

HV Mfg

FALL 2013

LEADERSHIP PROFILE

**Gretchen
Zierick**

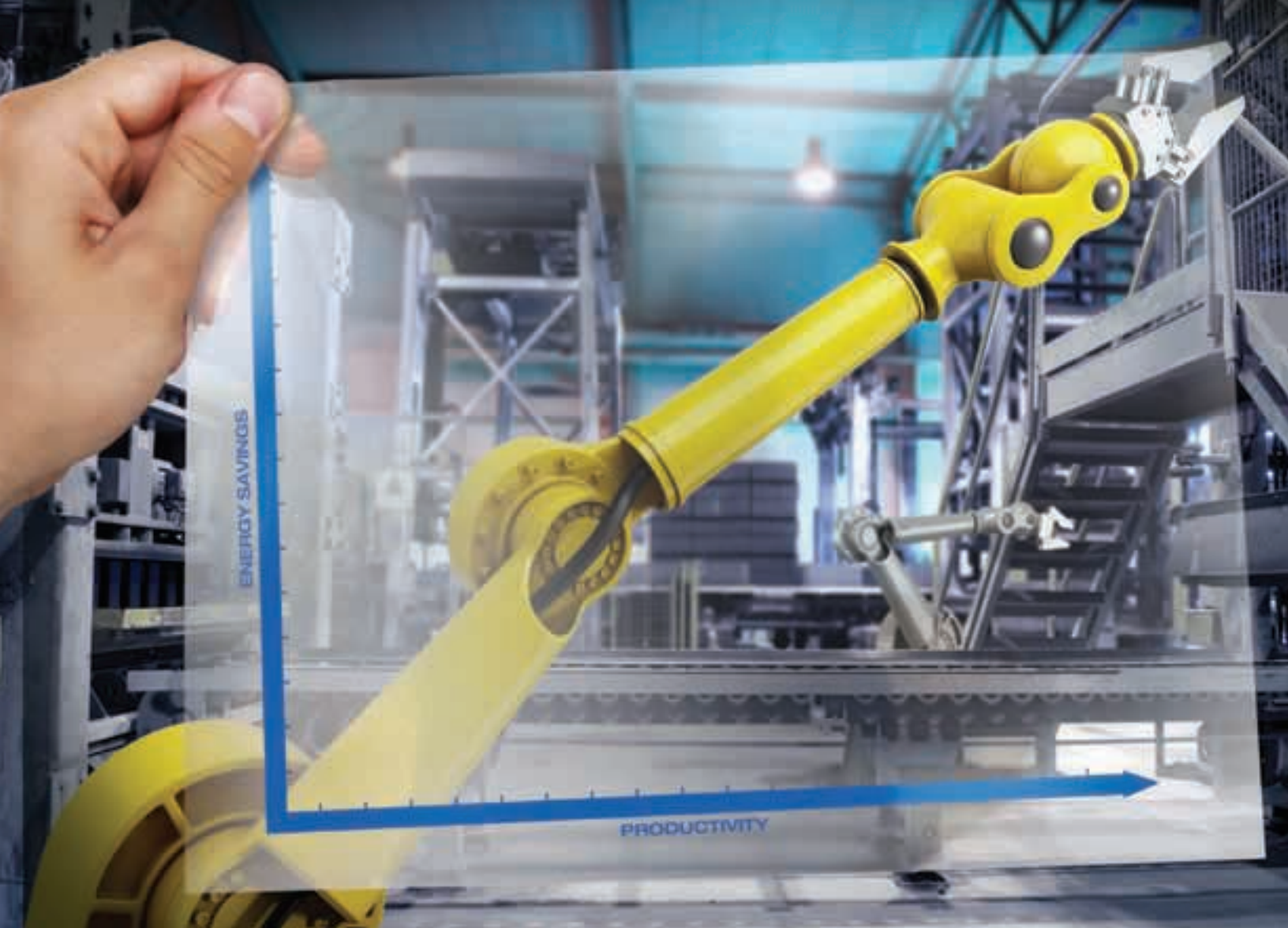
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INSIDE THIS ISSUE OF

HV Mfg

5 | Letter from the Executive Vice President

On the need to adapt.

7 | Legislative Issues

The tipping point for immigration reform is at hand.

11 | Pressing for Growth

The Manufacturers Alliance goes to Washington and two congressmen come to meet with the Council of Industry's Board of Directors.

16 | A Willingness To Try New Things

An interview with Gretchen Zierick, President and CEO of Zierick Manufacturing Corp.

19 | Always Light

Selux Corporation invests in training and creativity to keep its lighting products competitive and cutting edge.

27 | Making Room for the Millennials

Whatever their faults, members of the Millennial generation are the future of manufacturing and a way must be found to nurture them.

29 | Hiring the Right People

Ideas to help build a successful recruiting strategy.

33 | Measure Twice, Cut Once

Planning, intelligent use of space and putting safety first can lower costs and help make investment in an industrial project more profitable.

37 | The Rise of the 3D Printer

The Hudson Valley 3D Printing Initiative draws together the resources of manufacturing and university to unleash the potential of this new technology.

41 | Resources — A listing of elected representatives, and government and private sector organizations of use to our members.

50 | Advertisers Index

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Harold King
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DEAR READER

The Need to Adapt

MANUFACTURING IN OUR REGION continues its slow growth. New technologies and global economic circumstances have created a new business climate for Hudson Valley firms. For some, this climate seems dangerous and inhospitable, and they have found it difficult and painful to adapt. However, many more have adapted by embracing new technologies, developing innovative products, and expanding into new markets.

Today, Hudson Valley manufacturers rely not so much on the sweat and strength of their workers as on their wits and wisdom. They avoid the “commodity trap” by manufacturing high-value-added products which are highly customized and engineered. Today “innovation” is as common a manufacturing term in the Hudson Valley as is “productivity” and “efficiency.”

This issue of HV MFG has several articles that look at how this adaptation is taking place. Our cover story highlights Zierick Manufacturing CEO Gretchen Zierick’s role in leading that company to adapt to this new climate. Our company profile of Selux Corporation shows how that company carefully designs and customizes its lighting products. We also offer articles on utilizing the new, “disruptive” 3D printing technology and on how manufacturers might adapt to take advantage of the millennial generation in their workforce.

This edition also features a list of resources available to assist Hudson Valley Manufacturing firms as they make the changes necessary to adapt and grow. From economic development organizations to educational institutions, government agencies and elected officials, there is a good deal of support for the manufacturing sector and I encourage all Hudson Valley manufacturing firms to reach out to them.

Like our members, the Council of Industry has also adapted to new realities. While our mission remains the same, the way we pursue that mission has evolved. Today we offer our members more and more varied services to help them compete globally. We help them develop their human capital through extensive training and educational opportunities. We provide cooperative purchases of goods and services—including our highly successful electricity consortium—to reduce member costs. We help our members find and develop skilled employees. We promote manufacturing to our elected officials, the media and the public in general so they understand the important role manufacturing plays in our economy. We are taking the lead in forming alliances with other organizations and institutions to better serve the evolving needs of our members.

As we have since 1910, the Council of Industry will continue helping Hudson Valley manufacturers adapt and prosper. 

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The Tipping Point for Immigration Reform

The Immigration Reform Bill that passed in the Senate contains many positive provisions for manufacturers and action on it in the House could come this fall. Meanwhile, employers should be aware that the Department of Homeland Security has intensified its I-9 inspections nationwide.

The Border Security, Economic Opportunity, and Immigration Modernization Act of 2013 (S.744)—a bipartisan comprehensive immigration reform bill—passed by the Senate on June 27 of this year, has been lauded by the business community for proposing significant changes to the nation's immigration system.

The bill provides for increased border security, including funding for 40,000 additional Customs agents nationwide. It also establishes a mechanism for the legalization of the more than 11 million undocumented aliens. Of crucial significance to the business community is the provision creating a guest worker program to address the business community's need for temporary workers. Regarding legalization, the bill creates a process by which individuals present in the U.S. unlawfully would be allowed to adjust their status to "Registered Provisional Immigrant Status" if they meet certain criteria and pay a penalty.

In spite of the benefits to the business community from increased

H-1B visas (rising from 65,000 to at least 115,000), Green Card backlog relief, and a guest-worker visa program for temporary lower-skilled workers, the bill imposes certain burdens on employers. It makes E-Verify mandatory for all employers, over a five-year phase-in period, and establishes a national online job registry where employers would have to post all jobs and recruit US workers before sponsoring foreign nationals for the most common types of work visas.

Despite the Senate's passage of S. 744 by an overwhelming 68-32 bipartisan vote, prospects for legislative immigration reform remain dim. The Republican-controlled House of Representatives has eschewed

the comprehensive approach and endorsed a "step-by-step, piecemeal, and enforcement-focused approach. Four limited proposals addressing discreet parts of the "broken" immigration system (agricultural guest workers, E-Verify, enforcement of immigration laws by state and local law enforcement, and increasing the number of skilled-worker visas) have been introduced. While a number of these bills are popular with employers, notably absent from the House bills is a proposal for dealing with the estimated 11 million illegal aliens currently in the country. With the resignation of Homeland Security Secretary Janet Napolitano, hope rests with the next Secretary being capable of working across party lines to build trust and create a comprehensive solution that can appeal to majorities in both houses of Congress.

Now is the time to advocate for reform

The window for reform may be closing quickly. Some have said that Congress has until December to pass a bill for President Obama to sign. Members of Congress on both sides of the aisle have conceded that it would be tough to get immigration reform done in 2014, an election year. The business community in the Mid-Hudson Valley should consider advocating for reform because it is good for our economy, businesses and families, and will help move us forward together. The message is simple and clear: if you favor reform, let your elected representatives in Congress know now.

As Congress dawdles on immigration reform, employers need to



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Otieno Ombok is a Partner in the White Plains, NY office of Jackson Lewis LLP, specializing in all aspects of employment-based immigration.

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be conscious of significant related developments. For instance, the Obama administration has shown that it will take unilateral executive action, where it legally can, in order to fix our broken immigration system. On the eve of the 2012 elections, the administration initiated a program known as Deferred Action for Childhood Arrivals (DACA) which grants a renewable two-year work authorization to people who came to the U.S. as children, if they meet set conditions. The response to the program has been impressive and already over 500,000 people have applied for DACA. A number of states, including New York, have taken steps to adapt their policies to ensure that more undocumented children qualify for DACA.

Even as employers worry about immigration reform and its potential impact on their businesses, the Department of Homeland Security has greatly intensified its I-9 worksite enforcement activities. Over the last 5 years, the number of I-9 inspections has increased from about 500 in 2008 to over 3000 in 2012. Moreover, the amount of fines meted out against employers has also increased from about half a million dollars to thirteen million over the same period of time.

Immigration and Customs Enforcement (ICE) targets employers who violate employment laws by knowingly hiring illegal workers, or by exploiting or mistreating them. In an I-9 audit, ICE looks for evidence of trafficking, smuggling, harboring, visa fraud, identification document fraud, and money laundering. To facilitate ICE's activity, a new Form I-9, Employment Eligibility Verification was released early this year. Employers are required to verify the identity and employment eligibility of all new hires or existing workers with expired documents on the new Form I-9.

One key feature of the new Form I-9 is that it contains optional fields for employees to enter their telephone number and email address. For employers participating in E-Verify, USCIS announced on July 1, 2013 that if an employee voluntarily provides an email address on the Form I-9, E-Verify will notify the employee directly of a Tentative Non-Confirmation (TNC) at the same time it notifies the employer. Employers should be aware of this new enhancement to E-Verify and establish a sound I-9 verification and compliance system to ensure full compliance with their I-9 and E-Verify obligations.

In light of ICE's heightened enforcement efforts, employers can take a number of measures to reduce the likelihood of being fined for I-9 violations: adopt written procedures providing clear guidance to human resources managers on I-9 compliance issues; appoint a knowledgeable I-9 manager; train I-9 personnel; and take steps to ensure that all contractors comply with I-9 obligations with respect to their employees performing contracted services at the employer's facilities.

They also should take steps to ensure that individuals are not treated disparately or discriminated against, such as by document abuse and over-documentation. I-9 verification can be complex and is fraught with pitfalls for employers. However, employers can minimize errors by establishing and maintaining effective I-9 compliance procedures and administering them in a uniform manner. Conducting regular in-house audits of I-9 records contributes substantially to meeting both of these aims.



The Department of Homeland Security has greatly intensified its I-9 worksite enforcement activities... Employers can take a number of measures to reduce the likelihood of being fined for I-9 violations.

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Pressing a Growth Agenda

The 2013 National Association of Manufacturer's Manufacturing Summit was organized to ensure the voices of the 12 million men and women who make things in America are heard. We were there.

In late July, we joined more than 500 manufacturers in Washington, D.C. as part of the National Association of Manufacturer's (NAM) Manufacturing Summit, to urge members of Congress and the Administration to implement pro-manufacturing policies that will help manufacturers grow and create jobs. House Speaker John Boehner (R-OH), House Energy and Commerce Committee Chairman Fred Upton (R-MI) and Rep. John Larson (D-CT) joined the Summit to discuss the importance of pro-growth policies to make manufacturers more competitive. Additional speakers included former Senators Blanche Lincoln and former Senator George Allen.

"Manufacturers agree with Speaker Boehner that it is unacceptable that America has fallen into the 'new normal' as our economy struggles to recover at the slowest rate since World War II," said NAM President and CEO Jay Timmons. "We are happy to see his focus is on jobs and turning the economy around. This slow pace of growth is unacceptable, and we need action in Washington that will allow manufacturers to grow and create jobs. Manufacturers' Growth Agenda can move us forward to lead our economy."

The Manufacturing Summit was organized to ensure the voices of the 12 million men and women who make things in America are heard. In addition to the engaging discussions with congressional leadership, manufacturers converged on Capitol Hill to participate in more than 200 meetings with policymakers over two days, including our New York Congressional Representatives.

By KARYN BURNS
Council of Industry
Director of Government
Affairs and Executive
Director of the
Manufacturers Alliance
of New York.

"The manufacturing army hit Washington this week to bring ideas, real-life stories and solutions directly to policymakers," added Timmons. "These are critical conversations because manufacturers face mounting challenges that threaten their ability to compete globally and increase the cost of doing business in the United States."



During the Summit, manufacturers met with members of Congress and the Administration to discuss the four overarching policy issues impacting manufacturing competitiveness: tax reform, energy, comprehensive immigration reform and infrastructure. Manufacturers highlighted the need for lower rates to make us more competitive in the global marketplace. As the nation's largest consumers of energy, manufacturers also continue to push for an "all-of-the-above" energy policy that will provide affordable and reliable sources of energy. In addition, NAM members are focused on infrastructure investment and comprehensive



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immigration reform to make us more competitive.

Specifically, our discussions were focused around the NAM's Growth Agenda. This four point plan includes specific initiatives, all progressive legislation, that will help bring our manufacturing sector to the forefront and make it vibrant again. Here is the four point agenda:

GOAL 1: The United States will be the best place in the world to manufacture and attract foreign investment.

- Create a national tax climate that promotes manufacturing in America and enhances the global competitiveness of manufacturers in the United States.
- Embrace an "all of the above" approach to energy production.
- Modernize and invest in infrastructure to help manufacturers in the United States more efficiently move people, products and ideas.
- Ensure-and independently verify that the benefits of regulations justify their costs to manufacturers in the United States.
- Implement common sense, fair legal reform.
- Reduce health care costs for both patients and providers.

GOAL 2: Manufacturers in the United States will be the world's leading innovators.

- Provide a strong, permanent and competitive R&D incentive.
- Support federal research agencies and public and private sector research.
- Recognize IP as the basis of America's innovative economy.
- Develop appropriate general and industry-specific best practices for improved cyber security.
- Support the growth of a healthy information and communication technology ecosystem.

GOAL 3: The United States will expand access to global markets to enable manufacturers to reach the 95 percent of consumers who live outside our borders.

- Promote a global trade policy that opens international markets, enhances competitiveness and reduces regulatory and tariff barriers.
- Reduce trading costs, domestic export barriers and unnecessary red tape.
- Boost exports through improved export promotion programs and export credit assistance for both small and large manufacturers.
- Ensure a level playing field for manufacturers by enforcing trade laws and international agreements.

GOAL 4: Manufacturers in the United States will have access to the workforce that the 21st century economy demands.

- Address regulations and mandates that undermine employer flexibility and ultimately discourage the hiring of new employees.
- Develop a more productive workforce and encourage innovation through education reforms and improvements.
- Enact comprehensive immigration reform.
- Attract the best and the brightest to the United States.

This was our third time participating in the NAM Summit, and I was incredibly impressed with the event. The nationwide representation, the events and speakers, and the engaging discussions on federal issues hindering manufacturing today were both beneficial and rewarding.

For more information on this event and the NAM issues we focused on, please visit our webpage at www.macny.org or the NAM's website at www.nam.org.



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Representatives Sean Patrick Maloney (D-18), left, and Chris Gibson (R-19)

Mid-Hudson Congressional Delegation Meets with Council Board of Directors

In early September, the two Congressmen representing the Mid Hudson, Sean Patrick Maloney (D-18) and Chris Gibson (R-19), met with the Council of Industry's Board of Directors to discuss the issues affecting the Valley's manufacturers. Those issues include simplifying the tax code, coordinating workforce development programs, reforming the regulatory process, improving access to economic development programs, Investing in infrastructure and reducing the cost of energy and health insurance.

"I was impressed by both Representatives' knowledge of our challenges and their commitment to manufacturers," commented Frank Falatyn, President of Kingston based Fala Technologies and Council Board member. "Both seem focused on solving problems rather than scoring ideological points."

Indeed, working across the aisle to make government work more effectively and efficiently was the theme of the evening, with both Congressmen emphasizing their common ground rather than their ideological differences. Representative Maloney pointed to his and Representative Gibson's work on the Farm bill, for which both have "taken flack" from their respective party leadership. But the resulting bill is a good one for Hudson Valley farmers. Both Representatives are part of the national "No Labels" organization, a movement of Democrats, Republicans and Independents dedicated to promoting a new politics of problem solving.

Both Representative Gibson and Representative Maloney encourage each of the Members of the Board, indeed, all Council members, to contact them directly if they have a problem with the bureaucracy, are applying for economic development assistance, or want to share an opinion on a particular piece of legislation. "I work for you," Congressman Maloney said. "That truly is how I approach my job." Representative Gibson added, "I don't care if you have 5 or 500 employees. I want to know what you think and I want to do what I can to help your business grow."

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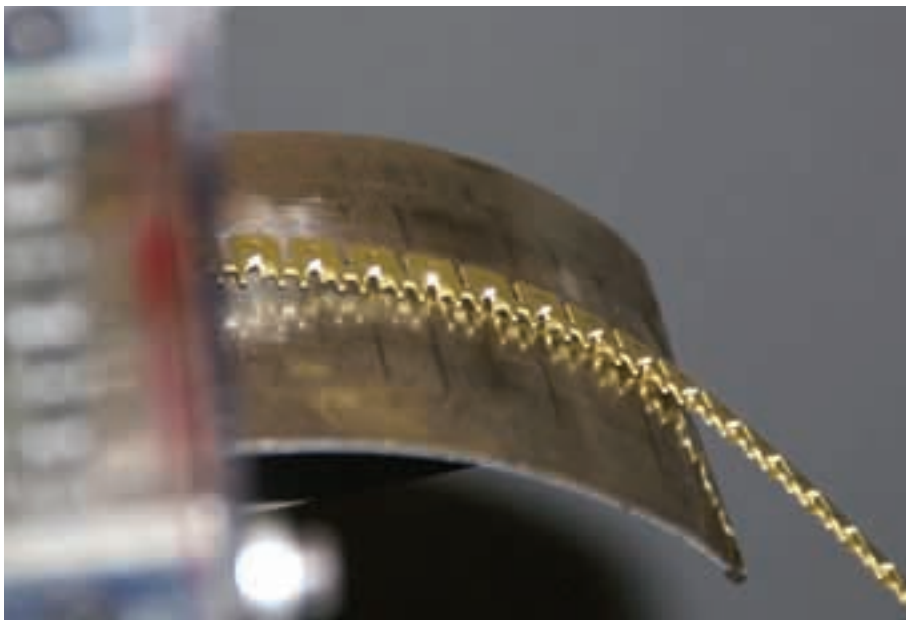
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Gretchen Zierick, President and CEO of Zierick Manufacturing Corporation

A Willingness to Try New Things

HV MFG sat down for a conversation with Zierick Manufacturing Corporation's President and CEO, Gretchen Zierick. We talked about the challenges and rewards of leading a Hudson Valley-based small manufacturing enterprise in today's global economy; being a woman in what is traditionally a male dominated industry; and what the future holds for her and the company bearing her name.





HV Mfg: Tell us a little bit about Zierick Manufacturing.

GZ: The company was started by my grandfather, Frederick R. Zierick, in 1919. He started making metal stampings for crystal radio sets and we grew up with the electronics industry. My grandfather would see an opportunity and he would expand our capabilities. Early on, that meant including plating and tapping. During the Second World War, our product line grew to include rivet terminals, lugs, clips, splices, and many other products for every sector of the electrical and electronics industry, including early circuit boards.

As the world of electronics has changed, so have we. My grandfather ran the company until about 1950, and my father ran it until 2000, when I took over. Today, our parts are found in things like LED panels, medical devices and solar panels.

HV Mfg: Did you always know you were going to work in manufacturing — for the family business?

GZ: I have been working for the company since I was 16 years old. I began as the “Assistant to the Receptionist” and progressed through pretty much every department except press and assembly. I guess I always knew I would end up running the company, so long as I proved to be capable.

HV Mfg: Were your father and grandfather engineers by training? Are you?

GZ: My father was an engineer but not my grandfather – he started the company with only an 8th grade education. Yes, I am a Civil Engineer. I started out taking physics at Mt. Holyoke and transferred to Bucknell after my sophomore year. My father assured me that any engineering concentration was fine, that the general engineering courses—including the math and problem solving—were the same across disciplines. I guess I wouldn’t know if it was otherwise, but I believe I was well prepared to work in the company.

HV Mfg: You became President and CEO in 2000. What changes have you undertaken to improve the company?

GZ: Changing the culture from one of top down decision making to one that works from the bottom up. That was no small task and, frankly, remains a work in progress. For 80 plus years our employees did things a certain way, maybe because they were told to do it that way or simply

because it was “always done that way.” I started to ask them why, to ask them if they had any ideas on how they might do it better, faster, more efficiently. I empowered people to make improvements and at the same time started holding people accountable to make improvements. Some people thrived, others did not. I like to think that today we are a team, that we are all vested together in the success of the company and that makes us a stronger and more responsive company.

HV Mfg: How much of that was driven by your leadership style and how much by necessity? We recall the early 2000’s as being pretty difficult for the domestic electronics industry.

GZ: Both. When I was 16 and working here, we had 35 people and we grew rapidly to over 100. I think that growth, along with my father’s style, led to a top down process. We were cranking out patented parts and we were getting paid pretty

well by our customers, but I always knew we could do better. At the same time, changes in the industry, increased competition from abroad and the slowdown after 9/11 hit us and we needed to adapt. I think the changes that we made also helped us to weather the most recent downturn. In 2010 we were hit very hard by the recession, but we pulled together and made it through.

HV Mfg: What are the challenges for Zierick going forward?

GZ: Honestly, the biggest threat to our success is government regulations and taxes. Sometimes I want to go on strike and head to “Mulligan’s Valley” and join John Galt. But then I remember I have 65 families that rely on the jobs here. We are an “S” Corporation, which means all the income of the business is passed through and paid at the individual rate. We comply with so many regulations, from so many departments, from so many jurisdictions – New York State DEC and DOL, United States EPA, OSHA, and now we also deal with the European Commission and their RoHS directive. Add to all that the MTA tax, crazy property taxes and the paycheck fairness act and it feels like, even though my name is on the sign outside, I no longer have control of the business.

One other critical challenge regards skilled workers – specifically toolmakers. Tool & die makers are critical to our business and the average age of the ones we employ is about 60. We just can’t find any with the necessary skills.

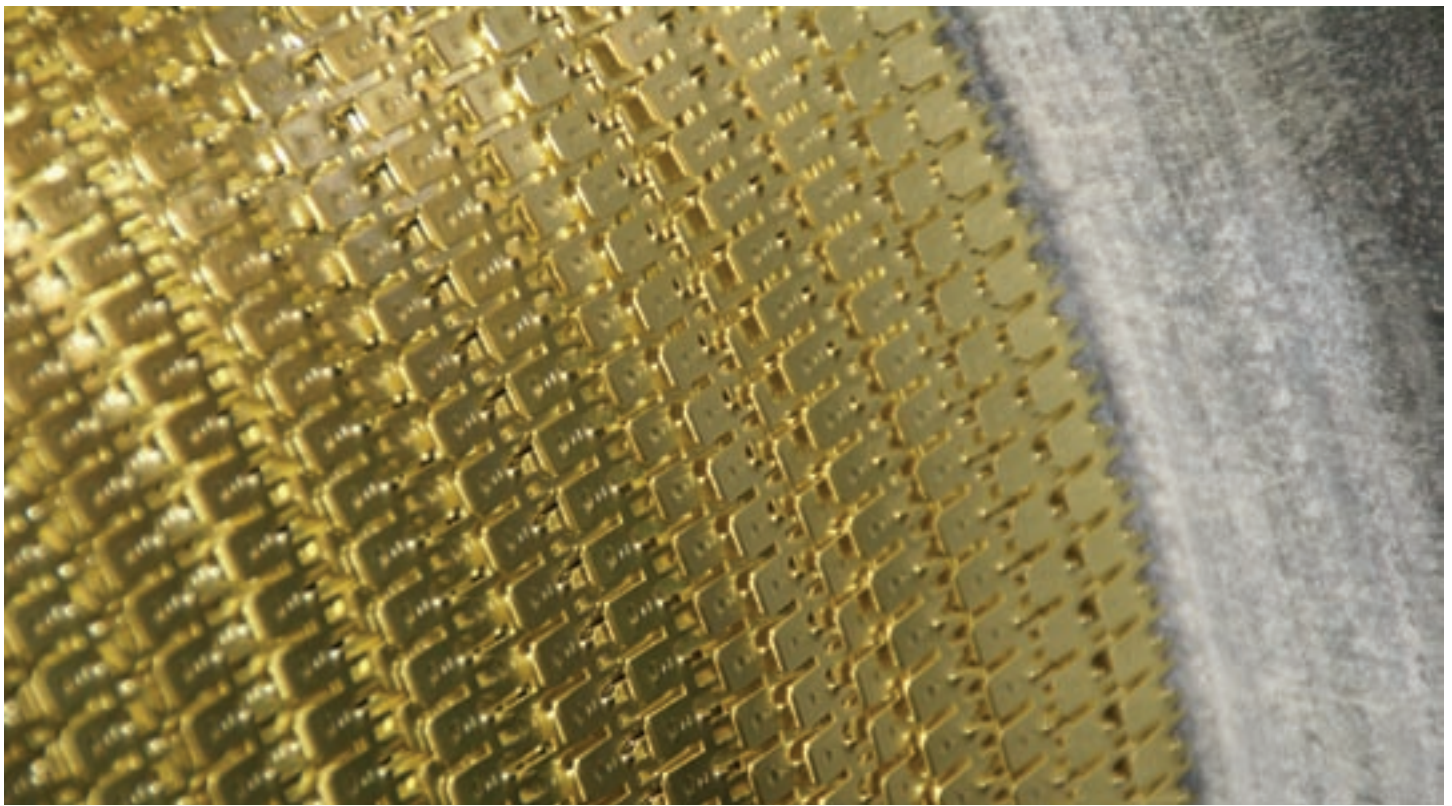
HV Mfg: What are the opportunities?

GZ: We have some patented products and we continue to provide innovative solutions to our customers. We are RoHS compliant and are working with our distributors to expand in Europe. Right now, exports are 14 percent of our sales, and that could increase.

HV Mfg: You mentioned that you have worked hard to cultivate a certain culture at Zierick. What do you look for in a new employee?

GZ: We want people who will care –

“I empowered people to make improvements and at the same time started holding people accountable to make improvements. Some people thrived, others did not.”



“I told everyone that these are ideas: if we try them, some will work, some will not, and some will last. But if we never try them, they have no chance of working and we are stuck where we are.”

you had any luck hiring this younger generation?

GZ: We need the people on the floor to operate their machines the whole time they are working. You cannot work productively, or safely, while texting your friends. (Honestly, I would love to be able to jam every cell phone signal inside this building.) Some young people can do it, some can't.

We have an engineering intern from Bucknell working for us this summer on a project that deals with a quality issue. He has been great, very focused, working on his own, comfortable using technology. It depends on individual temperament and the task at hand to determine whether manufacturing is a good fit.

HV Mfg: What do you think makes a good leader?

GZ: Flexibility, persistence... a willingness to try new things. When I first took over as president and began to implement some changes I would call meetings with our leadership team, or even the whole company, to introduce a new concept or tool. Once I overheard some people derogatorily refer to these as my “flavor of the month” meetings. Instead of being hurt or angry I embraced the term and began referring

care both about the company and their fellow workers. We also want to see some enthusiasm for the work. We hire, almost exclusively, “temp to perm”; that way we can see if the individual has the necessary skills and temperament while they are still working for the temp agency, before we bring them on permanently.

HV Mfg: A companion article in this edition deals with Millennials working in manufacturing. Have

to these initiatives as “flavors of the month.” I told everyone that these are ideas: if we try them, some will work, some will not and some will last. But if we never try them, they have no chance of working and we are stuck where we are. Being flexible allowed me to not only try something new, but to turn the resistance around.

HV Mfg: Engineering and manufacturing have traditionally been fields dominated by men. Happily this is changing. What is it like being one of only a handful of women CEO's of a manufacturing firm and what advice do you offer to young women pursuing careers in the field?

GZ: Sometimes it is an advantage being a woman and sometimes it is not. On the one hand, no one forgets me—I am one of three women in the PMA (Precision Metalforming Association) of New York and New Jersey, and the first female president of that group. On the other hand, while there's not exactly an “old boy's network,” there are certain customs and habits that remain in place that can be perceived as obstacles. As for young women interested in the field, there are resources to help and encourage their professional advancement. The Women in Manufacturing Association (www.womeninmanufacturing.com) is a great group that offers advice, mentoring and networking. I attend their conference every year and it has been very valuable. Basically, if you like to design and build things, there is a place in manufacturing for you whether you are a man or a woman.

HV Mfg: Finally, you are very involved in the aforementioned PMA, the Council of Industry and other groups. What value do you see in these associations?

GZ: They keep me engaged, especially in politics and advocacy for Zierick and for manufacturing. Through PMA and the Council I know how to stay connected with our elected officials and I have the resources I need to communicate with them on a variety of issues important to my business. I also value the employee training and the networking opportunities.

Always Light

To turn the artistic inspiration of architects and lighting designers into reality requires more than a knowledgeable engineering staff and state-of-the-art equipment. Selux has had to be equally creative in its purchasing and manufacturing process and, above all, flexible, to meet its crucial deadlines.

We produce luminaires. But we deliver quality of life,” is the motto appearing across the bottom of a page on Selux’s website, a motto that reflects the importance of light beyond the utilitarian. Light has a social and cultural significance: In our homes and workspaces, our stores, memorials and places of worship, lighting can be used not only for improved visibility, but also to set a mood or evoke a particular feeling. When looking through the photographs of completed projects on the Selux website, the artistry of the lighting design becomes evident, as well as its ability to subtly impact the setting of a room, a park or a pathway.

Hermann Bansbach understood this when he first developed simple and affordable battery powered lamps that brought light to the people of Berlin, Germany after World War II. At a dark time in history, in a ruined city with little or no electricity, the lamps brightened the lives of Berliners. From this beginning, Bansbach founded the company originally known as Semper Lux, “always light.” The company that eventually became Selux has been around for over 60 years in Europe and for the past 30 years in the US. Currently, this global company employs more than 500 people in Europe, Australia and North America and generates over 80 percent of its revenue outside of Germany.

“The belief that light has a social and cultural significance impacts our way of doing business today,” says Peter Stanway, CEO of Selux’s US Facility. “The adaptability and innovation of our lighting design concepts continues to bring quality of life to the Selux customer.” The lighting fixtures used at the 9/11 memorial site are a great example of lighting used to set a mood. “Selux lighting fixtures were designed

to enhance the somber feeling and invoke a sense of spirituality at this particular site”, says Stanway.

In the six and a half decades since its inception, Selux products have evolved from those early battery powered lamps to wooden luminaires for fluorescent lamps, in the 1950s, and to polycarbonate globes in the 1960s. By 1975, the company decided to add interior lighting options to the exterior products it already produced, making Selux one of the few lighting manufacturers to cater to both markets. In the 70s, Selux was also the first manufacturer to introduce the original linear luminaire, a development that allowed lighting to be sold by the foot.

In 1983, the company expanded into North America as Selux US,

a collaborative effort with Staff Lighting, at a plant in Highland, NY. In the mid-90s, Selux US restructured its management and broke away from Staff Lighting to become Selux Corporation. In 2002, the Highland facility expanded to add a state of the art powder coating facility and an indoor/ outdoor showroom. This is the only Selux plant in the United States and, as such, it handles a significant portion of the company’s production. It has grown from five employees in a shared office space, in 1983, to 150 employees in a 68,000 square feet facility today.

The new millennium brought innovations in energy efficiency, and in 2003, Selux introduced the first architecturally designed solar powered luminaire product line, called Sonne. These fixtures are easily installed, contain photovoltaic panels designed specifically for lighting applications and are designed to blend with their surroundings.

It has only been in the last 60 years that “Lighting Design” has become a recognized specialty field. In addition to aesthetics, energy



Photo by Jonathan Intravaia



The World Trade Center Memorial in NYC.

Landscape architect, Peter Walker, and architectural lighting designer, Paul Marantz, chose to work with Selux to create lighting specifically designed for this eco-friendly public space.

and make them a reality through fabrication with metals, plastics and electrical technology,” says Stanway. “Because these lighting fixtures are envisioned in the initial building plans, which go through many revisions, it is often a few years from inception to project completion.”

Touring the Highland facility, with its knowledgeable engineering staff and state of the art equipment, it is easy to understand why Selux is well known among architects and lighting designers for its flexibility and its ability to develop an end product as close as possible to the original artistic vision. Each product that leaves the plant is, in some aspect, custom made to fit specific color or design specifications. This means it is hard to predict in advance what will be needed to keep on hand. Selux has had to be very creative in the purchasing and manufacturing process to meet their customer deadlines. In order to have the parts and products they need, when they are needed, Selux has incorporated Lean Manufacturing techniques. These techniques are employed to eliminate waste from processes, adding value and improving efficiency.

efficiency is also an important consideration when designing building projects and there are more options than ever for achieving various levels of energy conservation.

The typical Selux customer is an architect or designer who works with Selux engineers to turn their vision into an actual, functioning product. “We work with architects and lighting designers to take artistic inspirations

In the Selux culture, training is key

“The person drives success at Selux, not just production,” says Stanway. “Employees are not pegged into one position; there is always room to grow with the company.” Training is one of the keys to growth and Selux has committed to training its workforce. “Training not only gives our employees the skills to do their job, but also the encouragement to be innovative in their thinking,” says Ellen Anderson, Human Resources Manager.

Working with SUNY Ulster has permitted Selux to access a variety of training at affordable cost. Recently, the entire company participated in a Communication training program and individual employees have taken part in training sessions on topics including Change Management, Thermal Flow, Excel, Six Sigma and reading and understanding blueprints. A group of Selux employees recently attended a Council of Industry Lean Six Sigma Yellowbelt training session with the intent of refining their “Quick Ship” process—a new program designed to get certain standard fixtures to a site within 10 days.

The skills Selux looks for in new employees don’t necessarily focus on lighting knowledge or training in illumination, and though basic welding or electrical wiring are good skills to have, the company knows it can teach the more technical skills needed for their open positions. Attitude matters and it helps to be bright, enthusiastic and eager to learn. According to Anderson, Selux is developing an on-the-job training program to help assimilate new employees and to cross-train employees in different roles within the organization.

Training beyond an employee’s primary position, or cross training, is a



Selux Projects:

(clockwise) Oakwood Commons, Poughkeepsie, NY; Alexander Hamilton Customs House, NYC; School of American Ballet at Lincoln Center, NYC; West Side Highway Ferry Terminal, NYC.

key strategy for Selux because, as Anderson points out, many of their employees did not start in the positions they currently hold, but have increased their knowledge through training, advancing as opportunities presented themselves. “We have many people that have become lighting professionals that did not start out as lighting professionals,” says Anderson. “Succession planning, organization

wide, is important and as an individual moves up, it opens up new positions for others to fill.”

Recognizing the importance of critical thinking, communication and leadership, Selux has sent several individuals through the Council of Industry’s Certificate in Manufacturing Leadership Program. One 2013 graduate of the program was Brenda Shaffer, Vice President, and a Selux employee for 25 years. Brenda took the course to gauge how it might benefit Selux’s training program for up and coming supervisors and managers. “I found the program to be very informative and beneficial, a great training tool and resource for future training,” she says.

In addition to expanding through training and innovation, Selux is planning to expand its physical facilities over the next five years. The company plans to include a UL certified laboratory where every type of lighting fixture can be tested on-site. Currently, products must be sent out for testing, which is not only inconvenient and time consuming but costly as well.

Moving forward

Despite the economy, new buildings are still going up and Selux has experienced continued growth, even with a management changeover in the past year. Recently, there has been an increase in business from Texas, the west coast and New York City. The projects, including many

SELUX IS GREEN in numerous ways. The parking lot is lit with solar-powered luminaires and the facility itself has solar panels on the roof of the building, providing over 50 percent of the energy for the office space.

The company recycles 80 percent of the water used in the factory process and recycles and reuses 100 percent of the cardboard and paper waste, as well as all of the scrap metal used in the manufacturing process.

Selux offers end-of-life recycling for all of their LED-based luminaires. In addition, the Lean manufacturing methods help to reduce usage of raw materials in the powder coating process and the facility utilizes a procedure that reuses up to 98 percent of all paint powder.

Selux has eliminated all CFC emissions in the paint facility and uses biodegradable liquids throughout the factory.



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Combining cutting-edge OLED technology, electronics and control technology, Selux and design studio ART+COM have opened a new chapter in professional lighting.

Manta Rhei silently floats in space while continually changing its appearance., combining light scenes and movement patterns in a series of carefully designed choreographies.

universities, are often a mix of public and private construction. High profile projects in recent years have included the lighting/ pole system for the entire Golden Triangle district in Beverly Hills, CA and the World Trade Center Memorial in NYC.

The solar powered Sonne line uses a "Smart Controller" programmable regulator which precisely controls the flow of energy between the solar panels, batteries, and lamp. Selux offers a variety of exterior solar luminaires, all of which are self-contained lighting systems that require no outside electricity and can contribute to LEED points for parking lot lighting. Many of these products are IDA approved "Dark Sky Friendly" and offer excellent optics and light distribution options.

The drive to become as energy efficient as possible has also led to an increase in the use of LED technology. Though LEDs initially cost more, they have a longer life than fluorescents, so there is usually a return on the investment by the fourth or fifth year, depending on the product. Because of their size, LEDs also have more flexibility than fluorescent lamps, allowing for greater creativity in design concepts. An example of this meshing of art and function in illumination is the "Manta Rhei," a joint project with the design office ART + COM. By combining up-to-the-minute OLED technology, electronics, and control technology, Selux and ART + COM have created a next-generation luminaire that floats silently through the room, continually changing its appearance and creating a captivating combination of motion and light. (see it in motion at www.artcom.de/en/projects/project/detail/manta-rhei/)

As a result of the increased popularity of LED and OLED lighting, Selux has had to reconfigure its manufacturing process to meet demand. "Business is not static and if you are not changing how you work with the market to provide the customer with the best possible solution, you will be left behind," says Stanway. "Selux is very interested not only in staying competitive but in growing. That means we have to be ever changing, updating our process and developing our products."

Selux is constantly evolving, as a company as well as with its products. It is this openness to change and adaptability that has kept Selux thriving through the years.



Anything, Anywhere



*Arnoff Global
Logistics Brings
Hudson Valley's
Products to
the World*

It was 9:30 on a Friday night when Dan Arnoff, Business Development Manager for Arnoff Global Logistics, got the phone call. A scheduled shipment of manufacturing equipment from the West Coast that needed to be on the East Coast within 48 hours had run into a problem. A last-minute addition of an extra piece of equipment meant another truck would be needed to complete the move.

Within an hour, the problem was solved. Arnoff was able to secure another truck for the shipment and the goods arrived at their East Coast destination as scheduled. It was a perfect example of what Arnoff Global Logistics' President Mike Arnoff says his company is all about: "We are

problem solvers," he says. "We want our customers to know that we will give them turn-key solutions to any of their moving and logistics problems."

Whether moving multi-million dollar shipments of sensitive manufacturing equipment or centuries old antiquities, Arnoff Global Logistics has earned a reputation for its attention to detail and personal service. The company has worked with IBM since the 1950s, when it moved an IBM system to the Bank of London. Since then, Arnoff has worked with the computer giant on scores of local, national and international moves.

"I think our long-standing relationship with IBM can be attributed to our reliability and quality," says Dan. "IBM is 100 percent focused on those two things and we are also. We pride ourselves on serving our customers and that means if something changes during the course of a job—even if that means adding another truck to a shipment at the 11th hour—we can change with it."



ARNOFF
GLOBAL LOGISTICS



Logistics in the Post-9/11 World

Frequent flyers know that air travel became much more difficult after 9/11, but the same is true for air cargo shipments.

"Life before 9/11 was quite a bit different," says Mike Arnoff, President of Arnoff Global Logistics. Air freight today is subject to much stricter controls—controls that can cause serious delays if a shipper is unprepared for the myriad of security clearances that must be met.

To ensure that its customers' shipments don't get held up in lengthy security reviews, Arnoff Global Logistics pursued and received Indirect Air Carrier (IAC) certification from the U.S. Department of Homeland Security's Transportation Security Administration (TSA). Per the TSA, the rating is for any "person or entity within the United States not in possession of a Federal Aviation Administration air carrier operating certificate that undertakes to engage indirectly in air transportation of property, and uses, for all or any part of such transportation, the services of a passenger air carrier."

To receive IAC certification, Arnoff Global Logistics underwent a stringent security threat assessment that required the company to demonstrate how it operates; its hiring and training procedures; and how it manages its facilities and equipment. "It was a lengthy process," says Arnoff, one that included documenting who can enter the company's facilities and where they can go when they come in. All Arnoff employees have undergone background checks and the company has satellite technology that enables personnel to track bar-coded shipments anywhere in the world in real time. But earning TSA IAC certification is an on-going

"We pride ourselves on being problem solvers," Arnoff says. "When you transport with Arnoff, you won't get service for just one leg of your move. We'll take care of the move from start to finish."

process, one that Arnoff personnel must always be ready to demonstrate. "The TSA can conduct a surprise visit at any time to ensure all criteria are being met," Arnoff says.

In the 12 years since the terrorist attacks, ground shipments have also had to adapt to stricter security clearances, especially those that involve tunnel or bridge crossings. To keep abreast of the constantly changing regulations, Arnoff has a staff member who is responsible for tracking all permitting requirements and restrictions, including those for hazardous materials and overweight and/or overheight shipments. "We pride ourselves on being problem solvers," Arnoff says. "When you transport with Arnoff, you won't get service for just one leg of your move. We'll take care of the move from start to finish."

Quality Control In All Facets

With 250 employees, six warehouse locations in New York, Connecticut and Florida, and a fleet of more than 200 company-owned trucks, trailers and flatbeds including specialized high-cube, climate-controlled trailers, Arnoff offers its customers a level of quality control that others who sub-contract parts of the moving process cannot. "There are people who can provide rigging services and people who can transport, but we do it all," says Dan. "By controlling our own assets, we control the quality and the outcome of each project."

Arnoff's assets also include the company's human capital—its employees—many of whom are highly skilled in professional rigging and millwright services. Others are clean room-certified, while still others provide custom crating and final mile delivery services.

All of those aspects of the business were employed in the move of a major semi-conductor chip fabricator. Arnoff personnel worked in conjunction with decontamination teams, electricians and plumbers to disconnect, rig and ship 512 oversized, extremely sensitive production tools from multiple clean rooms that occupied more than 250,000 square feet. Arnoff employees then fabricated more than 2,000 custom heat-treated wooden crates approved for international shipping. The company also served as the exclusive freight forwarder, getting these crates to their final destinations in Europe and Asia.

Although a third of the company's business comes from the high-tech sector, Arnoff Global Logistics also provides services to all industries, from producers of applesauce to costume jewelry. In the past year alone, Arnoff has provided: final mile deliveries and installation services for more than 20 school dormitories across the Eastern seaboard; warehousing and distribution services for kitchen products sold on television; and assisted in the packaging and transportation of specialized medical equipment destined for cancer clinics in South America.

Simplifying Complex Moves

With its complete suite of moving and storage services, David Feldman, Arnoff's Vice President of Sales, says Arnoff Global Logistics wants to eliminate the hassle of moving for its customers. "We have experts on lab moves, on clean room moves and on rigging for heavy equipment. We have so much experience, that's why we tell our customers, 'Let us be a resource for you.'"

That is exactly what Prof. Richard Gross, Ph.D., did. When it was necessary for him to move sensitive scientific instrumentation equipment valued at well over \$1 million from seven laboratories at New York University Polytech in Brooklyn to the Center for



From Sculptures to Semi-Conductors

Like most immigrants in the early 20th century, Abraham Arnoff and his son, Louis, were willing to work hard to make a new life for their family in America. After arriving from Russia, the Arnoffs settled in Lakeville, Conn., and quickly earned a reputation in the community for their work ethic—and their truck.

The father and son were often asked by locals who had traveled to Europe to use the truck to pick up the travelers' furnishings, crates, etc., at New York City's ports. Given the care with which the Arnoffs treated these precious antiques and works of art, word quickly spread to some of the New York area's largest museums and auction houses that when you had to move

something of great value, the Arnoffs were the people to call. Since 1924, the company's clients have included the Metropolitan Museum of Art, the Franklin D. Roosevelt Library & Museum and Christie's Auction House.

As their business has grown over the past 10 decades, the Arnoffs have continued to move items of great value, but today, those items could just as easily be multi-million dollar semi-conductors. As IBM's go-to moving company since the 1950s, Arnoff has earned a reputation for skillful moves of highly technical equipment ranging from solar power components to cell phone towers.

But even as the company has evolved into a global logistics firm that serves scores of high-tech businesses, Arnoff is still true to its roots, having just recently moved a collection of Napoleon Bonaparte's artifacts to several new museum showings. Carefully crated and packed in a climate-controlled and Arnoff-owned truck, the shipment was valued at nearly \$20 million.

For some, the move may have been a white-knuckler. For the Arnoffs, you might say it was just another day at the office. "Every move we do is valuable—especially to the people whose goods we are moving," says Mike Arnoff.

"Every move we do is valuable—especially to the people whose goods we are moving."



"The crew was terrific. They went above and beyond our expectations."

Biotech and Interdisciplinary Sciences at Rensselaer Polytechnic Institute (RPI) in Troy, he chose Arnoff.

"I looked at four different movers but was struck by Arnoff's professionalism from the walk-through to the end of the move," he says. "They asked a lot of questions and did not make any assumptions. They told us how to prepare, how they'd handle the equipment and offered useful suggestions. They were there when they said they'd be there. And their price was better than any of their competitors."

Gross' equipment included biological samples that needed to be kept at minus 80 degrees Celsius. Arnoff personnel made sure they were the last items loaded onto the company's climate-controlled trucks and the first items off. "Many of our shipments are very sensitive," Mike says, noting that the company has extensive experience in moving complex equipment that has specific requirements for timing, temperatures, humidity and stability. "Our air-ride trailers are so smooth that you could put an open cup of coffee in the trailer and drive it for hundreds of miles and it would never spill," Mike adds.

Gross had anticipated his move out of NYU Poly would take two days and that it would take another two days to move into his new labs at RPI, but thanks to Arnoff's professionalism and efficiency, his equipment was moved and delivered in half that time. "The crew was terrific," Gross says. "They went above and beyond our expectations."

That's just what Mike Arnoff wants to hear. "We're not a giant company, we're a medium-sized company with the reach of a giant company," he says. "Our only measure of success is when we exceed our clients' expectations."



Three generations of Arnoffs: Richard, Mike and Dan.



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Making Room for the Millennials

Though they are often portrayed as lazy and self-absorbed in the media, there remains, beneath all the ridicule, one uncomfortable truth: Millennials are the future of the country, of the workforce, and of the manufacturing industry.

They were born in the 1980s and 90s, and came of age and entered the workforce in the midst of the worst economic crisis since the great depression. They're more likely to go to college than previous generations, and more likely to move back in with their parents after graduation. To them Facebook, Google and texting aren't bewildering innovations, but part of day to day life. They are the most racially and ethnically diverse generation in American history, and the most likely to come from single-parent, blended, or same-sex parent families.

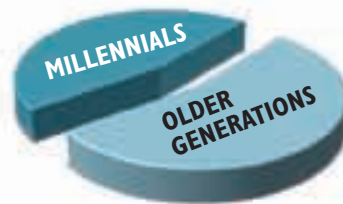
They are the Millennial generation, 80 million strong. In March a New York Times headline asked if they stood a chance in the real world; in May, Time Magazine dubbed them "The Me Me Me Generation." Though they are often portrayed as lazy and self-absorbed in the media, there remains, beneath all the ridicule, one uncomfortable truth: Millennials are the future of the country, of the workforce, and of the manufacturing industry. A recent study estimated that Millennials will account for 34 percent of the workforce in 2014, a proportion that will rise to 46 percent by 2020.

In spite of their reputation as needy and entitled, Millennials do have a lot to offer the manufacturing industry. While many people equate manufacturing with smokestacks, assembly lines and monotony, modern manufacturing is, in fact, innovative, fast paced and high tech. Given the right management, the very traits that cause their elders to sneer may make Millennials close to ideal candidates to work in modern manufacturing.

Perhaps the most obvious of these traits is their affinity for technology.

Millennials are the first generation to grow up surrounded by computers and cell phones. Whereas previous generations may have struggled or marveled at the switch to digital, for these new workers digital is the default.

"Millennials have been associated with a high level of engagement with technology both for purposes of gaining information and



**By 2020, Millennials will
comprise 46% of the workforce.**

for communication," observes Rebecca Mazin, founder of Recruit Right, a Westchester human resources firm. In an increasingly digital world, tech-savvy employees aren't just an asset for a business, they're a necessity.

Millennials' affinity for technology has also given them the ability to multitask with ease. Many of them will have been carrying a phone—filled with apps and other gadgets offering a plethora of ways accomplish tasks—since they were teenagers. At home, they were

on the computer with one browser tab open to their homework, another to Netflix while simultaneously using their Smartphone to text a friend, and post an update to Facebook. It is easy to imagine a Millennial using this multitasking skill to attend a web-conference with the company's European sales office while at the same time checking the production schedule and completing a performance review.

Millennials are also more collaborative than previous members of generations, and more accustomed to praise and supervision. They're one of the most heavily parented generations in recent history. They grew up being chauffeured to and from school, soccer practice, little league games and dance classes; their summer vacations were spent at swimming lessons and summer camp. This early exposure to sports and other team activities has rubbed off and made Millennials excellent team players, a trait well suited to working in the modern manufacturing sector.

However, the constant attention of their parents, coaches and teachers, has also imbued the generation with an inflated sense of self-worth. They've been constantly told they're special and are accustomed to praise. That attitude does not mesh well with the metrics-driven manufacturing sector where everything is measured and benchmarked.

How to Make the Most of Your Millennials

These are just some of the most significant traits that set the Millennials apart from previous generations of workers. Now, as employers seek to engage them as they enter the workforce, it is important to recognize how the manufacturing industry can adjust to maximize the skills and talents of this workforce of the future.

DAVID KING,
a Millennial and
English major at
Gettysburg College,
is a graduate of New
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Manufacturers that are able to harness and integrate the best and brightest of the Millennials into their workforce will be the ones that thrive in the coming decades.

• Break free of the assembly line.

As noted, Millennials are used to having options: doing the same job 40 hours a week, 50 weeks a year, is not their idea of a career. Variety is key here; keep the Millennials engaged by keeping them challenged. Rotate their responsibilities, cross train them, just keep them from doing the same thing day in and day out. Katie Sens, human resources director for Beacon-based Council of Industry member Chemprene Inc., a company specializing in the manufacturing of coated

fabrics, notes that there are several training and managerial benefits to a multitasking workforce. "Some of the younger employees here are very easy to cross train," compared to older employees who have worked at one job throughout their careers and aren't interested in changing. When things are slow in a department, "it kind of handicaps us, because we can't move them around to where we need them when we need them," says Sens. According to the Manufacturing Institutes' 2011 Skills Gap Report, a survey of more than 300 manufacturers nation-wide, "When asked to look ahead three to five years, respondents indicate that access to a highly skilled, flexible workforce is the most important factor in their effectiveness, ranked above factors such as new product innovation and increased market share, by a margin of 20 percentage points."

• **Mentor, don't manage.** The Millennials confidence and self-assuredness can breed a "can do" attitude, but it needs to be encouraged. Millennials have been heavily supervised their entire lives, but are uncomfortable with the traditional role of the manager as the controlling content manager. They may not think they need an expert, but they do need a mentor, to offer advice or encouragement. Millennials work well with others, but they need to be praised and rewarded in a way older generations may see as needy. They're "a generation that is used to praise and reward for everything they do," Mazin explains.

• Solicit ideas and opinions from your Millennial employees.

Millennials are used to being part of a team and will have trouble adjusting to being just a cog in a corporate machine. Combine with their inflated sense of self-esteem, this leads them to expect to have their opinions heard. "They should be given the opportunity to demonstrate skills and some space to experiment," Mazin says. That upbringing also means that they're used to near constant praise for their hard work, and they may not be prepared to go without it. "Employers should be very clear about goals and expectations and focus on shorter term rewards," Mazin says.

In spite of their more coddled upbringing, Millennials aren't completely unaware of what's going on in the world; one of those browser tabs is often devoted to a news site. They know that the unemployment rate is high and the recovery is slow. "Many 20-somethings are finding their first employment to be part-time or contract work. They have not been exposed to job security and are not necessarily expecting it." This has led them to be more open towards changing jobs. "Millennials have no expectation of a long-term career with one employer and, at the same time, no qualms about transporting their training and knowledge to a new position. It is not a question of loyalty but of earning potential, finding an affinity with co-workers and finding a living situation that fits their needs," Mazin says. This lack of interest in long-term stability makes it all the more important that employers keep their Millennial employees engaged.

Manufacturers that are able to harness and integrate the best and brightest of the Millennials into their workforce will be the ones that thrive in the coming decades.

Hiring the Right People

High-performing employees can help you grow faster, run smoother and have a direct impact on your bottom line—no matter the size, type, or location of your business. For a small business owner, hiring the right people can be tricky, especially when you may be competing with much larger enterprises for the same resources.

When thinking about hiring, consider the following statement:

"I noticed that the dynamic range between what an average person could accomplish and what the best person could accomplish was 50 or 100 to 1. Given that, you're well advised to go after the cream of the cream...."

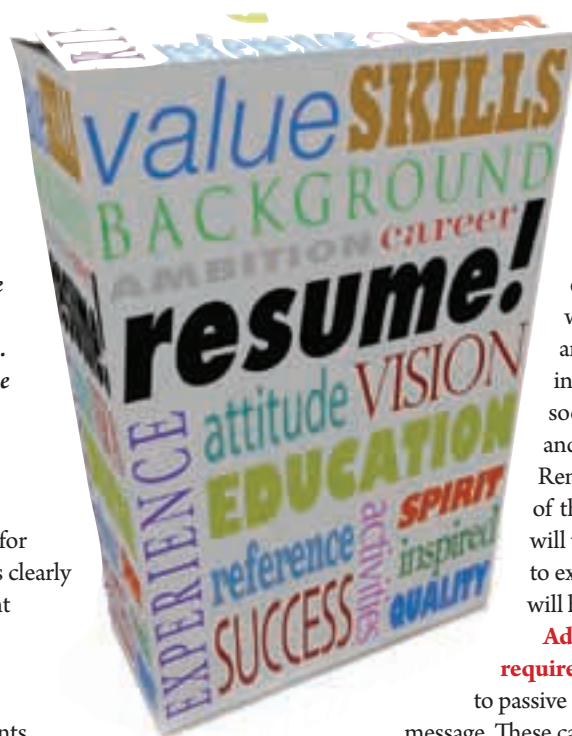
A small team of A+ players can run circles around a giant team of B and C players." —Steve Jobs

Of course, the numbers will be different for every industry and company, but Steve Jobs clearly highlights the importance of hiring the right people. With this in mind, I have outlined several ideas to help build a successful recruiting strategy.

Highlight your company. Everyone wants to be part of a successful organization. Hiring top talent requires a clear understanding of what makes your company successful, where it is going, and what it has to offer its employees. It is important that you understand these things and be able to communicate them to potential candidates. Otherwise, it will be difficult to attract candidates who are considering multiple offers.

Define the requirements carefully. This sounds ridiculously easy, but it's amazing how many business owners will embark on a search

without determining exactly whom they want to hire. It's important to detail the specific job requirements and desired personal characteristics—creating a "hiring scorecard" that can be used in screenings and interviews—to determine if a candidate can fulfill the requirements



of the job. Needless to say, it's also critical to determine if the candidate will be a cultural fit as well.

Find passive candidates. Most potential candidates are not actively looking for new employment. You will need to target them while they are currently working or when they are new to the marketplace. This can be done in many ways, including creative advertising, social media, personal or employee networks, and either in-house or outsourced recruiting. Remember to network and leverage the contacts of the people you or your employees know. This will take time and effort, but is necessary in order to expand the number of qualified candidates you will have for your opening.

Advertise the opportunity, not the job requirements. When advertising or reaching out to passive candidates, you need to have a compelling message. These candidates are not looking for work but may be interested in better opportunities. They will be less likely to notice or respond to an advertisement that simply lists a position's requirements or necessary skills. Instead, try describing the positive impact that candidates will make while performing the job. Focus on the challenges they will face or why people currently in the role like their position. Help them see the future and why the position you are offering will be a positive career change. Remember, candidates who are currently working will not often be interested in a lateral move, but they may be interested in a better future.

Find a recruiting platform that allows for pre-screening. When you do need to wade through resumes, use a recruiting system with pre-screening questions and candidate rating capabilities. This allows you to focus on the exact capabilities you need and only review the candidates who have passed the initial screening, saving yourself massive amounts of time.

DEAN DOMENICO, is Vice President of Ethan Allen Personnel Group, matching Hudson Valley jobseekers with career opportunities since 1969.

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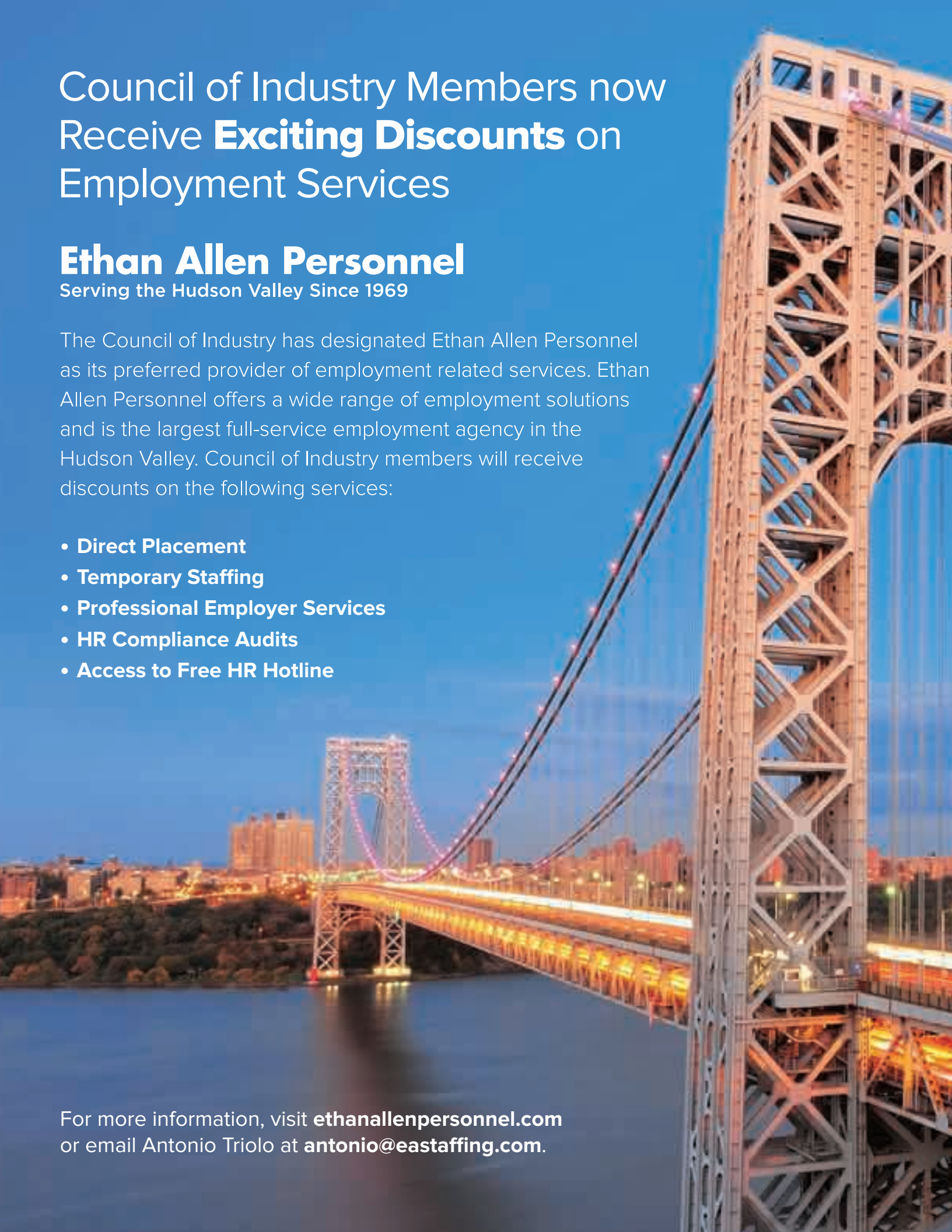
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The maxim, "Hire for attitude, train for skill," still holds true. Someone with a picture perfect resume but a terrible attitude will undermine your workforce. Nobody can afford that.

Build interview questions around your requirements. Create interview questions that will uncover whether the interviewee has the skills you are looking for. Make sure that there are people in the interview process who are capable of determining if the applicant meets the technical requirements of the position.

The best interview questions are "behavior-based." Ask applicants to tell you about a time when they accomplished something; how it went; what problems they encountered, and how they dealt with those problems. This digs into past behavior, which is a predictor of future behavior. Asking, "how would you handle a problem," is a future-focused, hypothetical question that elicits a hypothetical response.

If you need someone who's determined, you could say, "Can you give me an example of how you once succeeded at a work task when the odds were against you?" If you're looking for someone with a killer work ethic, you could ask, "How would you define "work ethic," and can you give me an example of a situation that represents yours?" The answers to these questions will give you a deeper look at the applicant's compatibility for the role.

The maxim, "Hire for attitude, train for skill," still holds true. Someone with a picture perfect resume but a terrible attitude will undermine your workforce. Nobody can afford that. Better to hire someone who meets 85 percent of what you're looking for but is teachable and a team player.

Look for repeated patterns of success. Don't just look for tactical job responsibilities and skills. Find the applicants who have repeatedly made a mark and exceeded expectations, time and time again. Drill down in the interview to ask those questions. Find out how they measure their own success and whether their employment history tells a story of a superstar.

Dig deep on references. An applicant's references are always handpicked by the applicant, meaning that you're likely to hear nothing but the positive. To get a more complete picture, ask the listed reference for another person who knows the applicant professionally, or look on LinkedIn to see if you are connected to any of the candidate's connections. You can go even further and ask the second-degree references for yet another person who has worked with your potential employee.

Don't settle. Almost every tip I've provided works in both a good and lousy economy. But let's be honest: When the good times roll, it's easier to find someone and say "good enough." But in a down economy, you should never do this. Take the time you need to find the right candidate, either active or passive, and make the right hire.

Conduct exit interviews. Do you really know why your employees are leaving? Exit interviews are an extremely important and useful tool for organizations. Proper exit interviews are an excellent opportunity to learn about both the strengths and weaknesses of your managers and the organization, helping you understand how best to satisfy and retain employees.

Evaluate candidate communications. Use the information in a candidate's correspondence to conduct a basic analysis of the candidate. Is the candidate interested in the role? Is he or she responsive to your e-mails? Does the candidate take the time to proofread a response? If so, this person is a viable candidate and ready for the next step. If not, it is unlikely that things will get better after the person has been on the job.

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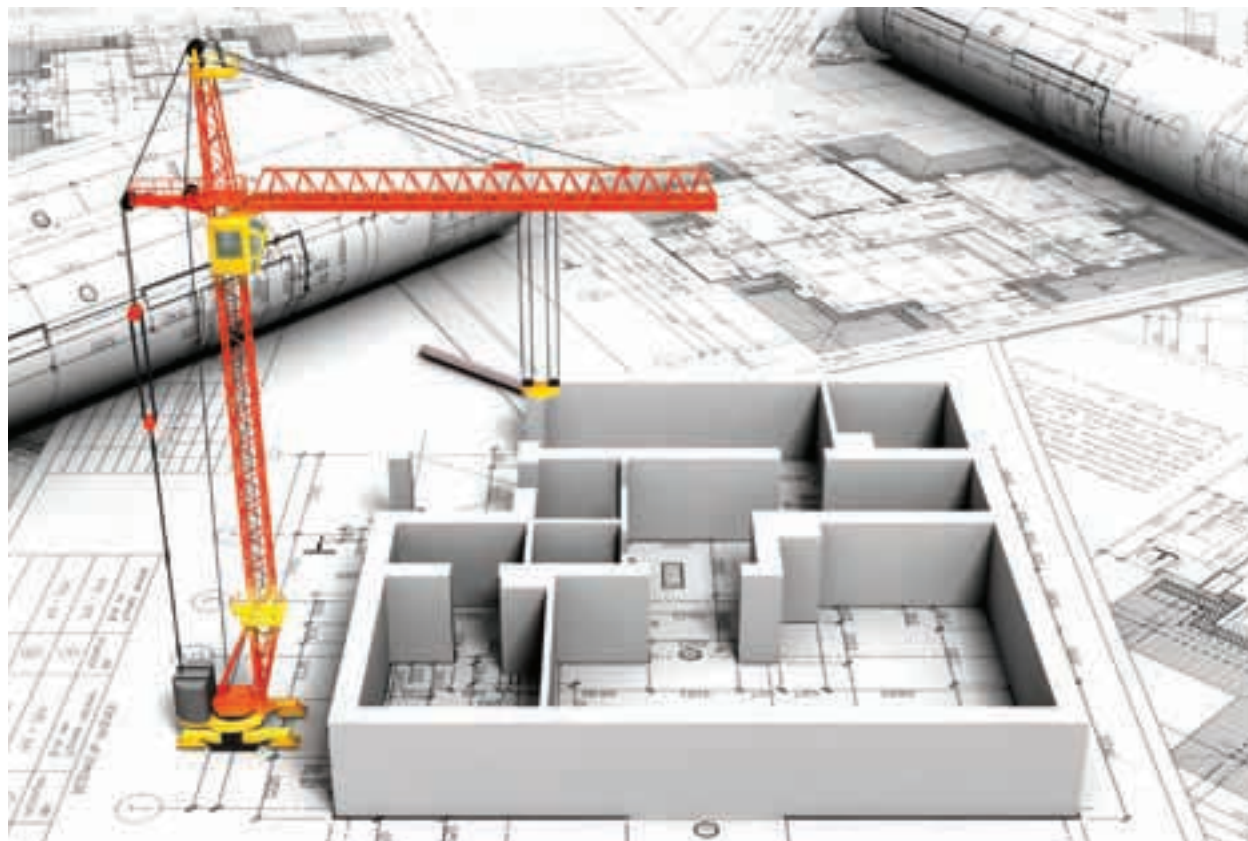
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Measure Twice, Cut Once

Proper planning, intelligent use of space and putting safety first can lower costs and help make investment in an industrial project more profitable.



The manufacturing industry is an integral part of the economy in NY State. During this Great Recession, every region has been hurt by the loss of manufacturing jobs. Manufacturing accounts for 10–15 percent of the wages paid in NY State's private sector, with salaries that are often above the state's average. With everyone talking about the importance of job creation for moving beyond this recession, it is important to remember that investment in manufacturing equates to job creation. Every dollar invested in manufacturing operations has the potential to increase economic activity (i.e. create new jobs) and every newly created manufacturing job creates jobs in other areas across the local economy.

IRVING ZUCKERMAN is Co-President of Verticon LTD, a general contracting and full-service construction firm based in Monroe, NY.

If you are contemplating an investment in manufacturing through the development or construction of an industrial property, we want to share some important points to consider, points that will make every dollar go further.

Planning


The proverb, "Measure Twice, Cut Once," is frequently used in carpentry. You measure your materials twice because after they have been cut, if an error has been made, the material can no longer be used. This simple principle can, and should, be applied to the development process of any building project.

Below is a list of questions prepared by the professionals at Verticon LTD to help you determine if the plan that has been provided to you by your team is well thought out and takes all the needs of your project into account:

Have you considered the future? You have undoubtedly looked at your company's current needs for the new space, but have you given any thought to what your future needs may include? You can avoid costly expansions or renovations if you give some thought to the future of your company before a building project gets underway. Below are some areas to explore:

- Have you analyzed your competitors and compared them against your own business?

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As of the end of 2013, any structure over 50,000 square feet will be required to go through an energy audit. If the energy efficiency of the building is found lacking, changes will need to be made to bring it up to code.

- After you have taken a closer look at your competition, what did you learn that might lead to a change in your internal process flow? You might consider discussing your options with a contractor whose experience and supply chain contacts can help you look at your process and develop a plan to improve what you are currently doing as well as address any changes for the future.

- Are you thinking of adding to your current product line? If so, it would be best to lay the groundwork for this during the pre-planning phase of your building project.

Have you explored all the options available to you? It is common to look at the costs of materials when beginning a project and settle on the most cost effective choice. Contractors often continue to utilize the materials they are most familiar with and fail to take the time to examine the wide variety of materials available in today's market place.

Yet the cheapest option may not be the best option. Utilizing less expensive building materials runs the risk of things breaking and needing to be replaced, which ends up costing both additional time and money. This also applies to the equipment used on the site. Using outdated construction equipment can result in inefficiencies that require additional hours to complete a given task.

Has a comprehensive budget been prepared? Every project begins with a bottom line number, but our question is meant to dig a bit deeper. Does the budget that has been prepared for the project look beyond the materials needed and the labor cost of construction? Have steps been taken to ensure that building costs don't accelerate like a runaway freight train? Further budget related questions to consider include:

- Have you looked at the further use of the facility and analyzed its productivity?
- Has the budget been prepared against a proven cost history across all categories?
- Will the budget be monitored as the project develops?
- Are there schedule compliance measures in place so that the cost of labor does not put the project over budget?


Have you considered energy efficiency? As of the end of 2013, any structure over 50,000 square feet will be required to go through an energy audit. If the energy efficiency of the building is found to be lacking, changes will need to be made to bring the structure up to code. Have you or the firm handling your build taken the time to plan for this policy change and planned for energy efficiency as part of the building process? You will save money in the long run by taking this into consideration before you build rather than waiting for an audit to be prepared and having to hire someone to make the necessary adjustments. In addition, even if your building is less than 50,000 square feet, you will benefit in the long run by planning for better energy efficiency.

Space


A higher level of efficiency is the goal of any business owner, whether



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your industry is manufacturing (production) or distribution (warehouse). Not only are you looking for increased efficiency in the form of productivity from your staff, you are looking to make the most of your space and utilize it as effectively as possible. It is important to maximize the entire footprint of the building, whether your plan involves the re-use of existing space through renovation or expansion, or the acquisition of a building, or undertaking new construction. For example, have you given any thought to the benefits you could gain by building a storage area that is higher and narrow styled?

A higher bay, narrow aisle styled storage area can make a huge difference in overall space efficiency. You can save 33 percent of aisle space by making the switch from a traditional forklift to a ninety-degree lift truck. The traditional forklift needs a 12' wide aisle to make a right angle turn, while a ninety-degree lift truck can work in an 8' wide aisle. This space savings reduces the overall space requirement by as much as 20 percent which, in the short term, reduces the cost of materials and, in the long term, reduces operational costs. Simply put, in the end you gain a huge increase in storage space (up to 60 percent) and spend less money to build that space.

Benefits of a high bay, narrow aisle storage space include:

- It is less expensive to build vertical than horizontal.
- An existing structure lacks the ability to go wider, yet you can add additional storage racks on-premises without taking away from currently productive areas.
- Wire guidance systems in the floor for the ninety-degree lift truck means no driver error.
- Lower operational costs apply.

Safety

Safety is good business. Accidents and injuries that are common on construction sites are more expensive than business owners realize. An injury at a construction site can slow or halt production, delaying the project and adding time and costs. When a work site is safe and secure, productivity increases, employee morale increases and projects progress smoothly. Be sure that the construction company you are working with has a proven safety record.

Things to take into account when considering the safety of your work site:

- All construction jobs should have a site-specific safety plan.
- Field staff and subcontractors should be trained in safety precautions and, if possible, certified through OSHA.
- On-site field safety manuals are important, putting potentially life-saving information at the fingertips of workers and where it is most needed.
- Training field staff in CPR and the universal precautions concerning blood pathogens will provide a higher level of security and safety.
- It is advisable to give your field staff the ability to ask questions and to be prepared to provide answers as well as any training that becomes necessary.

Everyone wants to see the economy move out of this recession into a pattern of growth. Investments in new projects and expansion plans from existing corporations will go a long way to add jobs and bolster the economy. If you find yourself in the pre-planning stage of a building project, or if you have found the information in this article to be informative, we would like to encourage you to be sure the company you are working with subscribes to the Measure Twice Cut Once adage. A reputable firm will do their due diligence. They will ask the tough questions and take time during the planning stage to consider the needs of your business not only today but also well into the future.

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By Theresa Keegan

The Rise of the 3D printer

This isn't just one more piece of new technology, but a development likely to bring fundamental change to the manufacturing process. The Hudson Valley 3D Printing Initiative is aiming to help the area unleash 3D's full potential.



In colleges throughout the world, students are studying for jobs that do not yet exist. At SUNY New Paltz, a handful of undergraduates are studying for jobs evolving faster than even futurists can imagine. Welcome to the world of 3D printing, a field proving as limitless as the imagination, one that is already rocking the way manufacturing is approached.

"3D printing isn't just one more piece of technology," explains Daniel Freedman, Dean of the School of Science and Engineering and a coordinator of the Hudson Valley 3D Printing Initiative. "It seems like something that's fundamentally going to change how many things function."

The HV3D initiative is officially launching with class offerings this semester and hopes to ultimately expand and offer printing services to entrepreneurs as well as established businesses. The \$1 million education effort, funded by a private \$250,000 contribution and a \$750,000 pledge

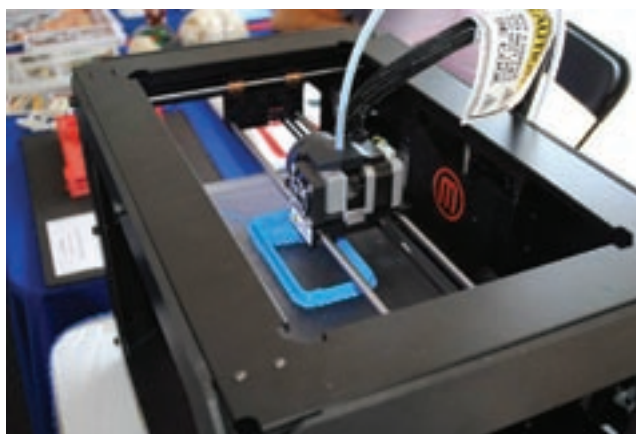
THERESA KEEGAN is a freelance writer in the Hudson Valley. She can be reached at tkeegan1@yahoo.com.

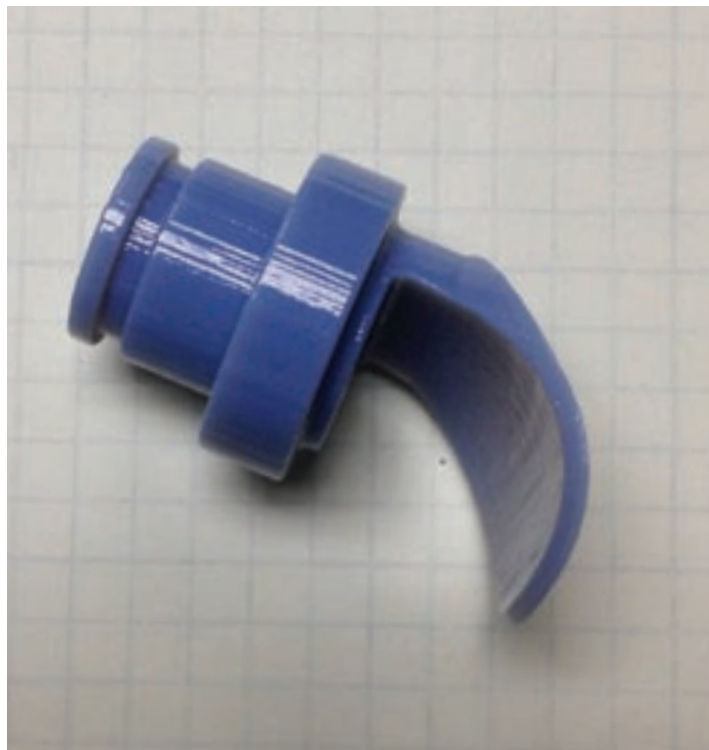
from Central Hudson, is expected to run for three years. However, companies in the region are already embracing the technology, using it in everything from jewelry design to precision manufacturing.

And within the flexibility of 3D printing lies its real potential, as it creates items in paper, plastic and a variety of metals including gold and titanium. It takes a computer-aided-design (CAD) file and prints it using an additive method, building layer upon layer, rather than manufacturing's traditional reductive process.

"This is a new horizon we're rushing toward," says Robb Engle, vice-president of engineering at Sono-Tek Corp. The Milton-based company, which creates high-quality spray nozzles for coating applications, is continually testing new spray-shaping options. As with any cutting-edge company, prototype testing, though necessary, has proven a time-consuming and often expensive endeavor.

"To set up a machine to test a single part is a lesson in frustration," says Engle. But when the company started contracting with area 3D printers to create prototypes, the process time





“People will have the ability to design and test out new products in a more cost-efficient way... New Paltz’s design program is a real strength and we have the comprehensive SUNY engineering program, so it’s technology married with design work.”

Daniel Freedman,
Dean of the School of
Science and Engineering

large masses and fine curving structures.”

The precision of 3D printing is appreciated, but the rapid turn-around is really why this technology is changing manufacturing.

“We’re faster to the table and spend less money in engineering and prototypes,” says Engle. When a new nozzle request came in recently, the machine shop said it couldn’t be manufactured. Instead, they created a computer design and ran it through the 3D printer.

was reduced from an average of seven weeks to three days. “It was like a hand in glove fit,” he says.

The company has a relationship with three nearby printers, keeping pricing and quality competitive. But a year ago, Sono-Tek finally decided to buy a printer of its own, opting for a lower-end model (prices range from \$2,000 to \$200,000) so that skills could be fine-tuned without incurring the expense of a more exacting machine.

“It’s not something you’re going to be successful at the first time around,” says Engle.

This summer the company hired SUNY student Alex Cannella as an intern (see sidebar). The junior had made her own mark at the campus earlier in the year having taken a math algorithm and, programming it through a 3D printer, created a beautiful vessel.

“It’s the first time it’s ever been done,” boasts Engle, who also sits on the advisory board of SUNY’s engineering department. “Math is way too complex to sculpt it, but it’s stunning to see the fine parts and the heavy parts and the parts that are just too fragile to have ever been machined. It’s complex, with

“I went back to the machine shop and said ‘Don’t worry, we’ve got it.’”

But Engle knows the need for precision machining won’t fully disappear. “Our machine shop will be around as long as the company,” he says.

Neal Johnsen of Stanfordville Machine & Mfg. is familiar with rapid prototype machines. His Dutchess

County company actually manufactured parts for the initial printing machines when they were in developmental stages. But he doesn’t use 3D printing. The 50, 500 and 5,000 production runs his company executes are done on CNC machines.

“We’re not a prototype shop,” Johnsen says. “As the technology develops and improves, we may find a need for it here, but not yet.”

At Zierick Manufacturing Corporation in Mount Kisco, president Gretchen Zierick went to great lengths to research and analyze the purchase of a 3D printer for the company. The most desirable printer was a \$60,000 machine, but that expense could not be justified. Instead, a \$2,200 model was purchased and paid for itself within one week by reducing work requests on the tool room.

While it’s not precise enough to be used in direct manufacturing, the company creates numerous prototypes to gauge the accuracy of both intricate and large pieces. It’s also used to create custom fixtures to hold parts rather than resort to the time consuming and messy process of drilling through plexiglass.

“It’s really working out well,” says Zierick. She’s thrilled with the ways the printer has aided the company, which makes electronic connectors for wires on circuit boards.

“They were making things the first day it was here and they’re doing a lot more with it than they thought they would,” she says. But, for the company’s more exacting production needs, they continue to contract with vendors offering high-quality 3D printing.

Prototype development by means of 3D printing has been heartily embraced by Hudson Valley manufacturers, as evidenced in the samples above. But when it comes to direct production, most are “giving the technology a little more time to mature.”



Alex Cannella's 3D piece derives from the Legendre polynomials she studied in a math class and was developed as a project for her "Crafting in Virtual Space" class. Cannella plotted aspects of the polynomials, imported the graphs into Rhinoceros 3D software and revolved them to create vessels. The one she chose to produce took 30 hours to print on a 3D printer.

"We're giving the technology a little more time to mature," Zierick says.

The potential arenas for 3D printing extend well-beyond manufacturing, ranging from cell regeneration, prosthetics and bone replacement to custom-made shoes and creating intricate designs on top of cookies.

Call it a disruptive innovation or disruptive technology, the outcome is the same: An existing market and value network will likely be displaced, and unpredicted uses will emerge thanks to the versatility of 3D printing.

"3D printing is democratizing the manufacturing process," says Sean Eldridge, president of Hudson River Ventures, which put up the private \$250,000 toward HV3D. His faith in the effort is so deep he has also pledged another \$500,000 of his own money to help local endeavors involving the technology.

"I think it's a great fit for the Hudson Valley, where we have a really great tradition of advanced manufacturing," says Eldridge. "We have a skilled and well-educated work force with a long history of culture in the arts and design."

The abundance of small and medium-sized manufacturers in the region is one of the reasons HV3D should succeed, Freedman believes. "People will have the ability to design and test out new products in a more cost-efficient way," he explains. The opportunity to have access, not just to the technology, but also to the school's engineering and design expertise, should aid in success. It's one of the first local efforts to recognize the ongoing integration of art and engineering, a melding that people embrace everyday when they use a smart phone.

"New Paltz's design program is a real strength," says Freedman, "and we have the comprehensive SUNY engineering program, so it's technology married with design work."

Profile: Alex Cannella



While some people consider art and engineering two drastically different career paths, Alex Cannella now sees them as complementary blends leading toward a rewarding career.

"I went back and forth between the fields," says the SUNY New Paltz junior. "But now I know I can do both." She expects, upon graduation with a degree in electrical engineering and a minor in design and fabrication, to create prosthetic devices.

A few recent experiences have guided her decision to pursue both art and engineering.

For starters, she learned her art professor had also majored in engineering and then earned a master's degree in art. Then SUNY New Paltz offered its new program that merges the two fields and finally, this summer, she experienced real-world implications as an intern at Sono-Tek, where almost all the employees are engineers.

"I got a different perspective," the 20-year-old said of her summer internship. And seeing the critical role manufacturing played in the overall process was incredibly insightful.

"I think when most people think of manufacturing they think of people who didn't go into a profession," she explains. "But the people who manufacture are critical. It's not just random." And she saw first-hand how manufacturers' contributions are essential to a product's success. "I just didn't really know the industry side. I think people shine a bad light on it (manufacturing) but they don't know about it."

She is now confident of one thing: "Anybody who does design should go through the manufacturing process."

And so when Cannella does begin her career, she'll be taking a different route than many expect.

"I'll start in manufacturing and learn the steps," she says, "and then I'll go into design." Where that will take place has yet to be determined. She would love to stay in the Hudson Valley to be close to her family in Rockland County, but fears there may be limited opportunities.

"I really want to be here, but I'm not sure I'll be able to find this kind of job here, so if something comes up elsewhere, I'll probably have to go for it."



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Advertisers Index

32	Adecco
48	Armistead Mechanical, Inc.
23	Arnoff
46	Barton & Loguidice, P.C.
6	BASF Corporation
13	Bond Schoeneck & King
8	Central Hudson
34	C.T. MALE ASSOCIATES
49	Council of Industry Membership Promotion
46	Curtis Instruments
BC	Direct Energy
35	Dutchess Community College
49	E.A. Morse
22	Eastern Alloy
44	Entergy
30	Ethan Allen Personnel
42	Fair-Rite Products Corp.
22	Fryer Machine
9	GKG
28	Here's Help Staffing & Recruiting
10	Hudson Solar
48	Hudson Valley Workforce Investment Boards
15	HV Shred
10	Jabil
4	Judelson, Giordano & Siegel, CPA, PC
44	Materion Corporation
34	Metallized Carbon Corporation
12	Mount Saint Mary College
IFC	NYSERDA
50	Orange County Packaging
15	Provident Bank
35	Rondout Savings Bank
50	Stanfordville Machine & Mfg. Co., Inc.
36	SUNY New Paltz
31	SUNY Ulster
14	The Chazen Companies
28	Ulster BOCES
40	Ulster Savings Bank
12	Ultra Seal
14	Unilock
IBC	Verticon Ltd.
13	Walden Savings Bank
31	Westchester Community College

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