

STANLEY
Engineered Fastening



A Changing Workforce

How to better meet the needs of a labor pool that's increasingly younger and more diverse.



The U.S. manufacturing workforce, like mass production itself, is changing at a pace and in ways never seen before.

Today's labor force is comprised of a mix of generations, data-hungry digital natives, more women, and workers from disparate cultures. It requires ergonomic solutions, multiple training strategies, and elements of Industry 4.0.

In addition to manufacturers dealing with human factors like Baby Boomers eyeing retirement and immigrants bringing their cultures into the workplace, manufacturing workers must now operate in an increasingly technologically complex setting that's more like something out of *Minority Report* than a Charles Dickens novel. Factories that are merging the real and cyber worlds with automation, connectivity, Big Data, and screen technology demand new kinds of employee qualifications, education, training, and, of course, trainers.

"The manufacturing environment of 25 years ago is not the same as what you walk into today," says Deanna Postlethwaite, director of global product management for STANLEY Engineered Fastening's Assembly Technologies product line, in Cleveland, OH. "The environments have been transformed from 'dark and dirty' to very technology-driven ones focused on increased productivity, consistency, quality, and safety."

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As the shop floor environment has advanced, so have the tools factory workers use. Years ago, when a car's weight wasn't an issue, assemblers wielded impact wrenches, hand wrenches, and ratchet wrenches to tighten large bolts that joined big chunks of metal on automotive body frames. They weren't concerned about breaking anything.

Some in the industry recall a time when over-tightening bolts and nuts wasn't a problem because workers' main concern was to keep the car from falling apart.

Then came the 1973-74 OPEC oil embargo, when Americans waited in long lines for gas and dialed down their home thermostats to save energy. With the energy crisis, vehicle lightweighting became the Holy Grail for automotive manufacturers. Engineered fasteners were downsized, but they still had to do the same job as the heavy, large bolts they replaced. Tool makers had to start thinking seriously about controlling torque.

Pneumatic air tools replaced the brute-force wrenches used to tighten bolts. But, while the air tools did the job of controlling torque, they were heavy and slow. So, toolmakers added electric motors and computer-based controllers, which enabled operators to tweak speed and other variables needed for an application.

As the new, advanced engineering in tools enabled more control over the work the men did, the tools also required their operators to have a higher degree of knowledge. Where brute force once sufficed for tightening a bolt, and every man knew how to use a wrench, the new tools called for a different skillset. Today, virtually all factory workers wielding those tools must understand math and basic computer programming.

But this shift affects more than the tools. Today's manufacturing plants are themselves very technology-dependent, says Postlethwaite. Computers increasingly control entire factories.

As a result, even workers with many years of on-the-job experience need to retrain or become obsolete. Longtime workers who have been able to transition to more sophisticated skillsets might find themselves working with new hires who are knowledgeable and trained in the new ways of the factory floor, either through certification in a technical school or a two-year degree at a community college.

"I think in the past you could always learn on the job, and now it's more about acquiring work-related skills before we even get on the job," says Postlethwaite. "It's fast-paced, and shops need to see how fast they can get that worker up and running and actually productive in the manufacturing environment." There's another way mature and new workers alike can become proficient with the new tools they're using: training from the tool vendor. In fact, STANLEY Assembly Technologies hired a product specialist to train automotive workers in the Michigan-Ohio area. It also has a team in Frankfurt, Germany to train workers in Europe. Even the sales team — the company's most direct link to its customers — provides customers with some kinds of training.

Notably, the sales staff works in both directions. They not only show customers better ways of doing things, they also bring ideas from the workers using STANLEY Engineered Fastening's tools back to the company's designers, who often then build user-suggested features into new versions of the products.

“For us, the training is part of our value-add,” says Postlethwaite. “We view training from the aspect of how do we enable the customer to be as successful as possible? How do we enable workers to be successful with the products we provide to them?”

Postlethwaite, who’s responsible for the overall training for her company’s assembly technologies products, knows a thing or two about teaching. Before joining the STANLEY Engineered Fastening division, one of the products she helped design for technical training centers and schools was an educational system to teach welding using virtual reality. She’s a proponent of presenting training to customers as effectively as possible, whether training at one of STANLEY’s technical centers; on-site; with tutorial videos, webinars or with other enabling technology; or some combination of those strategies.

“My thought is, how do we enhance our hands-on training with multimedia formats so that training covers all the different ways that people learn?”

Keeping workers safe and on the job

Just as people learn in various ways, they have bodies of all shapes, sizes, and ages, each with various abilities to reach, grab, and bend. Couple these differences with the need to apply fasteners at points on a vehicle that can be tricky to reach on a factory assembly line, and the case for ergonomics becomes clear.

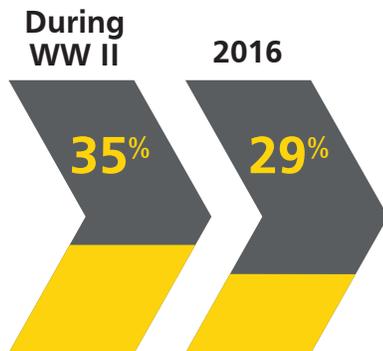
After all, all joints don’t present themselves for the operator’s convenience. Sometimes they have to get under and over, sometimes they have to move something, and so STANLEY Engineered Fastening has different dimensions to its tools to let operators get into these spaces easily.

As physical plants and tools have evolved, so has the profile of workers in manufacturing. More women are taking on high-level executive positions in manufacturing companies, as well as working in more physical roles like welding.

For example, the company worked with a new Detroit-area factory that builds sub-assemblies for the automotive industry. Long before the owners hit the switch on the new line and workers started work, STANLEY Engineered Fastening was there to get specifics.



Women in Manufacturing



“We have to go there. We have to get a lot of primary data about the fastening they’re doing, get application details and the assembly process,” says a STANLEY Engineered Fastening product specialist. “We have to know how our tools will be used, and we have to make them ergonomic.”

At times, the tools need balancers or arms added to make them easier to use. STANLEY’s technical specialist collects information about output, torque and how many bolts a worker fastens per minute. If a line worker is fastening a lot of bolts, a smaller tool may create too much heat for the person to handle comfortably, and a larger tool is required.

Going on-site and talking to the people who use the tools has an advantage for tool makers, too. Sometimes workers will suggest changes to make tools better, or they’ll unwittingly inspire an improvement just by showing how they hold a tool. Often the enhancement falls between the specs for two different tools, so it doesn’t require a redesign or complicated retooling to accomplish it.

Leaning in to help women

As physical plants and tools have evolved, so has the profile of workers in manufacturing. Like Postlethwaite, more women are taking on high-level executive positions in manufacturing companies, as well as working in more physical roles like welding, according to manufacturing jobs placement firm ResourceMFG.¹

That’s good news for the industry, demonstrating that initiatives to remediate the shortage of skilled workers are working. Those efforts are largely about getting people interested in manufacturing via organizations like Women Who Weld. In 2016, women made up 29 percent of the manufacturing workforce, according to the U.S. Department of Labor.² That’s getting close to the ranks of women during World War II, when females made up 35 percent of the civilian labor force.³

“We talk about a skills gap, and we talk about manufacturing needing more workers,” says Postlethwaite. “Well, you’ve got a huge pool of women out there and if we can encourage them to join the manufacturing workforce I think we could do some great things.”

Even so, women still may be tested by their male counterparts to prove they’re up to doing the job. That’s where national groups like Women in Manufacturing, as well as support from within companies, can play a key role. To answer that need, STANLEY Engineered Fastening has a women’s employee resource group with several chapters worldwide.

Motivating digital natives

While it’s one thing to attract the younger generation to manufacturing careers, it’s another to figure out how to train them and keep them engaged.

“The younger workforce is quite different from their predecessors, which can be challenging for some employers; however, the differences can bring about a lot of opportunities,” says Jeannine Kunz, vice president, Tooling U-SME, the education program of the Society of Manufacturing Engineers. “Take, for instance, Millennials who, in contrast to Baby Boomers, are motivated by experiences and connections. They were raised on technology, so online or virtual training might be more appealing to them.”



“Manufacturers who work well with Millennials also understand that little things matter to them — allowing them to showcase their talents and skills to help solve problems. Enlisting them to train older co-workers on technical job functions also helps them feel more connected and valued at the company they work for.”

In France, Germany, and the United Kingdom, the younger workers usually have no factory experience and are hungry for learning the basics, says Vahid Amirzadeh, European product manager for STANLEY Engineered Fastening in Frankfurt.

“In the past, we only had to train for our equipment,” says Amirzadeh. “But now they’re asking for more basic training because they have no experience. They want to go deep into tightening.”

As a result, the team that Amirzadeh oversees has expanded training from one day to two. In addition to teaching about the parameters, common problems, troubleshooting and programming controllers of tools, the training team covers basics like torque, accuracy, and the 50-40-10 Rule for fastening.

But these younger workers, often new engineers fresh out of school, are hungry for more than just basic information. These digital natives also want current data, charts, and trending information. That’s what they’re used to — having data at their fingertips, with their phone and tablets, and the internet never far away. As a result, they usually can make use of information rapidly.

Just as the oil embargo in the 1970s led to lightweighting vehicles, computing has ushered in the Internet of Things and Industry 4.0, in which tools are tracked and controlled digitally.

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The resulting data helps optimize operations by merging the physical and cyber worlds. New plants are well-positioned to jump in, while existing manufacturers sometimes need time to adjust to this new way of thinking and doing things.

Having young workers bring their digital knowledge to training classes brings an unexpected benefit to the existing manufacturing workforce, too. With the younger generation asking questions in training classes with the older generation sitting alongside them, the experienced workers can see what can be done. It may just take a while longer for them to learn and adjust.

Postlethwaite adds a side note about mixing older and younger workers: It's up to a plant's leaders to create an atmosphere of respect across the generations. One of her strategies is to create a buddy system so employees of disparate ages get to know each other.

"You have all of that longtime experience and knowledge," she says. "And then the younger workers say 'Look, I can add this, and I can get data out of this.' Sometimes I'm sure there's conflict, but many times I think they learn to respect each other for their different views."

Embracing diversity

Age isn't the only variable in the makeup of the manufacturing workforce. In Michigan and elsewhere, immigration means employees come from many different cultures, often those new to manufacturing operations.

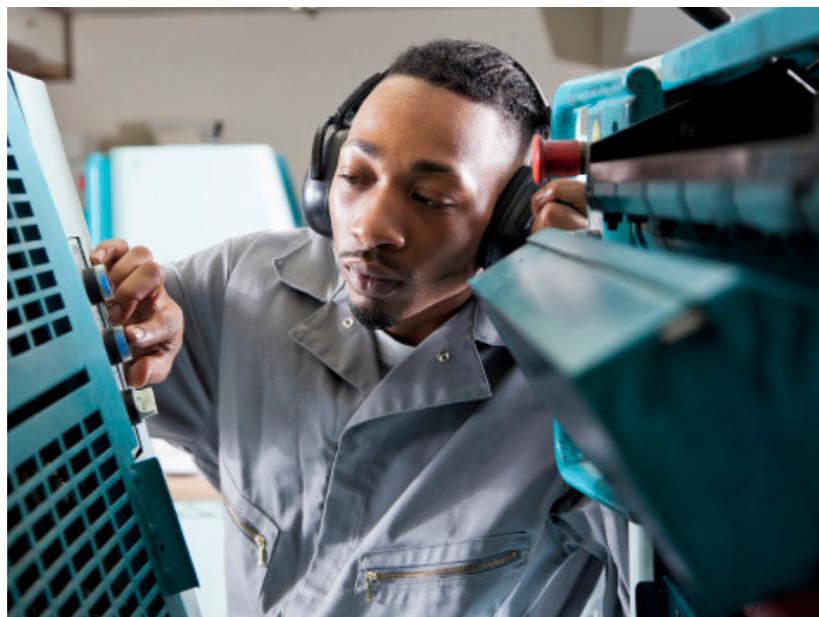
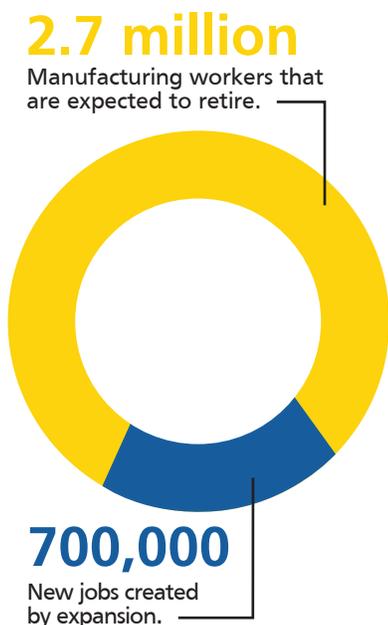
Oakland County, where STANLEY Engineered Fastening's headquarters is located, along with Macomb and Wayne counties, form Michigan's most population-dense tri-county area. All three counties experienced an immigration wave during the last 20 years of the 20th century, according to an article in the Macomb Daily.⁴

At the turn of the 21st century, immigrants who came from India, Iraq, Albania, Lebanon, Yemen, and other countries in the 1980s and 1990s made up 45 percent of the total foreign-born population in Oakland, 34 percent of the total in Macomb, and 48 percent in Wayne.

As a result, a younger and more diverse population is replacing Baby Boomers through attrition. Many of the replacements have grown up here, and understand the American way of life.

This greater interest in manufacturing jobs couldn't come at a better time. During the decade ending in 2025, an estimated 2.7 million manufacturing workers are expected to retire, according to a Deloitte report entitled *The Skills Gap in U.S. Manufacturing 2015 and Beyond*. Those leaving the workforce, along with a projected 700,000 new jobs created by expansion, are partly what's creating that gap over the next eight years.

For now though, those who run training classes for STANLEY Engineered Fastening say their greatest challenge is a modest one: finding more vegetarian or dietary restriction-friendly lunch options for their diverse trainees.



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Sources

¹ResourceMFG, "Manufacturing's Changing Workforce," 2016

²"Women in the Labor Force: A Databook," Bureau of Labor Statistics, 2017

³"Women & World War II," Metropolitan State University of Denver

⁴Charles Crumm, "Migration fueling Macomb County population growth," 2018

STANLEY ENGINEERED FASTENING FAMILY OF BRANDS

AVDEL

INTEGRA

NELSON

OPTIA

POP

STANLEY
Assembly Technologies

TUCKER