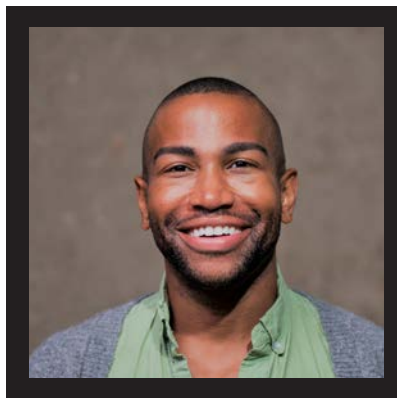
For one, the number of men on any given job site easily outnumbers the women. As recently reported by the Bureau of Labor Statistics, women make up just 9.1 percent of the construction industry's workforce. When taking into account sheet metal as a specialty within that percent, that populace is even smaller.

So how then do we get more women to trade in their hairpins for hard hats? Well, according to the National Association of Women in Construction, market forces are already at work. The association reports that the number of women in the construction industry has been steadily on the rise over the past decade.

I'm no economist, but I am willing to bet that increase also correlates with the rise of innovation and use of technology, sustainability and safety in our industry. (See a blueprint for growth in these areas from Dodge Data & Analytics on page 26).

Without mansplaining* too much more, what I mean to say is that our industry is getting smarter and women are, and will continue to play, a crucial role of that.

And, as if you needed any more



convincing, we have proof that diversity is powerful and profitable.

A study by the Peterson Institute for International Economics (PIIE) — a nonprofit, nonpartisan research institution devoted study of international economic policy — found that companies in the top 25 percent for gender diversity of their workforce were 46 percent more likely to outperform their industry average.

Additional proof of this power can be found in our special Women Who Rock edition of The Cut (on page 9). Even more proof of this can be found in the women who pull the purse strings to make SNIPS magazine possible, from our formidable art director, Niki Bonkoski, to our

fearless publisher, Sarah Harding.

In celebration of Women's History Month, and Women in Construction Week (March 3-9), we invite you to share the stories of women in your shop who are making a profound difference (email me at adolphuse@bnpmedia.com) in your operations. Although they may not all wear hard hats, that doesn't make them any less of hard workers. And at the very least, that deserves a very big "Thank you."

Emell Derra Adolphus
Editor-in-Chief

* The explanation of something by a man, typically to a woman, in a manner regarded as condescending or patronizing.

SNIPS Volume 88/Issue 3 (ISSN: Print 0037-7457 and Digital 2329-2741) is published 12 times annually, monthly, by BNP Media II, L.L.C., 2401 W. Big Beaver Rd., Suite 700, Troy, MI 48064-3333. Telephone: (248) 362-3700, Fax: (248) 362-0317. No charge for subscriptions to qualified individuals. Annual rate for subscriptions to nonqualified individuals in the U.S.A.: \$149.00 USD. Annual rate for subscriptions to nonqualified individuals in Canada: \$184.00 USD (includes GST & postage); all other countries: \$209.00 (int'l mail) payable in U.S. funds. Printed in the U.S.A. Copyright 2019, by BNP Media II, L.L.C. All rights reserved. The contents of this publication may not be reproduced in whole or in part without the consent of the publisher. The publisher is not responsible for product claims and representations. Periodicals Postage Paid at Troy, MI and at additional mailing offices.

POSTMASTER: Send address changes to: SNIPS, P.O. Box 2145, Skokie, IL 60076. Canada Post: Publications Mail Agreement #40612608. GST account: 131263923. Send returns (Canada) to IMEX Global Solutions, P.O. Box 25542, London, ON, N6C 6B2. Change of address: Send old address label along with new address to SNIPS, P.O. Box 2145, Skokie, IL 60076. For subscription information or service, please contact Customer Service at: Phone: (800) 952-6643 Fax: (847) 763-9538.



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Revisiting new construction from Kaempff & Harris Sheet Metal

On the cover:

Complex ductwork fabricated by Sheet Metal Connectors, Inc. for the U.S. Bank Stadium in Minneapolis, Minnesota. Cover design by Nicole Bonkoski.



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THE CUT

Tech | Talk | Trends & Events

Girl on FIRE



Photo by Amel Puric

Breaking barriers with like-minded women

Women in HVACR is a membership-based association that empowers women in the HVACR industry through networking opportunities, mentoring and education.

“Our reach is nationwide and our members are diverse. We pride ourselves on being one of the only industry organizations to span from the technician all the way up to the manufacturer. This span enables us to provide multiple avenues for women to connect and grow, both professionally and personally. One of my favorite quotes I think of when I talk about WHVACR is ‘Work until you no longer have to introduce yourself.’ And this organization lets everyone do just that.” – Colleen Keyworth, Board Member and Sales & Business Development Director for Online Access.

Membership is open to individuals, both men and women, who are interested in supporting the awareness and development of career advancement opportunities for women in the industry. For more information, visit womeninhvacr.org.

ALL-STAR APPRENTICE

At the Brooklyn, New York-based Gentlemen Sheet Metal, second-year apprentice Ti Crawford is a standout on the shop floor. Not only is she a woman in a painfully male dominated industry, her fiery work ethic is quickly positioning her to be a formidable force in ductwork fabrication.

“She is a quality apprentice,” says shop owner Paul Appel, “and she wants to work. My mechanics in the field request her if they need someone in the field to cover a job.”

Quality of work is what first attracted 30-year-old Crawford to the sheet metal industry. After two years of college, she spent

some time in Local 79 before testing into Local 28.

“I wanted to get into it because I knew it was something I was capable of doing, despite it being a male dominated field,” she says. “On a great day, everybody is just in sync, and I feel like everybody cares about the quality of work they do here.”

Upon completion of her apprenticeship, Crawford plans to focus on honing her drafting skills. As for advice to other women thinking about a career in the trades: “Go for it,” she says.

“There is definitely work to be done, and there is definitely a need for people, especially women.”

Women on the RISE

According to the Bureau of Labor Statistics, women account for less than 10 percent of workers in the construction industry. But with more jobs to fill now more than ever, that number is on the rise. Celebrate the women in your shop during Women in Construction Week, observed March 3 to 9, 2019. For more information on how you can celebrate or support women in construction, visit nawic.org. ✂

BRAZEN

Welding Wonder Woman



Much of what Alicia Butty knows about welding, she learned as a teenager working in her family's custom manufacturing business, Butty Manufacturing in Jerseyville, Ontario. "Having grown up in the industry, a lot of what I know today I learned from my father," says Butty, who is a certified welder and works full-time as a CWB Weld and Quality Assurance Inspector.

"I thoroughly enjoy my full-time job," she says, but it's on Instagram as

@canadian_welder_girl where she shines. Her side hustle, creating custom metal signage and other art pieces — including an angel-worthy set of wings — has garnered her more than 30,000 followers.

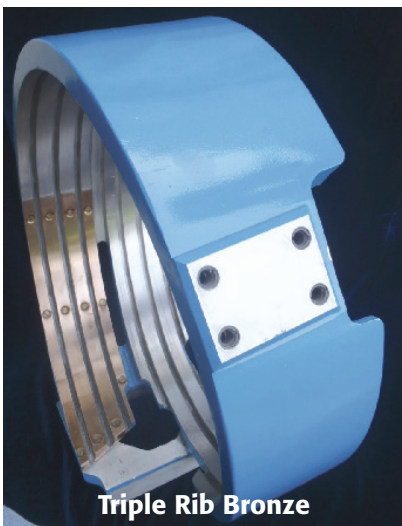
"In my early years, I was unsure about my career path," says Butty, who spent some time as a communications major before enrolling in a welding program at Mohawk College. "I knew I liked to work with my hands and be creative with my welding skills. Soon I was getting orders and receiving financial compensation for my art."



The rest of her welding work speaks for itself. ✂

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ASHRAE

Championing Change

In a primer on ASHRAE's new "Building Our New Energy Future" report, ASHRAE president Sheila Hayter galvanized members to make way for change in how building energy systems interact.

"Instead of individual systems — buildings, utilities, the transportation sector, and the industry sector — it's becoming one system, and buildings are going to play a central role in that new paradigm," says Hayter, who was recently named ES Magazine's one of 20 to Watch: Women in HVAC. "Buildings will be where energy is generated, stored, and commandeered, and we will be optimizing energy flow in a different way."



She adds, "We may not have the answers right now, but what ASHRAE can do is cross over into other sectors—the power sector, the big data sector (including cybersecurity) and the transportation sector that's becoming electrified. We need to step into the room and be part of the conversation to find new strategies for these sectors to interact. My platform is a wake-up call."


To read the complete *Building Our New Energy Future* publication, visit ashrae.org 🔗

WOMEN WHO WELD



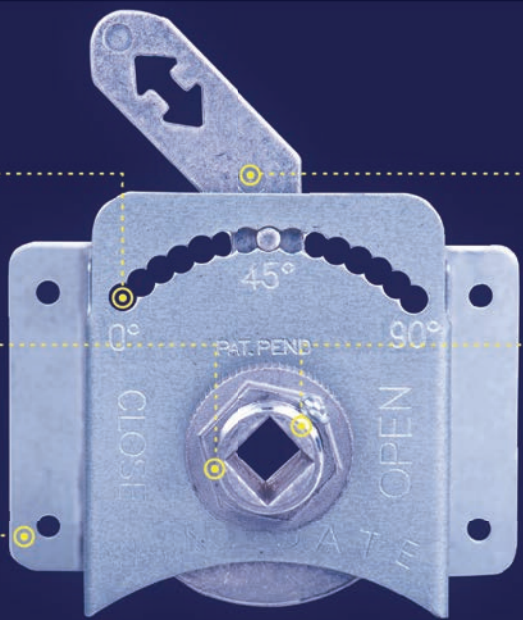
Hear more from the most popular women who weld on Instagram as they share why they love working with their hands with SNIPs.

"Welding gave me self-esteem and self-worth that I didn't have when I started," explains Barbie Parsons (pictured above). Read more at SNIPsmag.com. 🔗



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The good, the bad, and the underestimated



When we think of customer service, we think of the words “please” and “thank you,” a kind face; we think of friendly

THE CUT

window tellers and retail stores where people not only give you a receipt but also a smile. But really, customer service — true customer service — is so much more than that. In fact, we should change the term from “customer service” to “customer engagement.” And here’s why:

In 2014, I was handed the reins to all the marketing, advertising and employee engagement responsibilities at our family’s company, McWilliams & Son Heating and Air in Lufkin, Texas. Immediately I spent as much time as possible soaking up what I could from industry gurus, industry publications and asking a lot of questions.

One thing I quickly learned from the best of the best in the HVAC business is that simply setting your company apart from the crowd is no longer enough. You need to leave them speechless.

Elevating your company’s customer

engagement experience can do that. And when done well, your customers will want to smother you with lipstick kisses (on the cheek!) and bake cookies for your technicians as they welcome them into their homes as an extended member of the family.

When it comes to customer engagement, personalization is key. Whether I am sending a celebratory note of congratulations or thanking a customer for their time and patience, I like to send a personalized thank you note with flowers from a local shop (this is an easy partnership for you to set up in your town that will blow your mind how well it pays off!).

Personalized interaction builds trust. The better the trust between you and your customer, the more likely they will be a returning customer.

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set a yearly customer engagement theme. This year's theme is "See the Big Picture." Because when our team sees the importance of all the little details, the big picture is that much more clear.

Each and every company has something special about them that makes them unique. Use that to leave a lasting impression on your customer's hearts and mind. Yes, I said "hearts."

In today's fast-paced world of social media and shortened attention spans, people are accustomed to companies being uncaring, too busy or just flat out apathetic. This is your opportunity to

show them what a real customer experience is.

Have you considered some extra things your team members could do to engage your customers or potential customers? Little things like opening the door and escorting customers out after they've been in the office. Or, maybe your service technicians pull the trash cans from the street back to the garage before knocking on the door. Your technician will be the talk of the town for this one, especially with the elderly! Or what about a salesman that takes time to change a light bulb he sees is out in the laundry room before climbing into the attic? Now, your comfort advisor has won your customer's heart and trust!

On another note, is your team involved in the community? Try having a company work day at your local Habitat for Humanity or women's shelter? Or

what about helping to advertise a pet adoption day where your company covers the cost of the first 10 pets adopted

This is our 45th year in business, and we updated our company's logo to reflect that so our customers know that being in business this long means we are doing something right; mainly, that we can be trusted.

Going the extra mile, thinking outside the box, this is a proactive process — which is why I call it customer engagement over customer service. Elevating the way your HVAC company or shop does engages with your customers will make you a shining star in your market and your community. And when you are the brightest star, it will be easy for everyone to see you're your work speaks for itself.

– Crystal Williams, Marketing Director at McWilliams & Son Heating and Air. mcwilliamsandson.com. ✂



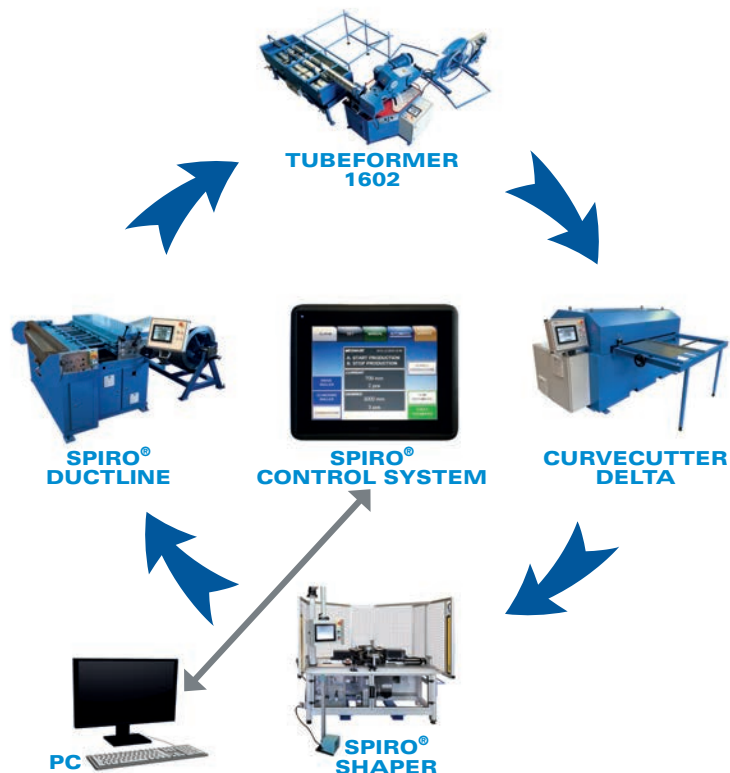
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EXPO

NADCA's 30th Anniversary



This year marks the 30th anniversary of the National Air Duct Cleaners Association Annual Meeting and Expo. The event, held March 31 to April 2 in Nashville, Tennessee, promises to honor the association's past while preparing for the future, says Mark Zarzeczny, ASCS, CVI, NADCA board member and chair of the Annual Meeting Planning Committee.

"This year's meeting will offer sessions that are forward-thinking and tackle some of the most important issues and challenges air duct cleaning companies face today. From new ventilation equipment and indoor air quality trends, to taking your business to the next level, cleaning in cannabis facilities, recruiting the right employees and dealing with prevailing wage, this annual meeting is jam packed with excellent content."

New York Times Bestselling author and entrepreneur Steve McClatchy will deliver a keynote address on achieving outstanding results in business. *For more information, visit nadca.com.* 

THE CUT

MANUFACTURER MATTERS

Rosie the Riveter

At Duro Dyne, Rosie D'Antonio is one of many women who have played an integral role in the company's longevity.

Rosie D'Antonio had mostly worked retail when she saw a newspaper ad and applied for a position in Duro Dyne's assembly department in 1979.

"You know, when you're young and you need work, you take what you can get," D'Antonio casually says about the job jump. Not knowing what to expect from the male-dominated manufacturing workforce, D'Antonio was pleasantly surprised to find that women at the Long Island, New York-based company were treated as equals.


"At Duro Dyne, the whole assembly area for hardware was all women (then)," D'Antonio remembers. In 1984, she was promoted to supervisor of the hardware assembly area. "So I was supervising, like I said, it was a whole group of women." Then in 2000, she was promoted to managing all facets of the company's production.

Now, as vice president of planning and procurement and one of the longest serving women in the company at 40 years, D'Antonio represents how much women have and continue to play an integral role in Duro Dyne's success.



Photo courtesy of Duro Dyne.

"You know, I never thought of myself as being groundbreaking or making strides because at Duro Dyne I never met any resistance to being a leader. So, I was very lucky in that respect," she says. "The company itself is family-oriented. They make you feel part of what's going on in the company. It wasn't like where we were working for a corporation. It was more family."

Attracting women to the trades doesn't have to be complicated, says D'Antonio. "They just have to be treated fairly. There is no discrimination between men and women, what they are capable of doing. If you treat them fairly, they will certainly apply and certainly stay." D'Antonio is proof of that. 


BUSINESS BUILDING

Inside BUILDTECH CONFERENCE & EXPO

The three-day AEC BuildTech Conference & Expo (April 30- May 2) will highlight the latest design and building processes, products and emerging technologies. And you're invited!

In addition to the five tracks, the edu-

cational program will also feature keynote presentations from Steve Jones, senior director of industry insights and research at Dodge Data & Analytics, and Antony Wood, Ph.D., CEO of Council on Tall Buildings and Urban Habitat.

For more information on registration, sponsorship and exhibitor opportunities, visit aecbuildtech.com or jump to page 26 for a special preview of Steve Jones' address. 

SHOP TALK

Udi Meirav accepting the Product of the Year Award at the AHR Expo in Atlanta, Georgia



UDI MEIRAV

By Emell Derra Adolphus

President and CEO of President and Founder of enVerid, SBC

After winning the AHR Product of the Year Award in January for its HVAC Load Reduction (HLR) technology, enVerid is moving forward with plans for a “commercial scale-up.” The Boston-based company recently hired a new CEO in Christian Weeks (formerly of the demand response company, EnerNOC, Inc.) to help with expansion while the company’s founder Udi Meirav will stay on as president and oversee enVerid’s vision to disrupt the indoor air quality industry.

“We’ve spent a long time trying to not only develop the technology but to also show the world how to use it and what the benefits are. It’s been a long road,” says Meirav. “But we’ve reached a point now where we feel we are at the inflection point, where the market is really excited about the product, and more and more people want to use it. And we need to gear up for what we anticipate is going to be a very steep wholesale.”

Here, Meirav discusses the future of indoor air quality and how advances in technology will one day change our ideas about “fresh air.”

COMING FROM BEING A SMALL STARTUP TO BEING NAMED PRODUCT OF THE YEAR, WHAT WAS THE SIGNIFICANCE OF THAT WIN FOR THE ENVERID TEAM?

For us it’s of exponential significance. Not just because it makes you feel good. If you look at this technology, it’s novel, it’s innovative, which sounds great. But that means that it takes a long time to get buy-in and support from the market -

place. So for us to have ASHRAE come in and say that it is the best product of year, it is enormously impactful and official. It helps us with the single most important agenda item for our company, and that agenda is to convince, to evangelize and show the world that this is a good idea. So for us this was really fantastic. **YOU HAVE A PH.D. IN PHYSICS FROM MIT. HOW DID THAT EQUATE TO DEVELOPING TECHNOLOGY THAT IMPROVES INDOOR AIR QUALITY?** Physics is sort of a broad skillset that teaches you how to think about the world. The reality is, if you have that broad skillset to think about problems, sometimes it is better an outsider with tools than to have prior knowledge so you can think in a new way about how to solve problems that have existed for a long time. When I first realized the way central air conditioning systems manage air quality by replacing the air in building with air from the outside, that struck me as not a very good way to do this. It’s essentially the same as trying to air condition your house with the windows open. So that was kind of the starting point of how we created the HLR solution. **LET’S TALK DOOMSDAY SCENARIO: CAN YOU FORESEE A FUTURE WHERE THE AIR INSIDE 10 TIMES BETTER THAN THE “FRESH AIR” OUTSIDE?** I think we are already there. Not everywhere, and not all the time, but there are many places where at least some of the time you are in that situation. So I don’t know if I would call it doomsday. **SO IN REALITY, THAT’S JUST MODERN DAY.** It is modern. Listen, man has been, since the dawn of time, wanting to shield itself from the outside environment and to create a new protected environment. First, we want to keep out the rain. Then we want to keep out the wind. And then we want to keep out the cold or the humidity. So we are gradually getting more assertive about creating a bubble around us, which is in many ways different from the outside and better for us as an environment. There is nothing wrong with that. We’ve always had this idea that outside air, “fresh air” was better than indoor air. At least from a freshness standpoint, that’s a misconception. **ESSENTIALLY, WHAT YOU ARE SAYING IS TO THROW THE IDEA OF FRESH AIR OUT THE WINDOW. PUN INTENDED.** But the good news is, we can address that. We have technology that can deliver good indoor air quality. And look, with or without indoor air quality issues, people spend 90 percent of their time indoors. So what really matters is what kind of air we are breathing in that 90 percent of time. Not the other 10 percent. Ideally you’d have great outside air and indoor air. But if you’re going to fix one of them first, you really want to fix indoor air because that’s where we spend most of our time.

For more information about enVerid’s HVAC Load Reduction technology, visit enverid.com. ➔



Duct Dynasty

For 50 years, the Minneapolis-based Sheet Metal Connectors, Inc. has endeavored to be a trusted partner to HVAC contractors around the country by making products that stand the test of time and integrity. As the company prepares to reach its next major milestone, SMC president and CEO Jim Myers is ready to take that contractor-manufacturer partnership to the next level.

By Emell Derra Adolphus

Dave Fait (SMC's first employee), Jerry Myers, Cal Jacobson (General Manager), Henry Swanson (SMC's 2nd employee)

When Jerry Myers founded Sheet Metal Connectors, Inc. in 1969, he intended to make the HVAC contractor's life easier. A half century and numerous industry-improving patents later, the company's bottom line is still as simple as that.

"We are working on the next generation right now, doing a lot of training, coaching and development to bring them into the fold. And that's one of our goals, to keep it family-orientated for generations to come," says Jim Myers, Jerry's son. "We are a two-fold business, the regional duct manufacturer and the nationwide component manufacturer."

A yellow label union shop, Sheet Metal Connectors first began operations in a 3,000 square-foot shop in Minneapolis, Minnesota, manufacturing slips and drive connectors with three employees (Jerry included). "He would be out on the road running down sales, and would come in the building and help run equipment if they had to get an order out. He wore more hats than I could count," Jim remembers about his father. Now the business has grown to more than 175 employees and three locations with the capacity to supply complete ductwork systems, including, spiral pipe, fittings, rectangular, welded, grease duct, PVS, doublewall duct and a number of other services.

The expansion is a testament to the company's commitment to quality, Jim says.

"You've got to trust that when you do the right thing, and you give a better product, they are going to jump on board. And everybody did," he says. "Quality is something we take great pride in, and although we might not always have the lowest price, we certainly carry the highest quality."

As the company prepares for an anniversary celebration later this year, we talked with Jim about longevity in manufacturing and how he plans to get Sheet Metal Connectors to its next 50 years.

What was your path into the family business?

My path was working summers in high school at the shop. It was sweeping floors, loading trucks and packing orders. I went off to college for a couple of years and took the path of sales in the business. As years went on, I entered into inside sales, and later grew into sales manager, then vice president of sales, and currently president.

The company came back under family leadership when you took the reins from Marty Wetzel in 2015. He had been running the company for 15 years. In terms of the business climate, what kind of company were you inheriting?

We had a good operation. We had just made it through some tough years there with the big recession, and we were getting the train back on the tracks, so to speak.

We got rid of a lot of waste in those downtime years, and we went through a lot of lean training for all the employees. So we were already on track to a better way of doing business than what we were. But at the same time, I had five different people who have worked 30-plus years who were retiring. It was a lot of succession planning and getting the new people trained by the people who have been doing it for 30 years. And people who have done a job for 30 years make it look easy. And it's never as easy as you think it is.

So what I was inheriting was a big change of leadership in many departments. However, we do have a great group of new leaders and a healthy mix of experienced and new employees. We work hard to retain the talented workforce that we have, we promote from within whenever possible, have fully employer paid health care benefits, and matching 401K donations.

With any change in leadership, there is an opportunity to rethink operations and adjust. Did this change set forward some new goals or processes?

Bringing in a new workforce did have its opportunities because folks that have been doing a job for so long can be pretty set in their ways. They are coming from the days of relying on paper versus using computers. They adapted



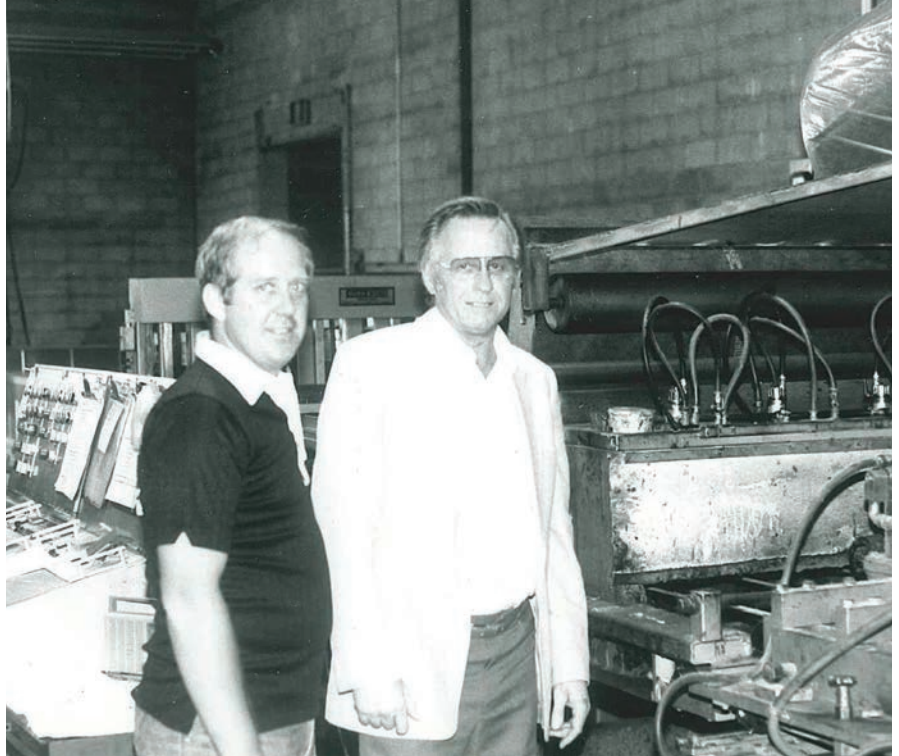


Sheet Metal Connectors, Inc. Through the Years

- 1969 – Sheet Metal Connectors, Inc. Founded by Jerry Myers
- 1973 – Moved to Brooklyn Center, MN
- 1983 – Moved to Northeast Minneapolis, MN
- 1984 – 2nd Generation begins to enter the business
- 1984 – Patent on E-Z Rail
- 1987 – Patent on Damper construction
- 1990 – Patent for E-Z Rail 2
- 1993 – Built Fridley, MN manufacturing facility
- 2002 – 3rd Generation begins to enter the business
- 2003 – Built 2nd building in Fridley, MN
- 2004 – Opened Rockford, IL manufacturing facility
- 2006 – PriceDuct software released and trademarked
- 2007 – Patent for E-Z Flange Jr.
- 2008 – Patent for Super Heto
- 2018 – Purchased Brooklyn Park, MN facility to expand Standard Metal Products.

along the way and were using computers but a fresh set of eyes on the processes helps. I let every department take a look at the current procedures and we would go back and review for best practices. And when they had positive changes, I welcomed them.

But you have to go back to my earlier statement. Sometimes the folks that did the job for so long did it that way for a specific reason, so we had to really analyze the changes to make sure we weren't creating a problem we had already solved.



Bob Sroka and Jerry Myers with SMC's first coil line.



Bob Roach from SMACNA and Jerry Myers

How has technology played a part in that generational shift of workers?

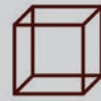
The two foremen that retired had more than 75 years of experience between them, and they could "feel" where the manpower was needed. Well, the new people sometimes didn't have the feel, and technology has helped. We created new labor tracking and manufacturing software for use within our shop. With this new technology we have greater efficiencies throughout the operation. We can move people around in minutes by

looking at a snapshot of current workflow and job progress.

Through the years we have bar coded everything so we can now track work throughout our shop. We have invested in automation, custom computer programming, and data transfer.

That sounds like a connection a lot of longtime shops are needing to make when it comes to training the next generation of workers.

It's kind of funny, when you worked somewhere for so long, I think a lot of the sheet



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metal people will understand “the feel” for where the manpower is needed. The next generation, they are going to want at their fingertips, on their iPad or their phone. They are going to want to see technology-based information. And that’s where our gains in knowledge came from with a lot of the new folks.

Are there any other ways technology has furthered your business?

About a decade ago we started an online estimating program called PriceDuct. PriceDuct lets the contractors get an instant price and also purchase the ductwork and accessories directly from us. The success of our system comes from the continually updated pricing.

When steel fluctuates, it’s really hard for a contractor to go back into their estimating system and change all of the prices from all of the vendors who have a price increase. Our system continually updates its pricing as the market changes, so contractors are always bidding with the most current number. Many contractors, even if they have their own estimating software, will still buy PriceDuct to update their systems.

We are going to continue down the road of integrating with our customers electronically so they can more easily send in quotes, orders, track order process, and even delivery.

On the floor how has automation played a role in operations?

We have been automating for decades with auto feeders, robotics and things like this. We see that is a necessity for the HVAC market. Some of our biggest competitors are still the contractors that feel that they can make it themselves, and our goal is to help them understand the amount of waste we eliminate and the efficiencies we bring as a manufacturer with our people doing it all day, every day.

Now I am a big fan of labor, and what I mean by that is the world needs people, and we are going to have hands-



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on in the construction side for years to come. But, on the manufacturing side, we will see more and more automation coming at us. And if you're not keeping up with automation, people will see you in their rear view mirror very quickly.

So what you're saying is we shouldn't be scared of automation. Automation and manpower can happily coexist?

Automation allows us to use our labor force in a more effective way. We are taking them out of repetitive jobs and we are putting them where they can effectively use their skills, which allows us to be more efficient and turn out a higher volume of material. We've never let a person go in our company's history because of automation. It gives us more business, which allows us to grow in other areas. Our employees are what make us a successful company, their hard work, dedication, and ideas are what makes Sheet Metal Connectors great.

Looking at Sheet Metal Connectors history, would you say you've always been an early adopter in the industry?

I would say we are leaders in the industry. Sheet Metal



Connectors has always been looking to make field labor as efficient as possible, and create a more energy efficient HVAC system. We've gotten six different patents on products through the years. The last product, the Super Heto (Stamped High-Efficiency Takeoff), was a patent we designed to increase the airflow on take-off collars. Complete Seal is another product line that we have introduced that allows contractors to install an airtight spiral duct system without the use of sealant.



That falls into labor savings, right?

There are cases that show pre-fabrication can have 15-20 percent overall labor savings. The trick for us is to show the contractors the benefit of shifting some of their field allocated labor to the manufacturer. With the labor shortage in many areas of the county, we feel that the pre-assembly in the shop will help to make job sites much more efficient.

That really hits home to Sheet Metal Connector's goal in being a partner to the contractor.

Every job is different, so we must adapt to meet the customer's needs. Whether it's pre-fabrication, logistics or the type of ductwork that should be used. We want to partner with them and make sure that each job gets an individual focus and runs as smoothly as possible.

On the job site, things are going a lot faster, timelines are shortened and you have many trades working side-by-side with



Jim Myers and Jerry Myers



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in both the manufacturing process and help their installation go smoothly. We want to be their fab shop. That's really our goal. So whether they need one product, or full pre-fabrication of the job, we want to be the go-to for all of their needs.

What is most important to you as you move into the next 50 years?

At the end of the day, I feel the number one thing we have to do is earn our customers trust every day. It is the trust that we are going to do the right thing, that we are going to be there when you are in a pinch, the trust that we will communicate if we have a question, or see a mistake. Integrity is what my Dad built this company on and it is still at the core of everything we do today.

For more information about Sheet Metal Connectors, Inc., visit smcduct.com ✂

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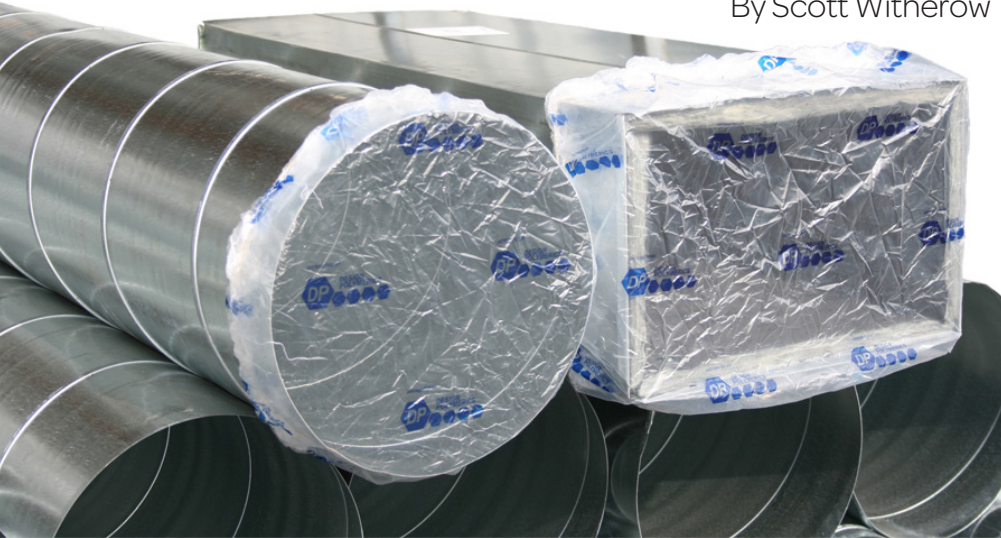
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By Scott Witherow



Elastic banded, reusable plastic duct covers.

UNCOVERING ISSUES WITH COVERED DUCT

How to prevent common covered duct issues without compromising indoor air quality.

The practice of capping the ends of duct started more than 15 years ago. Over the past several years, there has been a substantial increase in the requirements for covering the ends of duct after fabrication and during transportation, storage and installation. Covering duct prevents dust and debris from accumulating in the duct system and creating a potential source of indoor air quality issues, including mold. Many architects, engineers and inspectors are requiring the practice of covering duct ends prior to arrival at job sites. Rolls of adhesive backed plastic and elastic banded duct covers are now a common tool for sheet metal shop workers and for field installers.

While covering duct ends in the shop is not specifically required by the US Green Building Council's LEED v4 EQ Credit: Construction Indoor Air Quality Management Plan or the SMACNA IAQ Guidelines for Occupied Buildings Under Construction, it has become an everyday reality for most sheet metal fabrication shops.



Condensation on interior of plastic wrapped duct.



Plastic wrapped duct at Spiral Pipe of Texas.

Corresponding with the increase in covering duct ends is the substantial increase of using water-based duct sealants and water-based duct liner adhesives. Covering the ends of duct has created an unintended problem; moisture trapped inside duct. Many contractors have encountered duct sealants and duct liner adhesives that can take weeks to cure, duct sealants that are failing pressure tests, white rust and even beads of condensation collecting on the plastic films. In many cases, the inside of covered duct is becoming the sheet metal industry's equivalent of a terrarium. There are strategies for mitigating or even overcoming these problems.

DUCT SEALANT STRATEGY

Duct sealants cure by evaporating water. When the humidity inside covered ducts reaches its saturation point, the curing process stops. Tightly sealed ends can create conditions where a duct sealant can take three weeks or longer to cure rather than the typical 24-48 hours. But there are strategies to increase the chances of success:

Seal duct as early as possible in the manufacturing process and keep uncovered for as long as possible. Seal early, load late. If possible, set manufacturing schedules to fabricate duct to be covered early in the day and seal as quickly as possible. The more water that is evaporated in the shop, the less water that will be trapped on the inside of wrapped duct.

Circulating air is the best way to drive off water and decrease dry time. Fans placed at a distance that moves air over open ended duct is the best method to avoid moisture problems. Air should be moving

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Uncovering

at the speed of a breeze and not at high speeds directly at the duct sealant. High speed air blown directly at the sealant will cure the top layer, trapping moisture in the uncured sealant below the surface.

Apply sealant correctly. Duct sealant should be applied to the thickness of a nickel, more is not better. Inside 90 degree angle seals are often caulked, back brushing the caulk bead will create more surface area which will reduce cure time. Airless sprayed duct sealants also cure faster than traditionally applied sealants.

Use a quality sealant. Duct sealants cure outside-in, meaning



Spiral Pipe of Texas (SPOT) sealed duct with forced air curing

the outside films over first and water evaporates from underneath the surface to fully cure. Significant problems can occur by using poor quality, economy duct sealants especially when sealing the inside of right angle joints that are found in longitudinal rectangular duct and fitting seams. Many economy duct sealants will soften or even reactivate when exposed to

moisture. Water evaporating from under the curing top film will cause this top layer to lose strength, resulting in tearing. Contractors often think that a duct sealant has cured and cracked, often times the sealant has torn during the curing process. Using

Notes from NADCA



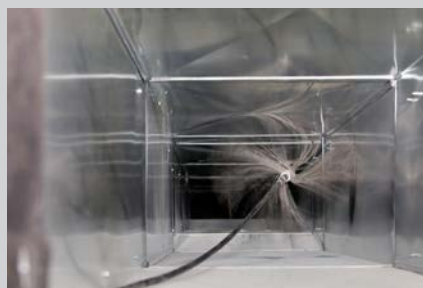
National Air Duct Cleaners Association president and chairman of the board, Richard Lantz, ASCS, CVI, clears the air on some frequently asked questions about duct cleaning standards.

On sealing air leaks ... According to the NADCA Standard, Section 4, Cleaning & Restoration Procedures, "assessment, cleaning and restoration of HVAC System Components does not include the sealing of air leaks within duct systems or HVAC equipment."

On cleaning completely sealed HVAC systems ... The HVAC system is the building's respiratory system and continually

circulates airborne particulates from the occupied space through the HVAC system. Even with filtration, contaminants will pass through the filters and build up over time and require cleaning to maintain cleanliness and performance.

On the use of chemical cleaning agents in HVAC systems ... The application of chemicals in an air conveyance system is acceptable only when the product is legally approved for the application for which it will be used. At this



time, the EPA has not accepted any disinfectant, sanitizer or fungicidal products for use in the ductwork of HVAC systems. However, some of these products are accepted for use in other parts of HVAC systems.

It is a violation of federal law to use a product in a manner inconsistent with its labeling. That is why we advise our members to reference the white paper and to not to apply disinfectant, sanitizer or other antimicrobial products to treat HVAC systems if such products do not include specific directions for HVAC use on the product label. EPA-registered pesticides must be used in compliance with the product's EPA-accepted label.

On ozone applications in HVAC Systems ... Contractors that treat with ozone must assure that applications do not occur in buildings that are inhabited or occupied (humans, pets, etc.) and that the treated areas are well ventilated prior to re-entry.

Currently no regulations exist regarding how to determine when it is safe to re-enter a building after ozone treatment.

The EPA has declared that there is evidence to show that at "concentrations that do not exceed public health standards, ozone applied to indoor air does not effectively remove viruses, bacteria, mold, or other biological pollutants.



Amanda Baker of Control Air in Anaheim, California, seals duct.

Toolbox Tips

“The BrushBeast offers a big increase in power that can handle heavy build up within any air duct system while still remaining portable and compact enough to move throughout a home or business,” explains Bob Elledge, president and CEO of Rotobrush International. “We are always looking for solutions to make the air duct cleaning process easier for contractors, we’ve updated the carrier to provide more space for accessories and the necessary tools to complete the job. It adds more convenience for the contractor, they can quickly access tools without going back and forth to the truck.”

Read more at SNIPSmag.com.

a premium grade, water-resistant, high polymer (rubber and glue) content sealant will eliminate this problem.

LINED RECTANGULAR DUCT WITH WATER-BASED ADHESIVE

Just like duct sealants, water-based duct liner adhesives and edge coatings cure by evaporating water and can create similar issues. And like duct sealants, there are ways to reduce trapped moisture issues:

Use the correct amount of adhesive. This is one of the most common mistakes sheet metal shops make. If a shop is experiencing adhesive running down the inside of lined duct or experiencing white rust while nesting L shaped rectangular, the shop is almost certainly applying too much adhesive. Water-based duct

liner adhesives, especially quality adhesives, require a light coating of adhesive on the metal. Less adhesive means less water to evaporate.

Use forced air and plan ahead. Apply early and load late, just like water-based duct sealing.

Use a quality adhesive that is water resistant. Many adhesives will reactivate after curing when exposed to water, i.e. condensation. The contractor runs the risk of losing adhesions should the duct liner adhesive get watered down by condensation. A loss of adhesion will risk a contractor’s ability to comply with SMACNA’s requirement of duct liner adhering to 90% of the surface. Fully curing adhesive on bare metal and exposing to water is the simplest and best way to determine water resistance.

The use of plastic wrap has

increased dramatically and is continuing to increase. The awareness and demand for indoor air quality makes it almost certain covering duct ends will be with our industry well into the future. Incorporating these shop strategies into the manufacturing process will lessen and, in some cases, eliminate most trapped moisture related problems.

Scott Witherow is vice president of Design Polymerics and on the Spiral Duct Manufacturers Association (SPIDA) Board of Directors. For more information about Design Polymerics, visit design-poly.com. For more information about SPIDA, visit spida.org.

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BUILDING BLUEPRINT



Steve Jones

All signs point to sustainability, safety and BIM technology when it comes to future success in the HVAC industry. But where do you begin? And most importantly, how do you keep building on what you're already doing? Steve Jones – director of industry insights and research for Dodge Data & Analytics and keynote speaker at this year's AEC BuildTech (April 30-May 2) – shows you the way forward to the future.

The only certainty in the construction industry is uncertainty, says Steve Jones, director of industry insights and research for Dodge Data & Analytics.

"This is a hideously uncertain business" Jones says. The problem, he explains, lies in what he calls "silos of excellence."

"Your more advanced HVAC guys are already using a lot of technology to create ductwork and automatically fabricate ductwork. But now it's about how can you integrate that along with other mechanicals, with electrical," Jones

says. "Look at it more like somebody who makes components for airplanes or ships. They're delivering an entire component that can get assembled. They aren't just delivering their one little system, and then everybody else has to work around it. We don't need silos of excellence. We need a rethought integrated workflow system."

Integration will be a major point of discussion when Jones delivers the keynote address at the upcoming, three-day AEC BuildTech Conference & Expo (April 30-May 2) in Rosemont, Illinois. The expo's HVACR/mechanical systems



segment, sponsored by Mestek Machinery, is one of five education tracks, including plumbing, roofing, building envelope and flooring. Jones' address will cover how all of these areas can work together in the modeling environment.

"One is connecting upstream into the engineering process. Another is connecting downstream into fabrication," he says. "You get the trade contractor working with the engineer. The engineer says what they are trying to achieve and asks how to best do it. Let them work that out together. You have a much higher chance designing it the way it's going to get built." Which leads to greater certainty, he says. "So the more certainty you can bring at any of these juncture points the better it is for everybody."

Some of the fastest growing industries in HVACR/mechanical systems are sustainability, safety and BIM technology. As a primer before the expo, Jones shares insights into how these trends will translate to building business.

SUSTAINABILITY

This trend is extending beyond its original focus on energy-conscious buildings to a deeper understanding of how the construction process itself can be made "greener." As such, it is increasingly important for general contractors to be capable of sustainable construction as both a requirement from environmentally-aware owners and a competitive capability to successfully differentiate themselves to win more work. In addition, it's "the right thing to do."

Low Engagement

- Before you break into sustainability, it is important to understand the basics of the sustainable construction trend. McCarthy, a major general contractor, defines itself as a "green builder" and defines sustainability as "creating innovative structures that blend form with function, in harmony with the environment." Start engaging the owner on sustainability goals and identify what you as the contractor can do to help accomplish those goals. **To bone up on the basics of sustainability in building, visit new.usgbc.org.**

Medium Engagement

- To advance in implementing sustainable construction, it becomes important to know in detail exactly what it means for your trade and to put the practices in place to "walk the talk." For HVAC contractors for instance, what can you do to reduce the amount of metal waste you generate on a site? How can you impact the number of times that powered equipment has to move your materials on a site? How much can you prefabricate, especially in multi-trade assemblies to reduce waste and optimize site space and resources?

High Engagement

- If you are already an experienced green building practitioner, make sure you are measuring the benefits and improvements. Not only will that encourage more internal innovation, but it becomes the key to increasing the competitive value of your accomplishments.



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BLUEPRINT

SAFETY

As we all know, safe construction is a challenging goal, but there isn't a more important initiative in the entire industry.

Low Engagement

- If your company's safety performance isn't what you want it to be, there are excellent resources available from organizations like the CPWR Center for Construction Research and Training that can quickly educate you on what steps you can begin to take on your way to a more meaningful commitment to improving job site safety. **For more information, visit cpwr.com.**

Medium Engagement

- If you think your company "does safety well enough," think again, because there is always room for improvement. Dodge has reports which address best practices and provide specific guidance on what is working for other companies.

High Engagement

- If you are at the top of the industry in terms of safety performance, congratulations. But don't rest on your laurels. Become an evangelist for what is achievable and never rest.

BIM

Model-based processes are rapidly becoming standard practice, especially on complex projects. An increasing number of general contractors expect and demand BIM capability from trade contractors. Ignoring this trend is risking irrelevance in the market place.

Low Engagement

- Every trade organization has resources to help its members become knowledgeable about and capable with BIM. Take advantage of those. **Specifically, read ASHRAE's "An introduction to BIM" guide at ashrae.org.**

Medium Engagement

- BIM standards for multi-party integrated digital workflows and collaborative processes with other BIM team members are the most critical aspects for companies at this stage of their BIM journey. Talk with other firms involved in BIM projects and leverage their experience. Be prepared to share yours also. BIM is a team sport.

High Engagement

- Measuring the positive impact of BIM to continually improve your program and sharing best practices with your team member companies will pay great dividends in accelerating your transformation, as well as conveying your successes for marketing purposes. ✂

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to expand their knowledge base, better understand their markets, identify unseen opportunities, make informed decisions—and thereby improve their competitive position and grow their business. In short, Dodge provides the industry with the ability to see ahead, think ahead, and stay ahead."

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KEYNOTES



Steve Jones

Senior Director of Industry
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Dodge Data & Analytics

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BUILDING ENVELOPE

LiDAR, BIM, 3D printing and artificial intelligence are some of the technologies being used to create building envelopes that meet owner needs and expectations. We'll explore the latest in designing for energy efficiency as well as ensuring the system performs as specified.



ROOFING

Knowing the evermore stringent roofing codes can be a tricky business. This track will keep you up to date on the latest, as well as how to avoid roofing mistakes, deal with legal issues and more.

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Frederick, Maryland

In all, Kaempf & Harris Sheet Metal utilized 600,000 pounds of galvanized ductwork to construct a commercial-grade HVAC system for the 270,000-square-foot Frederick High School in Frederick, Maryland. Included is 16,000 pounds of solid welded stainless steel to serve 25 air handler units, 67 fans, five make-up air units and 113 heat pumps. Also, Kaempf & Harris installed six mechanical rooms, 1,500 registers, grilles and diffusers, and 305 fire and fire/smoke dampers, which enabled the building to meet LEED Silver standards for environmentally friendly operations.

The project was completed a little more than two years ago. Manpower peaked at 20 people, Kaempf & Harris president Aaron E. Smith says, which allowed the newly built school ample time to test the system before opening. Oak Contracting served as the general contracting partner on the project. *For more photos from this job site, visit SNIPSmag.com.* ✂

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