

A woman with short brown hair, wearing a bright pink blazer over a white lace-up top and blue jeans, is smiling and holding a large blue and tan tote bag. She is standing in a retail store with shelves of various bags in the background. To her right, there is a mannequin wearing a white sweater and a table with a large bouquet of blue and white flowers, a laptop, and some brochures.

HV MFG

THE COUNCIL OF INDUSTRY MAGAZINE

FALL 2023

THE CHANGING MANUFACTURING LANDSCAPE

COMPANY PROFILE

Balchem Corporation

LEADER PROFILE

Kelly Lyndgaard
Unshattered

CYBERSECURITY

AI IN MANUFACTURING

REPORT FROM PATTERN FOR PROGRESS

RESOURCE GUIDE INSIDE



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COMPANY PROFILE



Based in Elmsford, NY, Balchem Corporation is a global leader in the development, manufacture, and marketing of nutrition and health products.

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ON THE COVER

Kelly Lyndgaard, Founder and CEO, in Unshattered's boutique, displaying one of their handbags made from the seats of Southwest Airlines planes.

Cover photo by Tom LaBarbera
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THE CHANGING MANUFACTURING LANDSCAPE

DEAR READER

Welcome to the Fall 2023 Edition of HV Mfg, the Council of Industry's magazine by, for and about Hudson Valley Manufacturers.

It's cliché to say, *"the only constant in life is change,"* yet in the world of manufacturing "truer words were never spoken." In this edition of HV Mfg we try to capture some of the changes occurring in our sector –changes in technology and demographics, as well as changing threats, values, and priorities.

We start with a Q&A with Kelly Lyndgaard, founder and CEO of Unshattered, a social manufacturing enterprise that is helping women overcome addiction through the production of high-end handbags. An article by Taylor Dowd introduces us to longtime Council member Balchem Corporation whose microencapsulation technology is transforming the food industry.

The technology that will likely have the greatest impact on manufacturing in the coming decade is Artificial Intelligence (AI). AI is already greatly impacting the sector in a variety of ways. We asked the generative AI tool ChatGPT to craft an article on the future of the technology in manufacturing. We'll let you be the judge of how well it did.

Pattern for Progress President Adam Bosch writes on the changes that will impact our workforce for decades to come. An aging population and outmigration are shrinking the Hudson Valley workforce and Adam explains its causes and impacts.

Other articles include a story on Cybersecurity threats by John Durkin, Region 2 Regional Director of the Cybersecurity and Infrastructure Security Agency (CISA). Ransomware and IP theft are becoming more and more common in manufacturing and CISA offers many resources to combat these threats. Finally, the Council of Industry's Kevin Gardener and Johnnieanne Hansen look at a few of the many programs high schools in the region are undertaking that feature industry involvement and collaboration to build a strong manufacturing workforce pipeline.

Of course, we have our regular Fall features including news briefs, "What Are You Reading," and our Regional Manufacturers Resource Guide.

One thing that does not change is my sincere appreciation for the organizations who placed advertisements in HV Mfg. I thank you for your generous support of the Council of Industry, this publication and manufacturers throughout the region.

I hope you enjoy this edition and thank you for reading.

Sincerely,

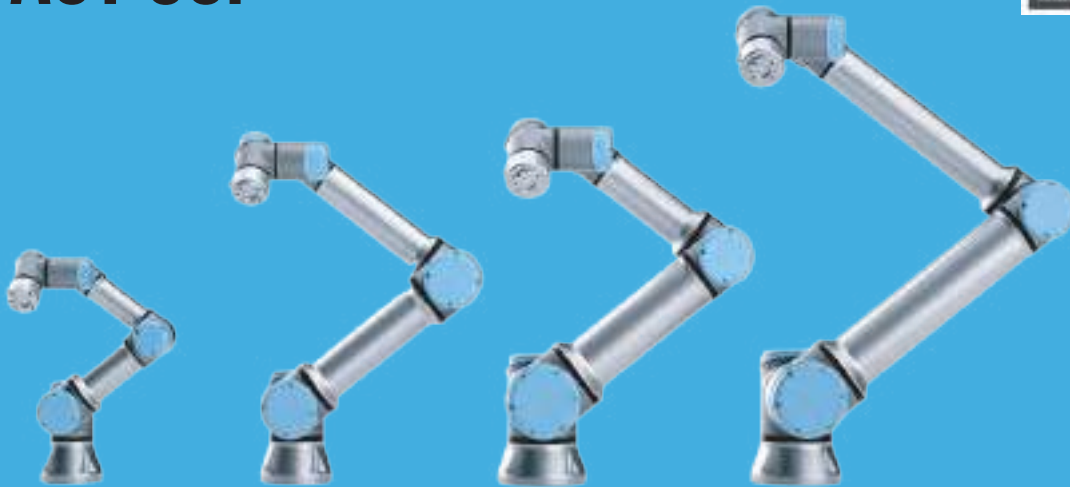
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THE MANUFACTURING ECONOMY

J.P.Morgan Global Manufacturing PMI™: Downturn in Sector is Slowing

The J.P. Morgan Global Manufacturing PMI™ improved from 48.6 in July to 49.0 in August, stabilizing a bit but contracting for the twelfth consecutive month. The declines for new orders (up from 47.6 to 48.1), output (up from 48.9 to 49.4) and exports (up from 46.4 to 47.0) slowed somewhat in August, and employment (up from 50.1 to 50.6) grew for the second straight month. Survey respondents remained positive in their outlook for future output (down from 60.8 to 59.6), albeit with some easing in confidence for the month. Delivery times (down from 51.9 to 51.2) narrowed for the seventh straight month in August despite some slowing, another sign that supply chain bottlenecks have improved.

Three of the top 10 markets for U.S.-manufactured goods experienced expanding growth in the sector in August, up from just one (Mexico) in July. Brazil eked out an ever-so-slight expansion in August for the first time since October 2022, and China rebounded, growing for the third time in the past four months. Overall, the data was mixed. Five of the top 10 markets had higher PMI readings in August than in July, four had lower and one was unchanged.

Activity Little Changed in September Empire State Manufacturing Survey

Manufacturing activity held steady in New York State, according to the September survey. After dropping sharply last month, the general business conditions index reversed course and climbed twenty-one points to 1.9.

- The new orders index shot up twenty-five points to 5.1, and the shipments index also rose twenty-five points to 12.4, pointing to an increase in orders and shipments.
- The unfilled orders index remained below zero at -5.2, a sign that unfilled orders continued to decline. Similarly, the inventories index came in at -6.2, indicating that inventories contracted again. The delivery times index ticked up to 2.1, suggesting little change in delivery times.
- The index for number of employees came in at -2.7, indicating a slight decline in employment levels.
- The prices paid index held steady at 25.8, pointing to little change in the pace of input price increases, while the prices received index rose seven points to 19.6, signaling a modest pickup in the pace of selling price increases.
- New orders and shipments are expected to increase significantly in the months ahead, and employment is expected to grow.

Fed Holds Steady, Project Rates Will Stay Higher for Longer in 2024

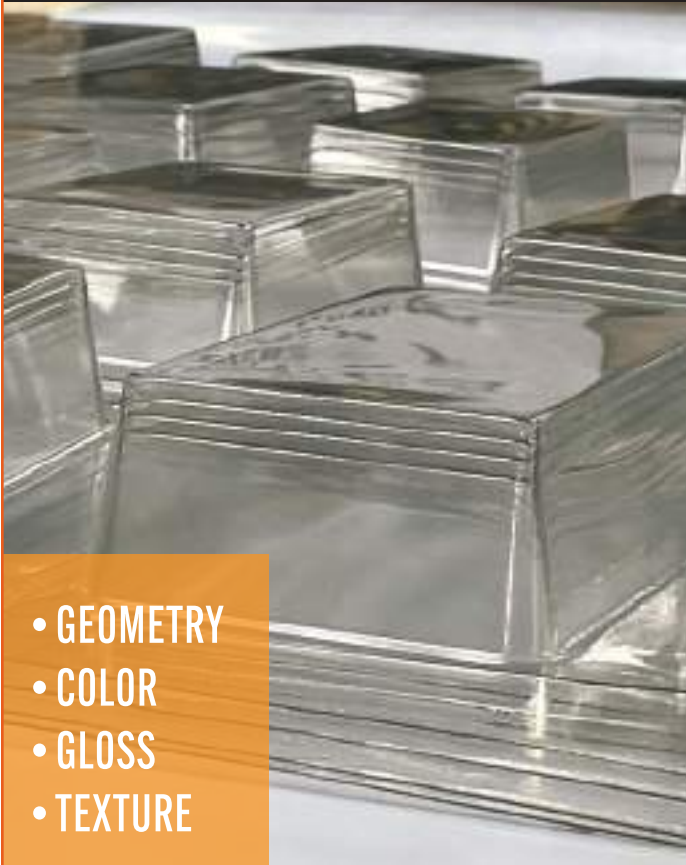
Federal Reserve officials voted to hold interest rates steady at a 22-year high at its September meeting but signaled they were prepared to raise rates once more this year to combat inflation. Fed officials raised their benchmark federal-funds rate at their previous meeting in July to a range between 5.25% and 5.5%. They began lifting rates from near zero in March 2022. With economic activity stronger than anticipated, most officials also expected they would need to maintain interest rates near their current level through next year, according to projections released at the conclusion of their two-day policy meeting. Officials projected stronger economic growth for this year and next, and they now expect a smaller rise in unemployment compared with their June projections. Most officials see the unemployment rate, which was 3.8% in August, rising to 4.1% next year, a lower level than they projected in June. Their projection for annual core inflation, which excludes volatile food and energy prices, edged down to 3.7% for the fourth quarter, compared with their June projection of 3.9%.

NAM Survey: Manufacturer Optimism Declines

The National Association of Manufacturers Q3 2023 Manufacturers' Outlook Survey showed manufacturers' with the lowest level of optimism among NAM members since Q2 2020. The sector continues to confront a tight labor market, unbalanced federal regulations and critical policy debates in Congress. The NAM conducted the survey from August 17 to August 31, 2023.

- Only 65.1% of respondents felt positive in their company's outlook, edging down from 67.0% in the second quarter.
- It was the fourth straight reading below the historical average (74.9%).
- Concern about an unfavorable business climate was the highest in six years (Q2 2017).
- The survey found that 69.1% of small manufacturers, and 63.2% of all respondents, would hire more workers or increase compensation if the regulatory burden decreased.
- More than 70% of manufacturers would purchase more capital equipment if the regulatory burden on manufacturers decreased, with 48.6% increasing compensation, 48.6% hiring more workers, 42.5% expanding their U.S. facilities and 38.4% investing in research.
- The top challenges facing manufacturers include attracting and retaining a quality workforce (72.1%), weaker domestic economy (60.7%), rising health care/insurance costs (60.1%), unfavorable business climate (56.7%), increased raw material costs (45.5%) and supply chain challenges (37.8%).

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Global Debt Hits Record \$307 Trillion, Debt Ratios Climb -IIF

Global debt hit a record \$307 trillion in the second quarter of the year despite rising interest rates curbing bank credit, with markets such as the United States and Japan driving the rise, the Institute of International Finance (IIF) said last month. The financial services trade group said in a report that global debt in dollar terms had risen by \$10 trillion in the first half of 2023 and by \$100 trillion over the past decade.

It said the latest increase has lifted the global debt-to-GDP ratio for a second straight quarter to 336%. Prior to 2023, the debt ratio had been declining for seven quarters. More than 80% of the latest debt build up had come from the developed world with the U.S., Japan, Britain, and France registering the largest increases. Among emerging markets, the biggest rises came from the largest economies, namely China, India, and Brazil.

CLIMATE, ENVIRONMENT, SAFETY, AND HEALTH

Climate Week 2023 - No New Fortune 500 Net Zero Commitments

Climate Week in New York was in September. After an explosion of commitments to net zero in 2020 and 2021, business momentum stalled. According to a report from Climate Impact Partners, there were no new commitments made in the last year, stalling the percentage of Fortune Global 500 companies that have made significant climate commitments at 66%.

"The backlash (against ESG) is having an effect... The uncertainty—whether due to lack of clarity around SEC reporting, around the expense, around how you link these actions to the company's bottom line—is causing everybody to pause," according to Sheri Hickok, CEO of Climate Impact Partners. However, the report also shows 76% of the Fortune Global 500 now report on annual emissions, with 55% of them even reporting on the vexing Scope 3 emissions (emissions from suppliers and customers).

NYS Comptroller DiNapoli: State Falling Short on Renewable Electricity Goals

New York state will have to take multiple steps to increase renewable electricity generation to achieve the objectives of the Climate Leadership and Community Protection Act (CLCPA). Success will also require state agencies to consistently and proactively identify and address problems, continue streamlining permit and interconnection study procedures, and develop the necessary infrastructure to connect renewable projects to the grid and New Yorkers' homes, according to a report issued in September by State Comptroller Thomas P. DiNapoli.

DiNapoli's report found that renewable generators in New York would need to produce an additional 78,073-gigawatt hours above 2022 levels, an increase of over 200%, to reach the CLCPA's 2030 goal of 70% renewable electricity consumption. The analysis is based on projections from the New York Independent System Operator (NYISO). NYISO has also projected that the state would need to add 20 gigawatts of

installed renewable capacity by 2030, which is triple the 2022 capacity of approximately 6.5 gigawatts. In the last 20 years, New York added 12.9 gigawatts of total electric generation, including both fossil fuel and renewable sources.

OSHA Plans to Make Injury Data Available Online

If allowed to stand by the courts, a rulemaking issued recently by the Occupational Safety and Health Administration (OSHA) will require employers to expose their reported accident illness and report data on the Internet, making it available to union organizers, personal injury lawyers, and their competitors. Scheduled to largely take effect on Jan. 1, 2024, it applies to employers with 100 or more workers in industries the agency defines as “high hazard,” although the list of these industries that OSHA provides appears to cover very nearly every employer in America today.

“With the new online availability of these records, employees, former employees and their representatives will be able to review your recordkeeping decisions by directly accessing the OSHA website without involving you,” explain attorneys who work for firm of Constangy, Brooks, Smith & Prophete. Another complaint raised in the legal challenges that were brought against the agency that could be resurrected this time around is the enormous cost to employers of adhering to the new rules, a subject remarked on by legal analysts as well. Employer attorneys advise covered organizations to begin preparing now for next year’s reporting requirements.

OSHA Announces Heat “Framework,” Employer Obligations Will Rise With the Temperature

On August 30, 2023, OSHA released a “Regulatory Framework” meant to outline potential options for the elements of a future OSHA standard. This framework shows that OSHA is focused on a programmatic standard where employers are required to create a plan to evaluate and control heat hazards in their workplaces, but also permit some customization of those plans based on various factors. In the short term, this framework provides employers with an indication of the type of items OSHA may be looking for during a heat illness or injury inspection. However, this framework is far from a final OSHA standard and any final heat-safety standard will almost surely be challenged in the courts, potentially further extending implementation.

While in the past focus on heat-safety violations may have been limited to the construction and agriculture industries, OSHA is now equally focused on heat-safety violations found in indoor work environments, such as manufacturing facilities. This expanded focus includes the manufacturing and warehouse industries. OSHA has also been conducting an annual heat awareness campaign for the last decade and in 2022, began its heat enforcement program.

OSHA Launches Initiative to Protect Workers from Silica Exposure

On Sept. 25, OSHA launched a new initiative focused on enhancing enforcement and providing compliance assistance to protect workers in the engineered stone fabrication and installation industries. Supplementing OSHA’s current National Emphasis Program for Respirable Crystalline Silica, this initiative

will focus enforcement efforts on industry employers to make sure they’re following required safety standards and providing workers with the protections required to keep them healthy. It establishes procedures for prioritizing federal OSHA inspections to identify and ensure prompt abatement of hazards in covered industries where workers face exposure to high levels of silica dust.

Industries subject to the prioritized programmed inspections include those engaged in Cut Stone and Stone Product Manufacturing as well as Brick, Stone, and Related Construction Material Merchant Wholesalers. Outreach efforts will continue to include additional industries that may work with engineered stone.

Administration Issues Revised WOTUS Rules, More Litigation Likely

On August 29, 2023, the Environmental Protection Agency (EPA) and Army Corps of Engineers (Corps) released a revision to the definition of water of the United States (WOTUS) that significantly curtails the agencies’ authority to require permits for development or work in certain waters and wetlands. Under the Revised WOTUS Rule, intrastate wetlands are jurisdictional only if they have a “continuous surface connection” to a traditional navigable water, impoundment, or a relatively permanent tributary to a traditional navigable water.

The Revised WOTUS Rule has two significant changes. First, it limits the extent of wetlands that are jurisdictional under the Clean Water Act (CWA). [3]

Second, it eliminates the “significant nexus standard” under which waters that “significantly affect the chemical, physical, or biological integrity of traditional navigable waters” were previously considered jurisdictional. Zippy Duvall, president of the American Farm Bureau Federation, commented, “We’re pleased the vague and confusing ‘significant nexus’ test has been eliminated as the Supreme Court dictated. But EPA has ignored other clear concerns raised by the Justices, 26 states, and farmers across the country about the rule’s failure to respect private property rights and the Clean Water Act.”



NAM's Timmons: “We Are Very Concerned About the Onslaught of Regulations in the U.S.”

“There are a few good things coming from [the Biden] administration”—including the CHIPS and Science Act and historic infrastructure investment—but there are also several trends that spell trouble for manufacturing in the U.S., NAM President and CEO Jay Timmons said on CNBC’s “Squawk Box” August 9th. “On the one hand we have a manufacturing strategy that Congress and the administration have been putting forward, which is ... to prioritize growing manufacturing here in the United States,” Timmons told CNBC’s Andrew Ross Sorkin.

“But ... you’re compounding that with three things. One is the [number] of regulations coming down. ... [Two is] slow permitting, which is making it difficult for manufacturers to build

those facilities they're willing to invest in. Thirdly, [in] some of the provisions that have been enacted, there's been confusing guidance or no guidance when it comes to accessing the funds and credits that are available for manufacturing. All three of those things together are making it very difficult for manufacturers to compete and succeed in our global economy."

LABOR, EMPLOYMENT AND WORKFORCE DEVELOPMENT

DEI Major Factor in Job Decisions for Candidates

Diversity, equity, and inclusion (DEI) is still a key factor for 53% of U.S. workers when considering a company for employment, according to research from Eagle Hill Consulting. Age is a factor in this perception as it's important to Gen Z at 77% compared to Millennials at 63%. When considering a new job, employees say it is important that there are employees they identify with (63%), leaders they identify with (59%), and that DEI is a priority for the CEO (52%). During the recruitment process, workers say it is important to hear that employee perspectives are valued (85%), employees feel safe bringing their authentic self to work (80%), leadership has transparent decision making (80%), and the company has a collaborative culture (75%).

However, employers have to catch up to address their workers' needs. Only 29% of employees say their company has taken more action in the past six months to demonstrate its commitment to DEI. Some segments of the workforce, however, report that their

employers have taken more steps on DEI, including workers who identify as having a physical impairment (46%), LGBTQ (40%), military veterans (40%), and neurodiverse (39%).

Education Secretary Cardona: America's Higher Education System is 'Broken'

America's education landscape can feel like a battlefield with wars being waged over reading, cultural issues, school funding, and college admission processes. But, at a breakfast with reporters hosted by The Christian Science Monitor, Education Secretary Miguel Cardona emphasized the need for a level playing field as students from all walks of life move from early childhood programs through college or apprenticeship training. Calling out the latter, he says the nation has a "broken higher education system."

Runaway costs, he says, have saddled too many people with student loan debt or prevented them from stepping foot into a college or university altogether. "We're banking on the fact that if we open doors to higher education, not only are our families going to be better, but our country is going to be better," Dr. Cardona says. As a new academic year gets underway – with stubborn pandemic-era challenges and an election year around the corner.

Why Labor Shortages Aren't Going Anywhere

Hiring at U.S. small businesses with fewer than 50 employees has slowed for five straight months, according to data from Paychex and IHS Markit, but ADP President Steve Mucci said, that has

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more to do with a lack of applicants than a reflection of small businesses pulling back.

“For small businesses, the toughest thing is they have the demand, and they have the need for workers — they just have a



little bit harder time finding it,” he said. That is counter to what is happening at some larger companies. In August, private payrolls grew by 132,000, a drop from the 268,000 gain seen in July, according to ADP’s monthly payroll report.

Manufacturing Labor Productivity Rebounds in Q2, Remains Sluggish

Manufacturing labor productivity rose 2.9% at the annual rate in the second quarter, rebounding after declining in the previous three quarters and the largest quarterly gain in two years. Yet, labor productivity in the sector was estimated originally to be up 4.0% for the quarter. Similarly, output in the sector increased 0.8% following declines in the two prior quarters. At the same time, the number of hours worked fell 2.1%, with hourly compensation jumping 8.0% in the second quarter. Unit labor costs among manufacturers increased 4.9%, rising for the ninth straight quarter.

Labor productivity for durable goods rose 4.5% in the second quarter, the first increase in one year, with output expanding 3.2%. Nondurable goods labor productivity rose a modest 2.0%. Manufacturing sector labor productivity has increased at an annual rate of 0.2 percent during the current business cycle, which began in the fourth quarter of 2019. This rate reflects output and hours worked growing at annual rates of 0.3 percent and 0.1 percent, respectively. This slow productivity growth rate follows the 0.0-percent annual rate of growth during the last business cycle that spanned the fourth quarter of 2007 through fourth-quarter 2019.

Hochul Signs Bills on ‘Captive Meetings,’ Wage Theft, Injury Compensation

In September Governor Kathy Hochul signed a package of legislation into law aimed at protecting employees in the workplace.

■ One measure prohibits employers from disciplining employees who decide not to participate in meetings about the employer’s political or religious views. The bill curtails an employer’s ability to hold captive audience meetings, which are mandatory meetings

held by an employer during working hours to discuss union organizing. Captive audience meetings have been a commonplace practice used by employers to communicate information to their workforce about the impacts of unionization in the workplace during the course of an organizing attempt by a union.

■ Another piece makes wage theft a form of larceny and lets prosecutors seek stronger criminal penalties against employers who steal wages from their workers.

■ A third piece of legislation increases the minimum benefits for workers’ compensation for low-wage workers who are injured and are unable to work. The third bill increases the minimum benefits for workers’ compensation to help low-wage workers who may be injured and cannot work. Starting in 2024, the minimum benefits for permanent or temporary partial disability will be \$275 weekly and will be increased to \$325 in 2025 and increased to one-fifth of the state average weekly wage in 2026.

Major labor unions throughout the state heralded the bill signings.

NLRB Paves Way for Workers to Unionize Without Formal Elections

The U.S. National Labor Relations Board in August resurrected key elements of a policy it eliminated more than 50 years ago requiring businesses that commit labor law violations to bargain with unions without holding formal elections. The board’s 3-1 decision in a case involving building materials company Cemex Construction Materials could provide a major boost to unions by allowing them to represent workers in certain cases when a majority sign cards in support of unionizing, rather than going through the lengthy and often litigious election process.

The decision came one day after the NLRB announced a final rule reviving Obama-era regulations designed to speed up the union election process, which is seen as giving an advantage to unions.

Dutchess Community College Opens State-of-the-Art Mechatronics Lab In Fishkill

The Mechatronics Lab at DCC, located at the intersection of U.S. Route 9 and Interstate 84 in Fishkill, will officially open its doors this fall. This 6,000-square-foot facility is equipped with cutting-edge technology and comprises three labs dedicated to hands-on training in four core areas: automation, electrical, HVAC, and mechanical. Developed collaboratively with industry



partners including the Council of Industry, IBM, Onsemi, eMagin, and MPI, the Mechatronics Lab will provide a range of programs, catering to students seeking academic credits and those pursuing non-credit options. Professionals already active in the field can enhance their abilities, while newcomers can acquire the technical skills necessary to kickstart their careers.

DCC offers short-term, industry-recognized credentials in topics ranging from pneumatics to robotics, and now, students can pursue DCC's certificate program in air conditioning/refrigeration and associate degree in electrical technology. With more trainings to come, such as Certified Production Technician (CPT) Plus and Certified Technician – Supply Chain Automation (CT-SCA) certifications, the Mechatronics Lab will establish itself as the premier training and manufacturing hub of the Mid-Hudson Valley.

U.S. Salary Increase Budgets hit 20-Year High

Increases to salary budgets rose to 4.4% on average this year, slightly higher than earlier projections of 4.1%, and also marking the highest level since the 2001 peak of 4.5%, according to a WorldatWork survey released last week of more than 2,000 U.S. employers. Last year, salary increase budgets stood at 4.1%. A tight labor market and cautious economic optimism contributed to the increase, according to Liz Supinski, director of research and insights at WorldatWork.

Budgets are expected to slightly drop next year, to 4.1%, according to the survey. The forecasted 2024 decline, she adds, may also be the result of an easing of the intensity of the labor market pressures as the impact of economic policy decisions filters out. In addition to salaries rising across the globe this year, employers are scaling back on layoffs, according to the WorldatWork survey. This year, 70% of employers worldwide reported no layoffs and a whopping 91% expect the same for 2024.

Annual Luncheon & Expo November 17th - FBI Cybersecurity Expert to Keynote, Leadership Certificate Recipients Recognized

The Council of Industry's Annual Luncheon & Member Expo will be held on Friday, November 17th at the Grandview in Poughkeepsie, NY. The Event will open with the Member Expo beginning at 11:15. The Luncheon program begins around noon with the presentation of Manufacturing Leadership Certificates to more than 40 individuals who have completed the program since last year's event.

Lunch and a Keynote address from Michael Pollice Special Agent Strategic Partnership & Domestic Security Alliance Council (DSAC) Coordinator. DSAC is a public-private partnership offered by the Federal Bureau of Investigation's Office of Private Sector and the Department of Homeland Security's Office of Intelligence and Analysis that enhances communication and promotes the timely and effective exchange of security and intelligence information between the federal government and the private sector.



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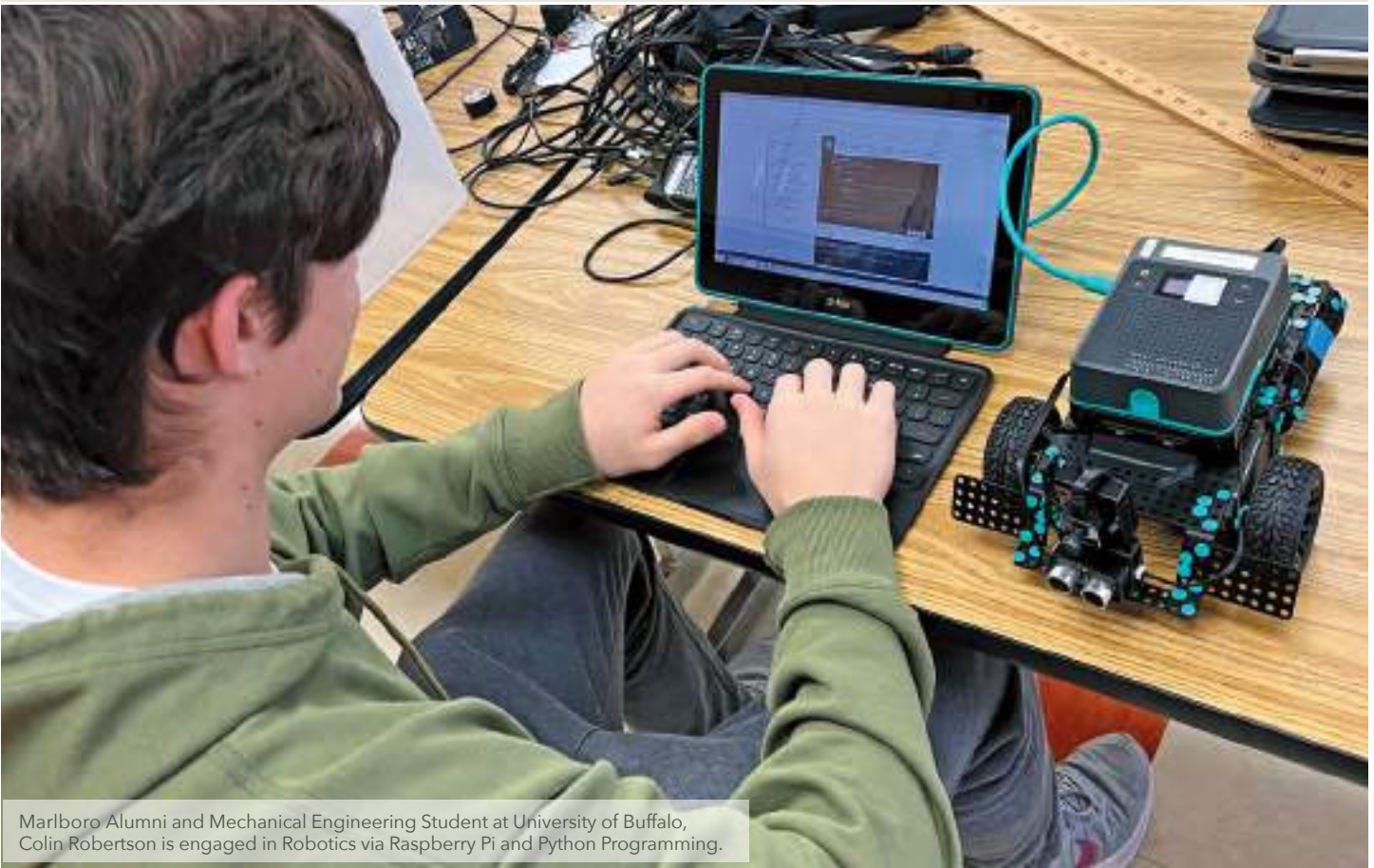
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HIGH SCHOOLS PARTNER WITH INDUSTRY TO STRENGTHEN WORKFORCE



Marlboro Alumni and Mechanical Engineering Student at University of Buffalo, Colin Robertson is engaged in Robotics via Raspberry Pi and Python Programming.

To meet the evolving demands of modern manufacturing, a concerted effort is being made to develop a skilled and adaptable workforce. Throughout the Hudson Valley, various workforce development programs and courses have emerged at the high school level to address this critical need. These initiatives are an important way to foster a robust manufacturing sector, enhance economic growth, and provide individuals with valuable skills and opportunities. These programs expose students to various STEM and manufacturing positions. They provide pathways to professional growth and skill development.

There are dozens of programs in schools across the Hudson Valley ranging from clubs like rocketry and First Robotics to Project Lead the Way, AP and dual enrollment courses, engineering electives, career and technical programs, and P-TECHs. Over the past few weeks, we were able to meet with leaders from several of these programs to learn more about what they do and how they engage with industry to prepare students for manufacturing careers. Here is what we learned.

ULSTER BOCES/HUDSON VALLEY PATHWAYS ACADEMY

Ulster BOCES, led by District Superintendent & Chief Executive Officer, Jonah Schenker, and Assistant Superintendent, Peter Harris, is redefining education through innovative programs that bridge the gap between classroom learning and real-world experience. One of Ulster BOCES' most exciting programs is its P-TECH school, the Hudson Valley Pathways Academy (Pathways). Pathways offers a transformative six-year

"Ulster BOCES' educational model fosters entrepreneurship – remarkable initiatives, coupled with the organization's strong commitment to strategic partnerships and practical curriculum place Ulster BOCES firmly at the forefront of educational innovation."

experience where students earn both their high school diploma and an associate's degree through an innovative project-based curriculum, all at no cost. Students engage in real-world problem-solving with industry partners, crafting solutions during P-TECH classes and presenting them back to the industry partners. This unique blend of academic and practical learning equips students with the skills and knowledge for a successful future.

The Council of Industry has had the pleasure of being an industry partner for this program and has enjoyed helping to develop it into something unique and useful for students, while exposing them to the extensive manufacturing sector of the Hudson Valley. Ulster BOCES and the Council of Industry also support the Ellenville P-TECH Academy, providing classes and training opportunities to their students.

Schenker and Harris say they are taking some of the more successful features of Pathways and applying them to the Ulster BOCES general CTE program. Their vision for the program includes using the successes of their current P-TECH model and broadly applying them to other students at the Career and Technical Center, while also engaging them with industry partners.

Schenker and Harris were also able to share some of the tangible impacts of their programs with a remarkable success story. They highlighted the journey of a former student who founded a business, Laundry Scoop, thanks to his experience in the program. Harris shares the exciting news that the student sold Laundry Scoop to Aloha Laundry Life, a

nationwide network, illustrating how Ulster BOCES' educational model fosters entrepreneurship. These remarkable initiatives, coupled with the organization's strong commitment to strategic partnerships and practical curriculum, place Ulster BOCES firmly at the forefront of educational innovation, embodying its vision for a brighter, more prosperous future for both students and the community.

ORANGE-ULSTER BOCES

Kathleen Smith, Director of Career & Technical Education, and Sara Puccio, Assistant Director of Career and Technical Education, at Orange-Ulster BOCES have a commitment to providing students with cutting-edge STEM and technical programs. Some of their programs include a STEM Academy that helps students to improve their thinking and reasoning skills and is built around learning about the engineering design process. Orange-Ulster BOCES also offers a Mechatronics and Robotics program that helps students prepare for careers in fields

where these skills are highly valuable. They emphasized the importance of equipping students with both technical skills and essential soft skills, such as problem-solving, communication, and adaptability, to thrive in rapidly changing industries. Smith and Puccio were able to share several success stories, including students securing employment right after graduation through internships and earning professional certificates in various fields. They also touched on the school's involvement in P-TECH programs and their efforts to stay informed about developments in education.

PINE BUSH HIGH SCHOOL

Principal of Pine Bush High School Aaron Hopmayer has a commitment to developing students interested in the manufacturing sector. Pine Bush High School boasts a multifaceted program that encompasses the full spectrum of student interests and career aspirations. As Hopmayer passionately stated, "Our goal is to serve all levels of students, whether they're entering the military, workforce, or college." The STEM curriculum offers an extensive selection of courses, ranging from drawing and design production to college level excelsior engineering, each tailored to cater to a diverse student body, for students with a variety of academic profiles. With a keen focus on soft skills development and hands-on, authentic learning experiences, Pine Bush High School is equipping its students with the essential tools and knowledge for a successful future. This approach has yielded remarkable success stories, with many



Ulster BOCES welding student.



Robb Engle Executive Vice President of Sono-Tek speaks to students from Marlboro High School regarding technical career paths during an annual field trip to Sono-Tek's facility.

"High schools across the region are engaging with industry specific companies to offer a different perspective, work-based projects, improving the student experience, and creating pathways to meaningful careers."

alumni securing high-demand careers in the aerospace industry. One graduate of the program was also the valedictorian who went on to the Ivy League's University of Pennsylvania.

Hopmayer emphasizes that industry partners have helped the program tremendously by providing shadowing and professional development opportunities, as well as donating their time, machinery, and expertise. Pine Bush High School's commitment to equipping students with both technical knowledge and employability skills is truly commendable, and their innovative initiatives are paving the way for a brighter future.

MARLBORO HIGH SCHOOL

Another notable figure in STEM education is the innovative Marlboro High School. Started in 2010, this important program is led by Thomas Fassell, who is the Engineering & Robotics teacher. The hands-on elective courses being offered include robotics, aviation, and technology, and prioritize experiential learning and resilience-building over conventional assessments. Students are encouraged to embrace failure as a stepping stone to growth.



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Fassel began the program with the help and encouragement of some parents of students in the district who worked in the engineering field. Today, Fassell and his students work closely with Council of Industry member Sono-Tek Corporation, where they see engineering and manufacturing in action. Several former students now work at the company as technicians.

Fassell's mentorship has paved the way for graduates who have found success in the Air Force, aviation, and technical fields. He envisions expanding the curriculum to incorporate high-voltage circuits and always is collaborating with industry leaders like Bantam Tools and Allendale Machine on several portions of his classes.

OSSINING UNION FREE SCHOOL DISTRICT

The Ossining Union Free School District is making concerted efforts in the realm of STEM education, with Interim Superintendent Mary Fox-Alter, Christopher DeMattia, Director of Science, Technology, Engineering, and Math, and Maria Meyer, Assistant Superintendent of Curriculum & Instruction, at the lead. The comprehensive STEM programs encompass a wide spectrum of opportunities, ranging from advanced placement and dual enrollment courses, a science research program, and robotics and engineering clubs. The Science Research program at Ossining Union Free School District stands as a testament to academic excellence, with students consistently competing at the highest levels in various competitions. This program provides students with a platform to manage their own thinking and engage with mentors in their chosen field, preparing them for future STEM pursuits. They also have a dynamic robotics team, which fosters hands-on learning, encouraging students to immerse themselves in technology, CAD systems, and prototype development.

Through these programs, Ossining Union Free School District educates and empowers students to explore and excel in the world of STEM. DeMattia explains that these programs "connect what you might learn in school to real-world problems" and offer students a glimpse into various STEM fields. The district's commitment to building students' capacity extends to partnerships with local industry experts. Two success stories that have come from these important programs would be a recent graduate who was involved in their engineering courses and the science research program. She has obtained a master's in industrial systems engineering and currently works for Lockheed Martin and is continually excited to participate in manufacturing in New York State.

Another former student is working as an electrician in Rockland County and went through the engineering program and First



Marlboro Alumni and Aeronautical Engineering Student at Rensselaer Polytechnic Institute, Audrey Werba discovered the theories of flight while she designed and built her own remote control airplane.

Robotics team. He was able to translate his knowledge into an important job in the Hudson Valley region. This integrated approach taken by Ossining Union Free School District ensures that students in these programs are well-prepared for their educational and career journeys.

DUTCHESS BOCES

Dutchess BOCES, under the leadership of District Superintendent, Jason Schetelick, is pioneering innovative programs that bridge the gap between education and industry needs in Dutchess County. It is evident that their commitment to workforce development is at the forefront of everything they offer. A notable achievement is the Industrial Manufacturing Technician Boot Camp, backed by a grant from the New York Department of Labor and the Dutchess County Workforce Board. As Schetelick explains, this program seeks to equip students with essential skills, including "measurement, reading blueprints, and basic mechanical skills," as outlined by industry partners. Additionally, Dutchess BOCES is set to launch a groundbreaking P-TECH initiative,

enabling high school students to graduate with both a diploma and an associate's degree, a testament to the school's dedication to educational excellence. Its engagement in international projects that also are partnered with local manufacturing organizations, like the collaboration with a German university and Onsemi, displays their students' ability to solve real-world problems.

Furthermore, success stories, such as hosting a signing day event for students securing careers straight out of high school, exemplify the



Ossining UFSD FIRST Robotics Team at the Albany Regional competition. The advisors for the Engineering Club (Robotics Team) are Doug Albrecht, Mark Scinta, and Michelle Portillo. The teachers for our Science Research Program are Angelo Piccirillo and Valerie Holmes.



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tangible impact of these programs, turning dreams into reality for Dutchess County youth.



Strider Bike Build from Pine Bush High School.

CONCLUSION

Developing a pipeline of workers with 21st century skills is vital to the success of manufacturers in the region and there are many high schools adapting to help build that pipeline. We learned a few things from our conversations over the past few weeks with these handful of schools. First, there are many, many dedicated educators working hard to prepare their students for life after graduation. Second, programs featuring hands-on and project-

based learning are popular and effective. Third, programs where industry partners and educators are both involved are the most successful, and educators are willing and excited to incorporate industry connections into their classroom.

No matter the specifics of the program we learned about, whether it is a first robotics club or P-TECH partnership, high schools across the region are engaging with companies in the industry to offer a different perspective, work-based projects, improving the student experience, and creating pathways to meaningful careers. The tangible impact of these efforts is evident in the success stories of students who have secured high-demand careers, founded businesses, and excelled in STEM competitions. Furthermore, their commitment to forging partnerships with industry experts and providing authentic learning experiences highlights their dedication to preparing students for diverse paths. As these programs continue to thrive and innovate, they are not only fostering a robust manufacturing sector and enhancing economic growth but also providing individuals with valuable skills and opportunities, paving the way for a brighter and more prosperous Hudson Valley.

*Kevin Gardener is the Marketing and
Events intern at the Council of Industry.*



SECURE OUR MANUFACTURING TO SECURE OUR WORLD



SECURITY IS A PRIMARY OPERATIONAL CONSIDERATION FOR MANUFACTURERS OF ALL SIZES

Over the past few years, a scourge of cyberattacks has caused extraordinary harm to manufacturers in New York, throughout the U.S. and worldwide: factories have been forced to close as online criminals rendered critical systems inoperable, private data has been breached and held for ransom, and proprietary information has been stolen. In every instance, these manufacturers have faced production delays, suffered revenue losses, and expended untold sums on mitigation and recovery. And the frequency of these attacks on our manufacturers continues to grow.

As manufacturing environments have become more interconnected with and reliant on enterprise networks, public clouds, vendor networks, and other third-party resources to conduct their operations, bad actors have set their sights on exploiting this ever-expanding attack surface. According to IBM

Security's 2023 X-Force Threat Intelligence Index, manufacturers were the number one target for ransomware attacks for the second straight year in a row last year, a trend that will abate only when we redouble our efforts to shore up our defenses.

The Cybersecurity and Infrastructure Security Agency's (CISA) office here in New York works with industry stakeholders to provide resources and tools to reduce the prevalence and impact of these cyberattacks and to build resilience into their operations. As October first marked the start of the 20th annual Cybersecurity Awareness Month and the launch of CISA's **Secure Our World** program, there's no better time than now for conversations about cybersecurity.

I'll discuss the objectives of the Secure Our World program and its importance to the manufacturing sector in a moment, but in name alone it should resonate with those in the industry: Security is a primary operational consideration for manufacturers of all sizes – the physical security of offices, plants, personnel, and proprietary information and data is front of mind for every owner



Technology manufacturers can play an especially impactful role in Securing Our World by implementing security features in their products that are built-in by design.

and operator. More and more, however, those physical security processes rely on internet-connected systems or networks and that technology plays a role in everything that keeps an organization secure - from communications equipment, security cameras, and access control systems to the very grid networks that power them.

We depend on this technology functioning well to keep our people and our facilities safe. How effective would it be in the event of a cyberattack?

I mention this to underscore the fact that cybersecurity is security. Full stop. A robust and resilient cybersecurity program is foundational to overall security in every organization, large or small.

In an industry steeped in security vigilance, how is it then that cyberattacks against manufacturers continue to grow?

The answer is that cyberspace is particularly difficult to secure due to a number of factors: the ability of malicious actors to operate from anywhere in the world, the linkages between cyberspace and physical systems, and the difficulty of reducing vulnerabilities and consequences in complex cyber networks.

As CISA Director Jen Easterly put it, “The digital threat landscape continues to evolve at an alarming rate, and yet many individuals and organizations have yet to evolve their digital hygiene practices at the same pace.”

The **Secure Our World** program aims to bridge that gap and provide individuals and organizations with the knowledge and tools they need to stay one step ahead of cyber threats by driving behavioral change of the most critical cybersecurity habits. Small and medium-sized businesses face unique challenges, so CISA is working to help them **Secure Our World** by offering tools and resources that can help keep our businesses, employees, customers, and ultimately, our communities safer.

For those businesses, driving behavioral change to integrate four key areas of cyber hygiene into day-to-day operations is critical to Securing Our World:

- Using strong passwords.
- Enabling multifactor authentication on all accounts that offer it.
- Recognizing and reporting phishing.
- Updating and patching software.

Remarkably, practicing these simple and straightforward behaviors could prevent the majority of cyberattacks, with phishing being the number one means through which criminals accessed manufacturers’ systems in 2021 and 2022, according to the IBM Security report. Additionally, phishing-related data



collected during CISA Assessments has shown that within the first 10 minutes of receiving a malicious email, 84% of employees took the bait by either replying with sensitive information or interacting with a spoofed link or attachment, and only 13% of targeted employees reported the phishing attempts.

The good news is that manufacturers are building cybersecurity into their overall security plans more and more. A 2022 Manufacturing Leadership Council survey found that 62% of surveyed organizations had a formal cybersecurity plan in place, nearly double the number reported in 2018. The bad news, of course, is that 38% of surveyed manufacturers are still missing this critical element in their overall security picture.

CISA’s Cybersecurity and Protective Security Advisors here in New York are available to provide an array of no-cost services, resources, and assessments to support manufacturers in building cyber threat prevention and resilience into their security plans. As an agency built on collaboration, the organizations who work with CISA do so voluntarily and on their terms, knowing that the

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information they provide will be protected. CISA can also develop and conduct tabletop cybersecurity exercises for your organization, provide general cybersecurity awareness training, and our advisors are available to speak to your workforce or security-focused events.

A few actions every manufacturer can take today to Secure Our World:

- Use strong passwords and a password manager. Passwords should be at least 15 characters long, unique to each account and, preferably, randomly generated by a password manager or computer.
- Enable multi-factor authentication (MFA) across all internet-facing accounts and services. Ensure everyone in the organization is using MFA on their accounts and devices, particularly for webmail, virtual private networks, and accounts that access critical systems.
- Avoid social engineering and phishing attacks. Educate personnel to recognize phishing (malware embedded in an email link), vishing (gleaning information to access systems via a phone call) and smishing (malware embedded in a text link) attempts and what they should do if they see something suspicious.
- Keep all operating systems, software, and firmware up-to-date. Enabling automatic updates and timely patching are among the most efficient and cost-effective steps an organization can take to minimize its exposure to cybersecurity threats.
- Use a reputable anti-virus and malware product and keep it up-to-date.
- Ensure devices accessible to the internet are properly configured and that security settings are enabled and kept up to date.
- Implement a recovery plan to maintain and retain multiple copies of sensitive or proprietary data and servers in a physically separate, segmented, and secure location.
- Maintain a current and tested Incident Response Plan to help quickly mitigate and recover should a ransomware or other cyber intrusion occur.
- Regularly visit [StopRansomware.gov](https://www.stopransomware.gov) for a wide variety of resources to raise your organization's cybersecurity awareness, and to stay up to date on the latest alerts and advisories regarding current threats.

The manufacturing industry is critical to the economic well-being of the nation, and its success in defeating cyber criminals is critical to our national security. Securing manufacturing secures our nation and secures our world.

To connect with your CISA advisors in New York or to learn more about CISA's resources, email CISA Region 2 at CISARegion2@cisa.dhs.gov. Learn more about Region 2 at CISA Region 2.

All organizations should share information on incidents and unusual activity at [Report to CISA](https://www.reportto.cisa.gov) | [CISA](https://www.reportto.cisa.gov) or by going to [CISA.gov](https://www.cisa.gov) and clicking

the "report a cyber issue" button at the top of the page. Alternatively, you can reach CISA's 24/7 Operations Center at report@cisa.gov or (888) 282-0870, or the FBI via your local FBI field office or the FBI's 24/7 CyWatch at (855) 292-3937 or CyWatch@fbi.gov.

Additional Resources:

- **CISA Cybersecurity Awareness Program Toolkit** provides resources for all segments of the community.
- **CISA's Cyber Essentials** is a guide for leaders of small organizations and agencies to develop an actionable understanding of where to start implementing organizational cybersecurity practices.
- **Critical Manufacturing Sector Resources** CISA identifies, assesses, prioritizes, and protects manufacturing industries with national significance to prevent and mitigate the impact of manmade or natural disasters.
- **Cross-Sector Cybersecurity Performance Goals (CPGs):** CISA developed the CPGs to help critical infrastructure prioritize investments where they are most likely to achieve high-impact cybersecurity outcomes. The CPGs can be especially helpful for healthcare and public health organizations that have gaps in expertise, resources or capabilities.
 - o **Cross-Sector Performance Goals Checklist:** As you get started on the CPGs, look through this checklist to help prioritize and track your organization's implementation.
- **CISA's Cybersecurity Advisors (CSAs)** offer cyber security assistance to critical infrastructure owners and operators and State, Local, Territorial, and Tribal (SLTT) officials. CSAs introduce organizations to various CISA cyber security products and services, along with other public and private resources, and act as liaisons to CISA cyber programs. CSAs can provide cyber preparedness assessments and protective resources, working group support, leadership, partnership in public-private development, and coordination and support in times of cyber threat, disruption, or attack.
- **CISA's Protective Security Advisors (PSAs)** are trained subject matter experts in critical infrastructure protection and vulnerability mitigation. They facilitate local field activities in coordination with other Department of Homeland Security offices and Federal agencies. They also advise and assist state, local, tribal, and territorial (SLTT) officials and critical infrastructure owners and operators, and provide coordination and support in times of threat, disruption, or attack.

Sources:

CISA Insights - Cyber Threats to Critical Manufacturing Sector Industrial Control Systems

NIST - Cybersecurity for the Manufacturing Sector

IBM Security X-Force Threat Intelligence Index 2023 | IBM

Manufacturing was the most targeted sector for ransomware attacks in 2022

CISA Phishing Infographic

Manufacturers Are Getting Tough on Cybersecurity – Nat'l Assoc of Manufacturers

John Durkin is the Cybersecurity and Infrastructure Security Agency Region 2 Regional Director.



WHAT ARE YOU READING?

HV Mfg asked the manufacturing community to recommend a book, article, or podcast that impacted them personally or professionally.



Anthony Campagiorni –
Senior Vice-President,
Customer Services and Gas
Operations - Central Hudson

The Title: *Wisdom of Our Fathers*

The Authors: Tim Russert

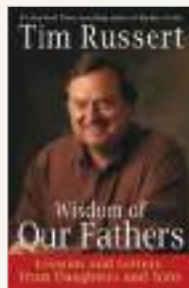
A Brief Summary: This book was a follow-up from Tim Russert's New York Times #1 best seller. *Wisdom of Our Fathers* is a wonderful collection of storied memories from sons and daughters about their fathers. The stories surround many common themes and topics about dads including honor, teacher, discipline, hands, and of course baseball. The book was an easy and delightful read that no doubt will bring back memories of your dad.

In What Ways Did You Find It Valuable or Impactful:

I am usually reading business books about leadership or energy issues. But, this book was particularly impactful to me both as a father and as a son.

I was given the book when I was a young father. Yet somehow, I couldn't find the time to read the book while my daughters were toddlers, adolescents, or even young teens as the days seemingly raced by at an ever-accelerating pace each year and it always felt like there with endless amounts of "things" to do rather than read. As my daughters enter their senior year of high school (they're twins), the stories in *Wisdom of Our Fathers* remind me that every interaction—maybe even the little things more so than the big ones—can be meaningful in a child's life. And, no matter how fast they grow up or how old we become, I will always be dad and everything that I do matters. It especially reinforced that showing up and being present really matters.

The book was also impactful in reminding me about so many great lessons from my dad (and indeed how there were so many common, wonderful traits that many dads shared with their children.) My dad passed away last year, and the book stirred so many emotions of gratitude, praise, laughs, and tears about my own dad. I saw him within so many of the stories written in *Wisdom of Our Fathers*.



Garrett Noach –
Vice President of Manufacturing
Lamothermic Corp.

The Title: *The Goal*

The Author: Eliyahu M. Goldratt

A Brief Summary:

The Goal is an excellent read that teaches the concepts of the Theory of Constraints, via a story of plant manager, Alex, who is at risk of closing his business's doors. Alex's company is facing poor on-time deliveries, plummeting employee morale, and declining efficiency. With an urgency to increase throughput, lower inventories, and increase overall profitability, he utilizes the theory of constraints to identify opportunities to improve his business operations.



In What Ways Did You Find It Valuable or Impactful:

This book is the book that hooked me into becoming a reader! Recommended to me by someone unenthusiastic about conventional "business books," *The Goal* lives up to its reputation. *The Goal* is an easy read that explains ideas in a way anyone can understand through an interesting story.

Though the book talks about several key concepts, Goldratt emphasizes a mission critical point: every system has a weak link that affects its performance, and you must fix it. On a regular basis, I find myself going back to the basics that this book lays out. This story has a special spot inside my head that constantly reminds me why it's so important to always improve, set clear goals, and understand constraints to make your business succeed.



Neil McGill –
Director of Operations
Allendale Machinery Systems Inc.

The Title: *The Ideal Team Player*

The Authors: Patrick Lencioni

A Brief Summary: *The Ideal Team Player* by Patrick Lencioni outlines three vital virtues for effective

teamwork: humility, hunger, and people smarts. Lencioni stresses the importance of nurturing individuals with these traits to optimize collaboration and achieve organizational success.

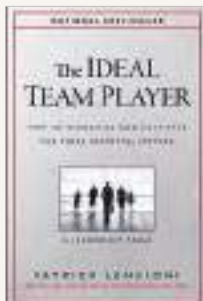
Humility involves putting the team's needs above one's own and acknowledging one's limitations.

Hunger signifies a strong work ethic, drive, and ambition.

People smarts covers interpersonal and emotional intelligence, allowing for effective collaboration and understanding of how your actions effect those around you.

In What Ways Did You Find It Valuable or Impactful:

Patrick Lencioni does a great job using a fable in the first part of his books to help introduce and explain his ideas. The storytelling aspect allows you to breeze through the book and makes it easy to relate the issues found in the book to your organization. While reading the book you find yourself thinking how obvious it is that the virtues Lencioni lays out are important to a successful team, but then you realize how most of our organizations prioritize so many other things over them.



After reading the book you start to analyze yourself and your team and start to understand better why certain members work so well together and why others struggle. Since reading the book I have been using the hiring guide questions in interviews and it is amazing how the simple questions really help to draw out a person's true personality. At first the questions felt out of place and got some strange looks from candidates. But, as we continued to use them we started to find that "Ideal Team Players" actually started to enjoy the questions and really thought about how to respond. On the flip side those candidates that were not ideal team players usually had short answers or did not understand the questions at all.

While we have only started using some of the tools from the book, and we must do more work organizationally to really optimize how we use the concept, I find myself thinking about the concepts and they have started to help frame my responses to different situations.

As a business leader *The Ideal Team Player* provides you with an easy to follow road map for identifying and cultivating the traits in your organization that lead to a more cohesive, productive, and successful team dynamic.

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**Dr. Alison Buckley –
President SUNY Ulster**

The Title: *Re-Creating the Corporation: A Design for Organizations for the 21st Century* (1999)

The Author: Russell L. Ackoff

A Brief Summary: Ackoff's clear and accessible prose challenges us to think about democracy in the workplace. He advocates for participatory decision-making. He blends theory with very practical examples to serve as a catalyst for integrating work and life. While some suggestions seem impractical, Ackoff hated offices and thought everyone should work in big rooms; he was a visionary who remains inspiring. He succinctly states his leadership philosophy: "*The transformational leader is one who can create an organization that reunifies life, who integrates work, play, learning, and inspiration*" (p. 291). Ackoff's approach to leadership remains both relevant and provocative.

In What Ways Did You Find It Valuable or Impactful:

Many years ago, when I worked at the Wharton School at the University of Pennsylvania and was decidedly the junior member of my team, I was asked to pick up one of our faculty emeriti at 30th Street Station. Professor Ackoff was coming to campus to speak with a group of European executives on campus for a leadership development program. He no longer drove and was less stable on his feet, so my boss asked me to provide transportation. He and I spoke little on the short drive back to campus. My boss made it clear that my reward for the task was the chance to sit in on his class. I did. I will never forget the first time I heard him speak. Generally acknowledged as the grandfather of systems thinking, he challenged nearly every assumption I had about organizations. While my academic training had been in labor history, Russ Ackoff made me want to go to business school. This summer, I found myself re-reading several of his books but lingered over *Re-Creating the Corporation* (1999).



Like many sectors, higher education is grappling with change accelerated by the pandemic. Our students and colleagues are coming back to our college communities. Processes, operations, and communications are different in a post-pandemic world, and frankly, we have had years of being apart, working in distributed environments. Ackoff offers a powerful reminder that in a system, the most important focus is the intersection of the parts. It really is about working together and acknowledging that individual actions impact the whole.



**Harold King – President
The Council of Industry**

The Title: *Mao: The Unknown Story*

The Author: Jon Halliday and Jung Chang

A Brief Summary: The wife and husband team of Jung Chang (who also wrote *Wild Swans*) and Jon Halliday depict "The Great Helmsman" as a cruel tyrant who did not even believe in the ideology, he imposed on China in the latter half of the 20th century. The book summarizes Mao's transition from a rebel against the autocratic Kuomintang government to the totalitarian dictator over the People's Republic of China. The authors pay particular attention to Mao's role in the planning and the execution of the Great Leap Forward and the Cultural Revolution and place the responsibility for the deaths of more than 40 million people from those events squarely on his shoulders.



In What Ways Did You Find It Valuable or Impactful:

The United States' rivalry with the Peoples Republic of China is heating up and will likely continue for decades to come. One of the areas that rivalry has - and will - play out is in the manufacturing sector so it makes sense to learn more about our rival. This book provided an eye-opening look at China's most important and influential leader, as well as perhaps its most important historical figure, Mao Zedong.

The book traces Mao's rise from his early days in the communist party in the early 1920s to his ascendance to Party Chairman and president of the PRC and onto his death in 1976. That rise is characterized by a single-minded quest for power and control that was often brutal and had little or no regard for human life. It was difficult for my "Western mind" to grasp that the folly of the Great Leap forward and the resulting widespread starvation was allowed to proceed unchecked. Nor was it easy to fathom the absurdity of the cultural revolution and the manipulation of socialist principles to murder millions. That said, having the details of those events laid out through the stories of people who survived them and hearing them in the context of Mao's quest for power, desire to free China from Western dominance and restore it to a prominent role in world affairs provides valuable insight to the how and why of China's actions in the world today – be the economic, social, or political.



Steven Howell – CPA
Director RBT CPA's, LLP

The Title: *The 2020 Commission Report on the North Korean Nuclear Attacks Against The United States*

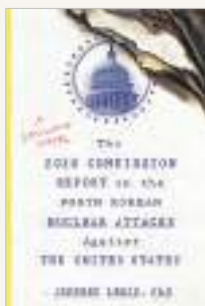
The Author: Jeffrey Lewis, PhD

A Brief Summary:

A speculative novel which depicts the horrific events of a nuclear war which happened on March 21, 2020. “North Korea’s accidental shoot down of a South Korean airliner, the retaliatory strike by Seoul, and the tweet that triggered vastly more carnage” are authored by Jeffrey Lewis, PhD in a way that makes you realize how vulnerable the human race is to war, destruction, and ultimately the loss of many human lives.

In What Ways Did You Find It Valuable or Impactful:

A long-time client of mine handed me this book during tax season and expressed what a great read it was. After forty years of reading many leadership, management, and behavioral science books, I thought it was time for a change. This book makes you mindful of the real dangers and tragedies of a nuclear war. That the wrong set of circumstances can set off a string of events that may possibly lead to enormous devastation and death.



Although this book was written pre-Covid in 2018, it somewhat parallels much of what the world experienced with the Corona Virus. The loss of life that affected almost all families, the financial burden placed on the country, and the unification of people working together to overcome this deadly disease. The impact it had on all of us was so real. The events of a nuclear war would be even more dramatic. Loss of life would be much greater than Covid and the world would face a time of unparalleled challenges and recovery. No matter what your view on war is, this book will challenge your thinking and leave you hoping that we never experience the use of nuclear weapons.



Peter Stanway – CEO
Selux Corporation

The Title: *Lying for Money*

The Author: Dan Davies

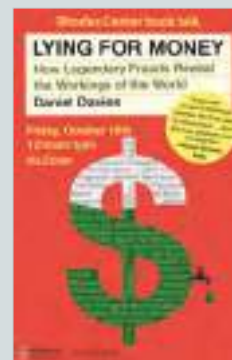
A Brief Summary: Whilst researching a distant relative that had brought bankruptcy upon American Express in the 1960s with one of

America's biggest scandals, “The Great Salad Oil Swindle”, I came across *Lying for Money*. The account of the swindle is nicely detailed in this book, along with many other examples of lying, fraud, and fiscal deception in corporations and financial institutions. Davies’ book is a journey into this corruption, the aim being to better place the reader to understand how fraud works and to manage risk to their own business or employer.

In What Ways Did You Find It Valuable or Impactful:

We all know that the Council of Industry is the champion of ethical business practice and that every member strives to perform work within the bounds of integrity. However, we live in a world where every business is under attack, whether this be the constant threat of hacking, ransomware attacks, or just plain old scammers having a go to take our hard-earned cash away from us.

When I ran businesses in the United Kingdom, security was about preventing physical threats related to the assets of the business. We always had the best intruder alarm systems, barbed wire fences, and bars on windows to prevent physical losses. On moving to the U.S., I noticed that people tend not to be as concerned about the physical threats. The imminent threat seems to come in a different guise, in the form of trickery. After reading *Lying for Money*, I feel more alerted to how businesses and managers can be vulnerable. Now, I’m locking my doors at night AND lying awake thinking about where the next trickster is coming from. My suspicions regarding distant Uncle Tino were also confirmed – he was in it up to his neck!





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Gus Scacco – Chief Executive Officer & Chief Investment Officer
Hudson Valley Investment Advisors, Inc.

The Title:
George Marshall Defender of the Republic

The Author: David L. Roll

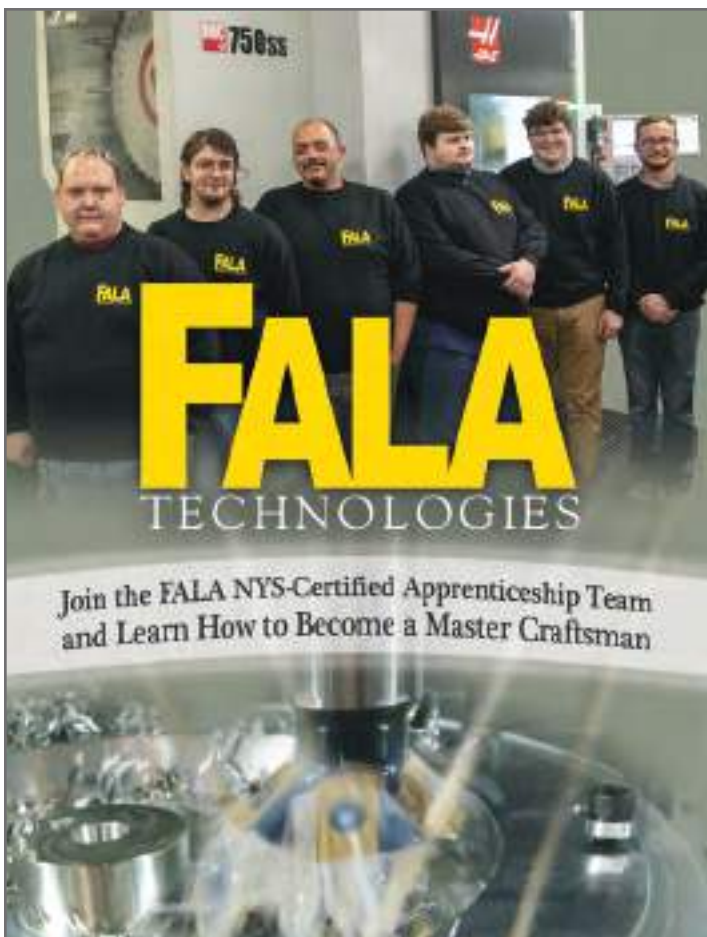
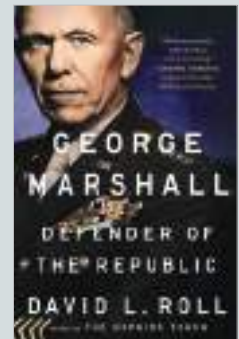
A Brief Summary: An account of the life of arguably one of the greatest leaders and statesmen in U.S. history. Throughout his career, George Marshall was admired for his insights and leadership in helping navigate the United States to victory in two world wars. He also helped to prevent the spread of communism in Western Europe and expanded free market economies by instituting the Marshall Plan.

In What Ways Did You Find It Valuable or Impactful:

I enjoy reading about leadership and now regard George Marshall as an understated leader. His impact was not just felt in the United States but globally. Marshall successfully rose through the ranks of the United States Army to become Chief of Staff of the U.S. Army under Presidents Franklin D. Roosevelt and Harry Truman, then served as Secretary of State and Secretary of Defense under Truman. He was routinely lauded by Winston Churchill for his leadership in the Allied victory in WWII.

The book chronicles a person of unselfish leadership. At one point during his career, Marshall was being pushed to run for the President of the United States as well as lead the Allied Forces in WWII. He declined both in pursuit of the “greater good.” During WWII Marshall stayed in Washington D.C. to work closely with Roosevelt and to push appropriations through Congress to advance U.S. war efforts. He also directed investments and logistics and acted as an intermediary between Churchill, Stalin, and Roosevelt to establish and maintain the allied plans for victory. Not surprisingly, many of the world leaders Marshall worked with were demanding and often difficult. Nonetheless, Marshall was adept at building consensus and keeping them focused on the issues at hand. As Secretary of State after WWII, he advocated for and put in place a economic recovery plan to help post-war Europe. This plan became known as the Marshall Plan and was a major reason he was awarded the Nobel Peace Prize.

The book is filled with examples of George Marshall’s dedication, organization, and unflinching decision-making, which I found to be inspiring. I personally rely on his consensus-building mantra in my personal and professional life.



LEADER PROFILE

KELLY LYNDGAARD, FOUNDER & CEO UNSHATTERED | WITH HV MFG STAFF

LEADING WITH PURPOSE

KELLY LYNDGAARD AND THE WOMEN OF UNSHATTERED



HV Mfg sat down with Kelly Lyndgaard, founder and CEO of Unshattered, a 501(c)3 social enterprise organization. Unshattered provides second-chance employment opportunities for women who have experienced addiction and come out the other side. Unshattered believes that a pathway to economic recovery is just as essential as the physical and psychological healing from addiction. By providing employment and job skills training in a community of like-minded women and continued dedication to ongoing personal and professional development, they see women remain sober and reach their full potential.



Maria, Business Architect and Operations Manager, staffing the boutique.

HV Mfg: Thank you for talking with us. Let's start with the basics - tell us about Unshattered.

KL: Thank you for the opportunity! Unshattered is in the business of second chances. We are a not-for-profit social enterprise that manufactures premium handbags. Our mission is to 'end the addiction relapse cycle by providing pathways toward economic independence and sustained sobriety.' We hire women who are overcoming extremely difficult circumstances. All are overcoming addiction – but that addiction is only part of their stories. They have also experienced some combination of trafficking, abandonment, abuse, and incarceration. And, we teach them a wide range of skills to produce the bags, from pattern making and sewing to marketing, production, and leadership.

Being a social enterprise we have a double bottom line. One is to produce products people will buy at a price that sustains the organization. The second is to provide growth and development for the women who work here – to show them there is a world of opportunity for them and that there are resources available to help them be successful.

HV Mfg: We understand you are an engineer by training. Tell us about your journey from that profession to this one.

KL: I *am* an engineer by training. I grew up in Pennsylvania and went to college in Indiana at Taylor University where I studied engineering and physics. When I graduated, I went to work for

IBM in Rochester, Minnesota. I loved it. During my career, I worked on a series of projects including Blue Gene/P (which, at the time in 2008, was the world's fastest supercomputer), and strategy and M&A for IBM's Systems division. My last role was as an executive leading database product management for DB2 and Informix. Also during my time at IBM I met my future husband and moved to the Hudson Valley.

HV Mfg: That is an impressive start with Big Blue. It sounds like you were on track to a senior-level position. What changed?

KL: Thank you – it was exciting and I loved my career there. What changed was, one Sunday I heard a woman who was recovering from addiction speak at our church. I was raised to believe that if you work hard and behave you will be rewarded. I was pretty sure that the solution to addiction is to – you know – 'stop sticking a needle in your arm' and 'get a job.' But this woman's story challenged my preconceived ideas. Emily grew up with a single mom who was frequently sick and at 8 years old she was already helping to care for her mother and siblings. A 15-year-old neighbor thought it would be 'funny' to watch an 8-year-old get high. Her life quickly fell apart. Addiction and homelessness followed. Hearing her story hit me like a ton of bricks. How can I, or anyone else, hold someone accountable for their irresponsibility when their addiction began when they were just a child?

I started to do some research – I do have that engineering training you know and am a problem solver by nature – and I learned a

lot about addiction and about the people who struggle with substance abuse. One thing I learned is how extremely difficult it is for people to maintain their sobriety for the long term. What a challenge it is for them to leave a year-long recovery program and then reenter the same environment where their addiction started.

During my research, I was introduced to an amazing local 365-day residential recovery program. I met women who were working so hard to overcome their addictions – to understand and tackle its underlying causes. I was amazed by their strength. I wanted to help.

I am also a crafter and a ‘maker’ and a few years earlier I had made a bag out of my grandfather’s coat as a way to remember him. It occurred to me that if I could teach the women to make bags out of recycled materials, the way I had, perhaps they would also find it rewarding and therapeutic.

I was unprepared for the impact of making something beautiful, and having someone pick it up and admire it, would have on these women. How something lit up inside them. They were radiant. I could see the power being creative offers. We set up a workshop



Kaylene, Seamstress and Leather Specialist, constructing a handbag out of a retired West Point Cadet uniform.

and started a project making bags out of upcycled materials.

Doing this during treatment was certainly helpful, but it wasn’t enough. Recovery programs do amazing work helping people get to sobriety, but they don’t address what I call the “Day 366 problem.” There is a gap between getting sober, and maintaining sobriety for the long term. It started to become obvious that women without education, job skills,

or a safe community to return to after recovery, were at huge risk of relapse and death. At first, I thought that helping them get good employment was the solution. We added a 6-month internship, offering the women a good reference. But, the reality was we were not solving the problem of a safe community to go back to. At the time, I was still in my executive role with IBM and I was conscious that the bag-making enterprise was growing. We were selling more bags, and the work was getting more sophisticated.

HV Mfg: So, you just quit your day job?

KL: Pretty much, yes. I quit my day job.

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HV Mfg: That took some courage.

KL: Honestly, at that point it would have taken more courage not to. I really felt compelled to help. And, for all the trappings of the corporate world, for all the rewards it was offering, I just knew this was where I belonged.

HV Mfg: Let's talk about the business side of the model. How do you balance the craftsmanship and customization these beautiful high-end bags require with the need for efficiency?

KL: That really is a challenge and kind of where our "double bottom lines" come together. On the one hand, we are seeking efficiencies to be economically healthy and sustain our operations. On the other hand, it is important that the person making the bag has ownership of it – that it is hers – and that we prioritize the employee's long-term success. We are always working to find some efficiencies, but when those two things collide we will choose the individual's development and ownership every time.

HV Mfg: With that in mind, tell us about the "secrets" in each bag?

KL: As I mentioned, all our bags are handcrafted from something discarded. The bags represent second chances for both our materials and the women who work with them. Each one also contains three secrets unique to that particular bag. Secret one is the we hide a message written in the inside of the liner from the woman who made it. The message is something meaningful to her; perhaps a verse, her number of days of sobriety, or a blessing for the future owner.



Lois, Lead Designer and Textile Specialist, selecting fabrics from Unshattered's collection of reclaimed materials.

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Second, the bags are named for people who are still struggling with addiction. We receive names from organizations like *She Has A Name* and *Faces of Change* in Camden, NJ, which work with individuals still on the streets. We let our customers know they are carrying their bag in honor of someone we hope finds healing, just like the women on our team have.

Finally, we include a gold seam sewn into each bag. This is a nod to Kintsugi which is a Japanese art form that takes broken pottery and repairs it with a gold lacquer. Its point is to show that breakage and repair are just part of life – it highlights and emphasizes imperfections. I think this is a perfect allegory for what we do here at Unshattered.

HV Mfg: Talk about the shifts you are seeing in the fashion industry and how you are adjusting to meet them.

KL: I'm seeing in our industry the same trends shaping the economy as a whole. And a lot of those work to our advantage. Organizations and the people who work for them, as well as customers, are putting an emphasis on environmental sustainability. They want products that are built to last and do minimal harm to the environment. At Unshattered our bags are made from repurposed materials. Some of our most popular bags come from repurposed leather donated by Southwest Airlines from the seats on their planes. We also make bags from West Point cadet uniforms that are donated when they graduate.



Reina, Unshattered's newest Seamstress, learning to sew.

A part of the focus includes energy sustainability. As you can see, we are in the process of renovating this building and will be emphasizing energy efficiency and renewables. We are working with Mass Design in Poughkeepsie to ensure that our building is highly efficient. It is also part of the 'Design for Freedom' movement led by Grace Farms. That movement seeks to ensure that all the materials used in construction are free of any forced labor in their supply chains.

From a pure fashion point of view, because we are such a small shop and do so much customized work we believe we are nimble enough to adjust quickly to any changes in customer tastes.

HV Mfg: How many women are working at Unshattered today?

KL: We have 12 women working here. The goal is to have as many as 50 in five years and we have already added two since May 1st of this year. This new facility will allow us to expand our operation. The demand for the product is there. People appreciate our mission. But, they also appreciate the quality and the beauty of the bags we are making. It's also true that there are many women out there who would greatly benefit by being a part of Unshattered. There is a tremendous need and I think we can – over the next three to five years – grow the business enough to need that many employees.

HV Mfg: How would you describe your leadership style? Have you had to adjust it to be successful here?

KL: I describe myself as a strategist. I am pretty good at organizing complex situations, setting goals and putting together plans to get to the desired outcomes. That has served me well so far here at Unshattered. Starting an organization from scratch, identifying the "double bottom line" to produce products to support the organization while also providing growth and development for the women who work here, has proven pretty complex. But, I think I am meeting that challenge.

I like to think that I am always evolving as a leader and always trying to hold myself accountable – the same way I hold others accountable. We use a "Balanced Scorecard" model for me - and Unshattered.

HV Mfg: Tell us more about that – What does a Balance Scorecard look like here?

KL: A Balanced Scorecard model is basically a holistic system for managing strategy when an organization has competing priorities. It provides a framework that gives organizations a way to "connect the dots" between the various components of strategic planning and management. Even though we are relatively small, we are fairly complex and the model gives us a visible connection between the projects and programs that we are working on. It also gives us the key performance indicators we need to measure our progress and success.

HV Mfg: We know you have worked to cultivate partnerships to support the organization. You mentioned Southwest Airlines – who are some of the others?

KL: There are so many! Yes, I mentioned Southwest Airlines and we are very proud to be part of their "Repurpose with a Purpose" program. I also mentioned Mass Design. They have been great in helping us with the renovation of this building. I also want to mention Ten Yards, global experts in fashion production and supply chains. They have been really instrumental in getting our production up to where it needs to be. They have helped with the layout of our operation, making sure our workstations

and equipment are effectively deployed. They understand our double bottom lines and have really helped us achieve them.

Marist has also been an incredible partner and our relationship is mutually beneficial. Their professors and staff have generously contributed their expertise, opened up their classrooms to focus student projects on our work, and introduced us to incredible industry partners. Marist prioritizes community impact and real-work student experiences. And, this generation of students is committed to social impact through their work. We're giving students the opportunity to truly influence a growing organization and show them that it's possible to use business for good.

And of course, we appreciate the support the Council of Industry has given us. In particular we appreciate your leadership development program. A handful of our women have participated in the training and it really has been transformative for some of them. Part of our role is to instill confidence in these women. The *Certificate in Manufacturing Leadership* helps them better understand themselves and how they relate to others and gives them valuable problem solving and communication skills. A few will be participating in your *Lean Six Sigma* training this fall too. All of it helps build confidence, and just as important, helps us be a more effective and efficient operation.



Jillian, Seamstress and Quality Control Manager, performing the 18-point quality control process for finished handbags.

HV Mfg: We are very proud to support Unshattered in both its bottom lines. Thank you for all you do and for taking some time to speak with us today.

KL: Thank you – I appreciate the opportunity to share our story with your readers.



Amberlee, Photographer and Shipping Manager, showing off a bag that incorporates the seatback pocket from a Southwest Airlines plane.

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Photo caption (L-R):
Jim Willis (owner)
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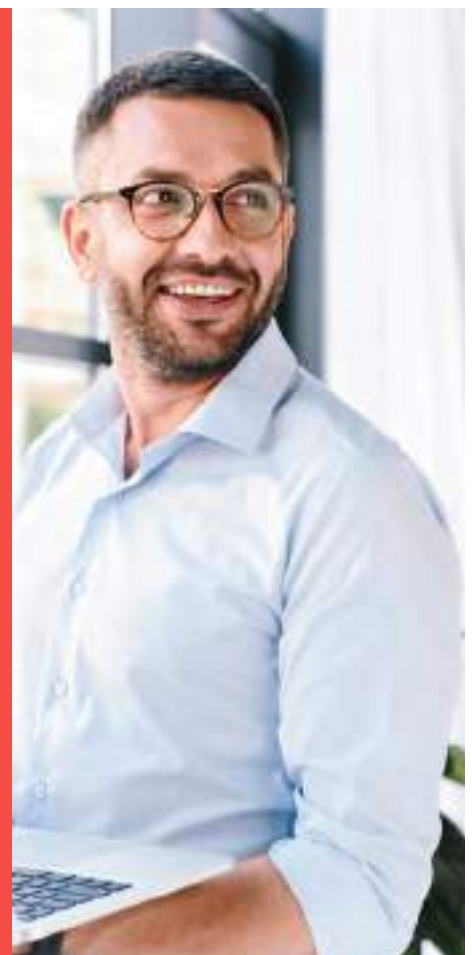
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COMPANY PROFILE

BALCHEM CORPORATION | BY TAYLOR DOWD

FEEDING THE FUTURE: HOW BALCHEM IS REVOLUTIONIZING THE FOOD SYSTEM



Martin L. Reid, Chief Supply Chain Officer, and Renee McComb, Director, Corporate Human Resources.

INTRODUCTION

In the ever-changing world of manufacturing, technological advancements and innovative solutions are driving the sector forward. One global health and nutrition company that stands at the forefront of this progress is Balchem Corporation (Balchem). Headquartered in Montvale, NJ, and with manufacturing and R&D facilities in Orange County, Balchem provides solutions that keep your loaves of bread fresh as well as solutions that prevent disease in the crops that end up on your dinner plate.

With a strong focus on cutting-edge technologies and a commitment to improving various markets, Balchem has established itself as a key player in making the world a healthier place. Martin L. Reid, Chief Supply Chain Officer, and Renee McComb, Director, Corporate Human Resources at Balchem, speak on the company's commitment to research and development, product markets and solutions, and the company culture.

Balchem, founded in 1967, is a global leader in the development, manufacture, and marketing of nutrition and health products. Balchem's impressive holdings include 21 manufacturing sites, seven technology centers, and seven regional offices. Balchem's sites are spread across the world, which vary in size — ranging from as few as 10 employees to as many as 200, while the company totals approximately 1,300 employees. In 2022, Balchem made \$942 million in revenue.

Its portfolio includes solutions for human and animal nutrition, as well as various industrial applications.

Human nutrition and health, which entails nutritional supplements, food and beverages, and infant and toddler formula, accounts for 56% of Balchem's sales and portfolio. Balchem develops choline (an essential nutrient), vitamin K2, and chelated minerals. The company's technologies are used to create ingredients, vitamins, and products for clients in the bakery, beverage, cereals, confectionery, dairy, dietary supplements, meats, and snacks markets. Animal nutrition and health, comprising dairy, poultry, swine, companion animals, and aquaculture, accounts for about 28%. This sector focuses on nutritional solutions, which include choline production, nutrient encapsulation, chelated minerals, and functional ingredients. Specialty products, which focus on various industrial applications, like medical device sterilization, nut and spice fumigation, and plant nutrition, make up 14% of sales. Under the Specialty Products umbrella, Balchem's Plant Nutrition business unit offers highly bioavailable foliar-applied chelated minerals and specialty micronutrients, known as Metalosate®, to the agricultural market.

BALCHEM'S TECHNOLOGY

One of Balchem's standout achievements lies in its mastery of microencapsulation technology. This process involves creating tiny particles that can encapsulate active ingredients, protecting them from external factors and ensuring controlled release.

Microencapsulation offers improved efficacy and enhanced product performance. "That's really the foundation of Balchem — that microencapsulation technology," says McComb. "It serves many purposes, but a few areas it can help with are taste masking, shelf-life preservation, and controlling the molding process in breads."

Balchem's Albion® Minerals brand improves mineral utility and enhances bioavailability; the VitaCholine® brand offers the health advantages of high-quality choline. Elevating nutrient delivery, the VitaShure® line of microencapsulated ingredients amplifies nutrient potency, prolongs shelf-life, and enhances flavor. Balchem serves the food, supplement, and pharmaceutical markets, with customers who have household names.

"Depending on our clients' needs, we can offer many different solutions based on our microencapsulation and other technologies," says McComb.

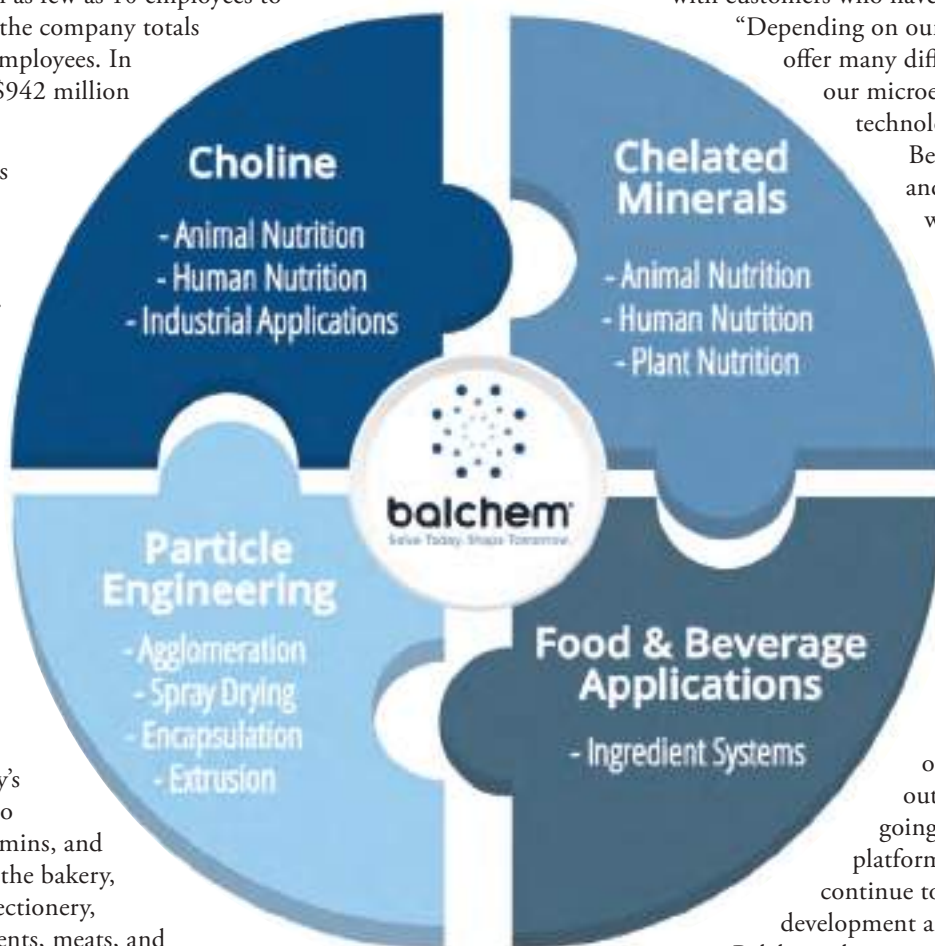
Before Balchem's products and ingredients are shared with clients or reach the shelves of stores across the country, there are countless hours put into conducting research, development, and testing. "There's a significant amount of R&D that goes into what we do. Our head of R&D, Mike Sestrick, and his team are looking at not just maintaining the things that put us on the map but putting out new technology that's going to help build on the platform of our products and continue to help with new product development and sales," says Reid.

Balchem also partners with universities to perform studies on emerging technologies and products. "We're really big on research to try to make sure that we're staying current and can come up with the next best thing to offer to our customers," says Reid. "We have done so many studies and so much work internally to understand our products, and we want to make sure people are aware of the nutritional value of our products."

McComb adds that Balchem is committed to fully standing behind its products and research.

THE IMPACT OF A LEADER

Originally from Jamaica, Reid grew up in the Bronx, and has lived on the east coast ever since. He studied chemical engineering at Rensselaer Polytechnic Institute before earning an MBA from Eastern University. Reid began an internship with Procter & Gamble in 1988 before being recruited as a chemical engineer the



following year. Since then, Reid has earned 35+ years of experience in manufacturing operations in a supply chain. He holds an impressive resume, with experience at some of the most iconic brands in the world, such as Godiva Chocolatier, Estée Lauder, Campbell Soup Company, and Covidien (now Medtronic).

Reid has carved a distinguished path in the realms of consumer goods and healthcare. When Reid learned about the open role at Balchem, which largely involves processes like chemical processing, food manufacturing, and packaging, he knew he had found an excellent fit. He began his Chief Supply Chain Officer role in February 2021.

Since starting for Balchem, Reid has navigated changes across the industry, from the COVID-19 pandemic to The Great Resignation and supply chain volatility. He credits his team for their attitude and ability to persevere. “At Balchem, it’s all about collaboration, understanding what we need to do to support each other, how we grow, how we manage our people, and support our people for the development, retention, and growth,” says Reid.

Planning and anticipating potential market changes is a big part of the equation at Balchem, Reid explains. “You need an



Innovating & collaborating together.

operating philosophy or strategy because you can't have an answer for everything all the time. We have a strategic plan that takes into consideration what must happen in order to drive employee safety, deliver quality products while managing our cost and service to our customers,” he says. “Ultimately, you have to trust your people, and trust that they're going to make good decisions, do what's right, and collaborate.”



Slate Hill Aerial photo - Balchem's original manufacturing facility which manufactures microencapsulated ingredients for the food industry that are mainly used in Bakery, Confectionery, and Meat applications to extend shelf life, control food ingredient interaction within its environment, and mask unwanted taste and flavor

During and in the aftermath of COVID, Balchem remained steady from a supply chain standpoint, and the growth of some areas in the company outweighed a temporary slowdown of others. For example, Human Nutrition Products saw significant growth, which helped prevent other areas of the company from down trending. “[COVID] was really just grinding it out,” Reid says. He explains the lessons from the pandemic have helped the team make decisions in the aftermath. Demand skyrocketed from normal quantities, and Balchem conducted analyses to determine trends, understand how to manage raw materials, handle labor, manufacture products in a timely manner, and determine which changes are and are not sustainable. “We had to be agile and ready to think on our feet and pivot,” Reid says. “Post-COVID, you leverage these things to optimize your costs, supply, and inventory, and really know your own supply chain. Now that things are stabilizing, we’re ready to supply and support our customers.”



Balchem develops concepts that use realistic costs for ingredients and processing, including the ability to test for commercial feasibility.

THE CULTURAL FIT

Balchem has cultivated a unique workplace environment that empowers its workforce to push boundaries, explore new territories, and innovate. The team abides by five core values, the foundation of Balchem’s people and products: Always doing the right thing; thinking big and acting small; collaborating and growing together; playing to win; staying focused on the customer. This culture is more than a mere ethos — it is an undercurrent that inspires Balchem’s team each day. Reid and McComb agree that finding people who emulate these values is crucial to upholding Balchem’s success.

McComb emphasizes that these values are a significant part of the hiring process. “I think the right culture fit is important because we may have a candidate who looks great on paper and has all the right skill set, but through the interview process we may determine they are not going to fit well into our culture,” she says. “We truly believe in a culture with dignity and respect. It’s all on how we communicate, treat one another and ensure we are always doing the right thing, our first core value.”

Reid looks for specific traits during the interview process, which he feels serve as an important gateway to what a candidate’s future at Balchem will hold. McComb adds that the company looks for candidates whose traits can develop and grow on the job. “I think the people who will develop well here at Balchem are people who are driven and passionate, have the willingness to do what it takes to get a job done safely and ethically,” she says. “That person also needs to be accustomed to wearing multiple hats, because we still run lean as an organization.”

Team mentality is paramount at the company. “We want people who are going to work as a team, and those who understand that it’s not really about them. It’s about what we collectively have to do,” Reid says. Balchem’s culture, however, is one of inclusion and diversity. “The cultural fit goes both ways, though. I think where companies fail sometimes is they will either dismiss an employee or a potential employee because they don’t ‘fit the culture.’ We

want people who are not just identical to everyone else — we want diversity of thought and diversity of background and experience.”

Balchem shows further commitment to its team by awarding annual scholarships to the children of employees, called the Balchem Sons and Daughters Scholarship Program. Since the program’s inception in 2005, it has provided \$178k in scholarship funds.

BUILDING BETTER

Despite competitors with strong presences in other regions, Balchem is a force in North America. Balchem distributes 77% of its products to North America, with a distribution rate of 15% to Europe and 8% to other areas (Latin America, Southeast Asia, etc.). “As our company grows, we need to make sure we understand how to increase distribution outside of North America and Europe so we can grow those other areas,” Reid says. “We want to better understand our supply chain network.”

In 2021, like many other firms, Balchem lost many of its employees. “At the time, I had been with the company for 15 years, and in my experience, I had never seen so many white-collar employees leave the organization,” says McComb. We definitely experienced the effects of The Great Resignation firsthand.” Because innovation and growth are at the forefront of Balchem’s goals, the company is growing and seeking exceptional talent to upskill its workforce. “Keeping and retaining talent is something that looks different post-COVID,” Reid adds. “If we want to grow, we need to have the right talent.”

Montvale serves as an ideal headquarters location because of its proximity to NYC and closeness to larger industries, as well as its talent pool. Balchem recently partnered with LinkedIn Learning to build out training plans for individuals, while Reid is rolling out leadership training to managers to help drive consistency and development. “From a retention standpoint, we are committed to the growth and development of our employees,” McComb says.

Communication is key, and an area that Reid has seen improve significantly over the years. “Our teams have done a great job in being able to communicate and understand one another and how each department function plays a role in our overall success,” he says. “Bringing in new leadership over these last several years has really helped foster that teamwork and collaboration, and it’s just made us a more impactful company for our clients and our employees as well.”



Martin L. Reid and Renee McComb collaborate.

On the backend of the company’s work is a sustainability commitment, which highlights efforts surrounding three pillars: People, Planet, and Profit. The company is committed to reducing its greenhouse gas emissions and global water use by 25% each by 2030. Balchem is a member of United Nations Global Impact, supporting its 10 principles on human rights, labor, environment, and anti-corruption. *Newsweek* Magazine named Balchem one of **America’s Most Responsible Companies** in 2021, 2022, and 2023.

WHAT’S TO COME

Looking ahead, Balchem will continue to work on product innovation and leveraging its brand and social media presence. It remains focused on organic growth as well as pursuing acquisitions. As the company grows and evolves, Reid emphasizes keeping people at the forefront. “I could not do what I’m doing without having strong leaders surrounding me,” he says. “Each department function plays a role in our overall success, and we’re all here for the same common goal. We will continue to foster teamwork and collaboration to make us a more impactful company not just for our customers, but for our employees too.”

Taylor Dowd is the Communications and Marketing Coordinator at the Council of Industry.



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THE EFFECTS OF THE GREAT PEOPLE SHORTAGE ON THE HUDSON VALLEY



The Hudson Valley will confront a serious labor shortage over the next two decades as lower births, a wave of retirements, and decades of outward migration drive down our full-time population.

The leading edge of this trend is hitting us now, and the symptoms are everywhere.



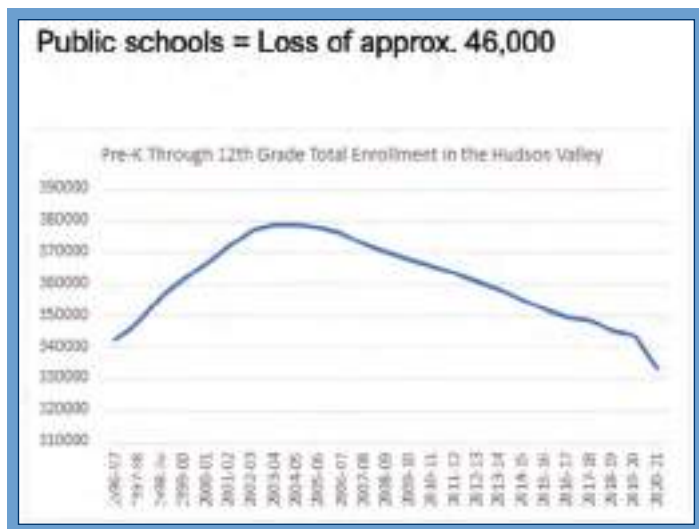
Hospital executives cannot find enough local nurses, forcing them to hire contract nurses from elsewhere at double or triple the cost. At least three school districts in our region have eliminated some bus routes because they cannot find enough drivers. Many restaurants have posted signs that ask their customers for patience because they are short on kitchen and wait staff. My hometown last year posted a help-wanted ad for an operator at the wastewater treatment plant, but six months later we had exactly zero applications. Years after being constructed, many of the new warehouse and shipping centers across the region still have A-frame signs on the highway soliciting employees and promising large signing bonuses.

All these are symptoms of shrinkage in our regional labor pool.

Earlier this year, our research team at Hudson Valley Pattern for Progress investigated this trend and published a report – The Great People Shortage and its Effects on the Hudson Valley – to underscore the demographic forces that are causing our labor stress.

“The Great People Shortage” is a phrase coined by economists who are tracking a global trend of declining births in all the major industrialized countries, including China, Germany, the United Kingdom, and the United States. To keep global and local populations flat, families must have an average of 2.1 children. The birth rate in all the industrialized countries has dropped below that threshold in recent decades. Here in New York, our families are averaging 1.55 children – a number that points to relatively significant population decline in the decades ahead.

The advertisement is split into two main visual sections. On the left, a large blue circular graphic contains the Fair-Rite logo (a stylized 'F' and 'R' inside a circle) and the text "Fair-Rite Products Corp." in white. Below this, it says "Manufacturing in Ulster County for 70 years" in a mix of white serif and script fonts. At the bottom of the circle, it reads "To keep up with Fair-Rite's Products: Job Opportunities, Product Offerings and how we can continue to be Your Signal Solution®" and "Check out FAIR-RITE.COM". On the right, a photograph shows a male worker wearing a dark cap, safety glasses, and a dark jacket, operating a piece of industrial machinery with a digital display screen.



On a net basis, the Hudson Valley now has 3,000 fewer annual births than it did in 1997. Most of our counties have seen their births drop by 20-35 percent during that time. For example, families in Dutchess County had 3,399 babies in 1997. Births dropped steadily over two decades, and by 2019 families in Dutchess only had 2,699 children, 700 fewer than a generation ago.

The trend of fewer births has resulted in plummeting school enrollments across the Hudson Valley. Over the past 25 years, school enrollment across the region has dropped by 34,088 children. There are 120 school districts in the Hudson Valley, and 97 of them are currently shrinking. In fact, every school district in the counties of Columbia, Dutchess, Greene, Putnam and Ulster have seen their enrollments decline since 2007. The majority of school enrollments in Orange, Rockland, Sullivan and Westchester are also shrinking significantly.

Despite these trends, we still hear people opposing direly needed housing projects by yelling that “we cannot afford to have more children in the schools.” This bizarre rallying cry is nonsense, and those who carry this myth to planning board meetings are only advocating for our communities to hollow out as kids become fewer and fewer. We should always consider legitimate opposition to land-use projects in our region, but the misguided argument against kids should be corrected and dismissed at the door.

The trend of fewer births across the Hudson Valley is paired with a second problem: more people have moved out of our region than into it for 24 of the past 25 years. During that time, the Hudson Valley has lost a net of 134,505 people to outward migration. (Migration is the movement of people county-to-county, and state-to-state across the United States.) Most people leaving the region in the 2020s are moving just over the border to neighboring states like New Jersey or Pennsylvania, or heading south to Florida and the Carolinas. When movers from the Northeast were surveyed by the U.S. Census Bureau, they cited housing as the No. 1 reason for leaving our area.

Fewer births, outward migration, and a wave of retirements among workers in the Baby Boomer

generation have yielded a workforce crisis that is being felt across every industry sector in the Hudson Valley.

Population data and projections underscore that our labor pool is getting smaller and smaller.

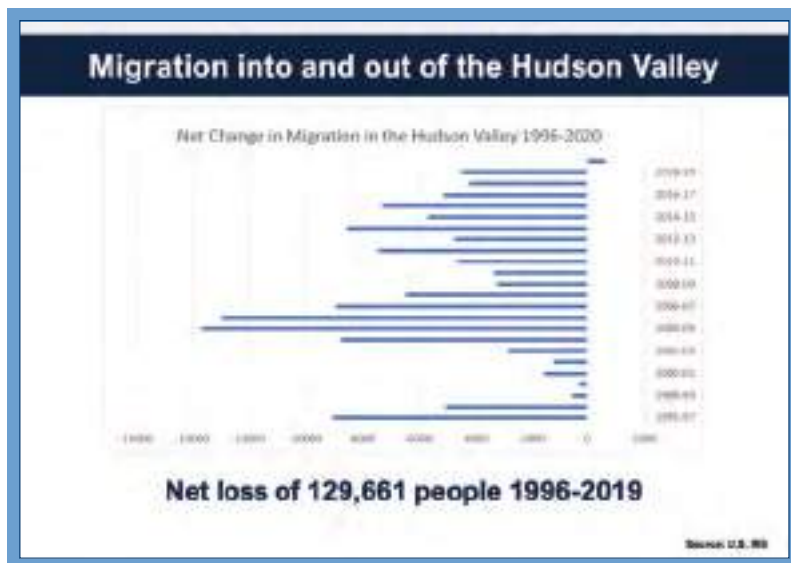
Our research team analyzed the number of people in the Hudson Valley between the ages of 25-64. The cohort of people ages 45-64 outnumbers the younger half, ages 25-44, by 99,770 people. What does that mean? For every person who retires in the Hudson Valley, we only have a fraction of a person entering the workforce behind them. As the decades pass, this trend will shrink the pool of people from which our businesses can draw workers.

Unfortunately, data show this problem will worsen over the next 20 years. The number of infants, children and teenagers living in the region has also dwindled considerably over the past decade. In fact, there were 26,335 fewer children and teens living in our region in 2021 compared to 2010. That trend – a consequence of lower births and families leaving the region – points directly to fewer workers in the future.

The great people shortage in the Hudson Valley comes with real consequences for our communities, businesses, and civic society.

The labor shortages we feel now will become worse. The trend toward fewer people also means fewer customers, which could lead to small-business closures and other consequences. The Hudson Valley has been very successful at attracting businesses to the region over the past 20 years, but local, national and international companies will not continue to set roots in the region if we do not have an ample supply of well-trained workers.

Our people shortage will pressure school districts to close additional buildings as enrollments drop, and stretch thin the group of volunteers who serve in our fire districts, ambulance corps, and Little Leagues. Our aging population in the Hudson Valley means that more and more people need healthcare services, but our shrinking workforce is yielding fewer and fewer people to work in that industry, creating a tension between demand for healthcare and the supply of people to work as nurses, doctors and lab techs.



People should never avoid bad news about their health or their finances.
It is a cruel coincidence that human nature is to avoid both.

We cannot let that happen in the Hudson Valley. The great people shortage drives directly to the core of our regional health and economy in too many ways. Let's see these trends with open eyes and open minds, and work together on evidence-based solutions that can alleviate them.

Paired with our housing crisis and climate change, the great people shortage will likely be the defining challenge for the Hudson Valley over the next two decades. The solutions are not easy, obvious, or guaranteed to work, but there are some common-sense actions that require the attention of our leaders in every corner of civic society.

Housing is imperative. We do not have enough housing. The housing we have is too expensive for most of our neighbors. And our local codes and review processes make it very difficult to build more of the housing we direly need. Unless we can unlock the market and incentivize the development of housing

Higher education is the second largest industry cluster in the Hudson Valley. Tens of thousands of young people come to study at our colleges and universities every year, but the region does not have a coherent plan to reach those young people, introduce them to jobs in the region, and convince them to stay. Empire State Development, SUNY, I LOVE NY, and workforce experts should collaborate on a comprehensive plan to keep college students here and connect them with employers who need them.

As we confront our people shortage, it is also important to acknowledge that births, migration, and immigration are the only three factors that can flatten our downward trend. Experts interviewed for our research took a particular interest in immigration. With births steadily lower and migration pointing outward for more than two decades, immigration might be our only chance to fill the widening gap in our labor force. It is frustrating we have no state or local control over immigration, but we should certainly pester our federal representatives to work toward a more rational, organized system that could bring the next generation of immigrant Americans into our region.

I will admit it. The data look gloomy.

I remember once listening to a radio interview with an economist who said that people should never avoid bad news about their health or their finances. It is a cruel coincidence that human nature is to avoid both.

for people across the entire spectrum of income and need, our people will continue to move to other places that offer affordable apartments and starter homes. Both are endangered housing species that are nearing extinction in the Hudson Valley.

Taxes are a second challenge. People who move just over the border to neighboring states save anywhere from \$2,800 to \$4,000 on property taxes for a home valued at \$400,000. Those who move south save \$6,400-\$8,000. New York has not entertained a serious discussion about property taxes since state lawmakers adopted a tax cap more than a decade ago. People who care about their wallets are voting with their feet and going elsewhere.

Two other opportunities hold some promise.

We cannot let that happen in the Hudson Valley. The great people shortage drives directly to the core of our regional health and economy in too many ways. Let's see these trends with open eyes and open minds, and work together on evidence-based solutions that can alleviate them.

Adam Bosch is the President & CEO
at Hudson Valley Pattern for Progress.



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ARTIFICIAL INTELLIGENCE IN MANUFACTURING: UNLEASHING THE NEXT INDUSTRIAL REVOLUTION

Editor's note: We hear a lot about Artificial Intelligence and its impact on various industries. In seeking an expert to write on the subject it occurred to us to go right to the source – so we asked ChatGPT to “Write a 1200-1500 word article for the Council of Industry HV MFG magazine about the future of artificial intelligence in the manufacturing sector.” Below is the result. While we see some holes, and some things we would have done differently, we believe it is, on the whole, pretty good. Tell us what you think.



The manufacturing sector has long been a hotbed of innovation, driving economies, and shaping societies. Today, the industry stands at the precipice of an unprecedented transformation, poised to embark on the next industrial revolution powered by Artificial Intelligence (AI). In this deep-dive article, we explore the intricate facets of AI's future in manufacturing, examining how it's revolutionizing everything from design and production to workforce dynamics and sustainability.

SMART FACTORIES: WHERE AI MEETS THE PRODUCTION LINE

Real-Time Optimization: Smart factories represent the pinnacle of AI integration in manufacturing. These high-tech hubs leverage AI, the Internet of Things (IoT), and data analytics to create highly connected and responsive production environments. Machines, processes, and systems communicate seamlessly, enabling real-time optimization. Production lines adjust settings autonomously based on real-time data, ensuring peak performance around the clock.

The manufacturing industry's future is unfolding today, and it's nothing short of a thrilling revolution.

– **Case Study: Bosch's Industry 4.0:** Bosch has embraced the concept of Industry 4.0, transforming its manufacturing facilities into smart factories. AI-driven data analysis optimizes production processes, reducing energy consumption by up to 15% and maintenance costs by 30%.

Predictive Maintenance: Predictive maintenance is a game-changer. AI algorithms analyze data from sensors and machinery to forecast equipment failures. Maintenance schedules are adjusted proactively, minimizing downtime and maximizing productivity.

– **Case Study: Siemens' Predictive Maintenance:** Siemens employs AI-powered predictive maintenance in its factories. By accurately predicting machine failures, they've achieved a 10-20% reduction in downtime and a 20-30% decrease in maintenance costs.

Resource Efficiency: Sustainability is a driving force in manufacturing today, and AI plays a vital role in achieving it. AI fine-tunes processes to reduce waste, lower energy consumption, and decrease the environmental footprint.

– **Case Study: Toyota's Sustainable Manufacturing:** Toyota has integrated AI and automation into its manufacturing processes, reducing carbon emissions by 15% and water usage by 40%. They're also aiming for zero waste to landfill.

Quality Assurance: AI-driven quality control systems are redefining quality assurance. Computer vision and machine learning algorithms inspect products with unmatched precision, reducing waste and ensuring superior product quality.

– **Case Study: Foxconn's Automated Inspection:** Foxconn, known for manufacturing Apple products, uses AI-powered robots for product inspection. This has improved accuracy and reduced errors by 30%.

AI-ENHANCED DESIGN AND PROTOTYPING: A CREATIVE RESURGENCE

Generative Design: The design phase is undergoing a revolution thanks to AI. Generative design algorithms explore countless design variations, optimizing for factors like strength, weight, and cost. This not only speeds up product development but also results in innovative designs that human engineers might not conceive.

– **Case Study: Airbus' Bionic Partition:** Airbus used generative design to create a bionic partition that was 45% lighter and reduced CO2 emissions by 66% compared to conventional designs.

Simulation and Prototyping: AI simulates product performance under various conditions, reducing the need for physical prototypes. This not only saves time and resources but also allows for more accurate and reliable product testing.

– **Case Study: GE's Jet Engine Design:** GE used AI simulations to optimize the design of a jet engine components, reducing weight by 10% and increasing fuel efficiency.

Customization and Personalization: Consumer demand for customized products is growing. AI-driven manufacturing systems can efficiently produce customized products in small batches. By analyzing customer data and preferences, AI guides the production process, enabling personalized products at scale.

– **Case Study: Adidas' Custom Shoes:** Adidas offers custom shoes through its Speedfactory. AI-driven design and production allow customers to personalize their shoes, resulting in higher customer satisfaction and loyalty.



AI serves as a valuable decision support tool for human workers. Workers can make more informed choices, ultimately driving efficiency and productivity.



HUMAN-AI INTERACTION AND WORKFORCE DEVELOPMENT: A NEW COLLABORATIVE ERA

Collaborative Robots (Cobots): AI is not supplanting human workers; it is enhancing their capabilities. Collaborative robots, or cobots, work alongside humans safely, handling repetitive and hazardous tasks. This frees human workers to focus on more complex and creative aspects of their jobs.

– **Case Study: BMW's Human-Robot Collaboration:** BMW employs cobots in its factories. Cobots work alongside human workers, performing tasks such as lifting heavy objects. This reduces the risk of injury and enhances productivity.

Training and Skill Development: Human-AI collaboration extends beyond the factory floor. AI-driven training programs, often using virtual reality (VR) and augmented reality (AR), offer immersive learning experiences. These programs help workers acquire new skills efficiently, empowering them to adapt to evolving manufacturing technologies.

– **Case Study: Siemens' AR Training:** Siemens utilizes AR-based training to upskill workers. This technology helps new employees quickly become proficient in complex tasks, reducing training time by up to 60%.

Creating Possibilities for Women in Recovery Using discarded materials to transform lives

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Decision Support: AI serves as a valuable decision support tool for human workers. AI-driven analytics provide insights that inform decision-making, from supply chain optimization to production scheduling. Workers can make more informed choices, ultimately driving efficiency and productivity.

– **Case Study: Ford's Supply Chain Optimization:** Ford uses AI to optimize its supply chain. This has resulted in a 25% reduction in unplanned downtime and a 50% decrease in transportation costs.

Ethical Considerations: As AI becomes more integrated into manufacturing decision-making processes, ethical concerns, such as bias in algorithms, must be addressed. Companies must ensure that AI systems are designed and managed ethically, respecting the rights and well-being of their workforce.

– ***Case Study: IBM's Ethical AI*:** IBM has developed guidelines for ethical AI deployment. They prioritize fairness, transparency, and accountability in AI systems to ensure they benefit all stakeholders.

THE CONFLUENCE OF SMART FACTORIES, AI-ENHANCED DESIGN, AND HUMAN-AI INTERACTION

The true power of AI in manufacturing emerges when these three pillars seamlessly intersect:

Efficiency Overdrive: Smart factories integrate AI-designed products into their production processes. Real-time optimization ensures that changes in product design or production requirements are rapidly accommodated. Human workers and AI systems evolve together, fostering a flexible and efficient manufacturing process.

Innovation Acceleration: AI-driven design innovation accelerates product development. By allowing AI to explore unconventional design solutions, companies can push the boundaries of what's

possible. The result is a portfolio of breakthrough products and solutions that redefine industry standards.

Human-Centric Technology: The synergy of human-AI collaboration is underpinned by a focus on human well-being and skill development. Workers are liberated from mundane tasks, allowing them to focus on creative problem-solving and higher-level responsibilities.

Competitive Advantage: Manufacturers that embrace the trifecta of smart factories, AI-powered design, and human-AI collaboration gain a formidable competitive edge. They deliver superior products, swiftly adapt to market changes, and optimize their operations. This positions them for success in an ever-evolving manufacturing landscape.

CONCLUSION

The future of manufacturing is not just a promise on the horizon; it is a dynamic and tangible reality. Driven by AI, smart factories, AI-driven design and prototyping, and the evolution of human-AI interaction and workforce development are the cornerstones of this transformation. Together, they are reshaping the manufacturing sector, making it more efficient, innovative, and adaptable than ever before.

The fusion of AI-driven efficiency, creative design innovation, and human-AI collaboration is not just a blueprint; it's the very essence of the future of manufacturing. It's an era where imagination meets reality, where machines and humans co-create, and where efficiency transcends conventional limits. Manufacturers that embrace this paradigm shift are poised for unparalleled success in the swiftly evolving landscape. The manufacturing industry's future is unfolding today, and it's nothing short of a thrilling revolution.



Manufacturers that embrace the trifecta of smart factories, AI-powered design, and human-AI collaboration gain a formidable competitive edge.

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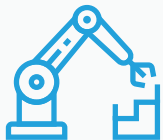
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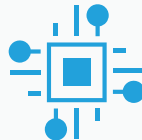
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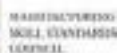


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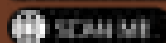
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