

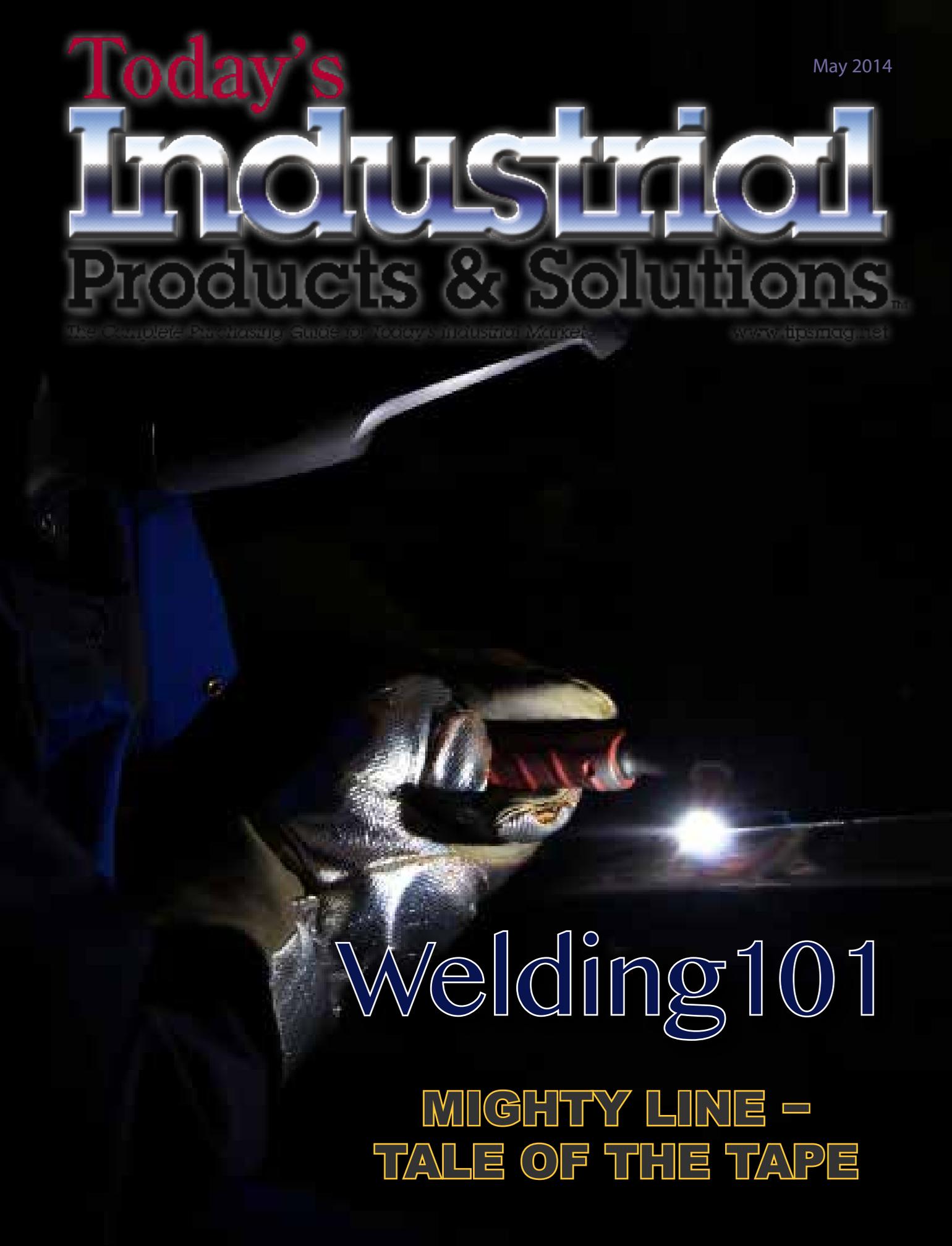
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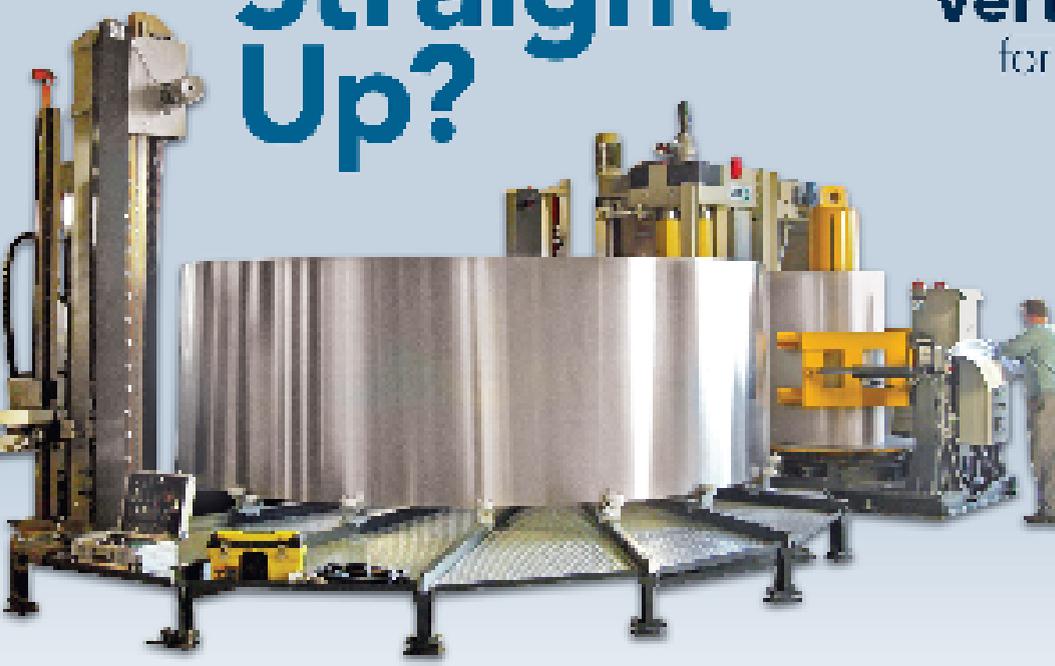
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Shielded Metal Arc Welding Certification Tests -

AWSD 1.1 Structural Welding Code Steel

By Jody Collier

Shielded metal arc welding tests for structural type work are specified by the American Welding Society Structural Welding code for Steel. AWS D1.1 is the name of the code book.

There are numerous AWS welding codes for all kinds of industries and the welding certification tests for shielded metal arc welding are usually pretty similar from one code book to the next. The American Welding Society provides code books for heavy equipment, Bridge Welding, Sheet metal, Titanium structures, Aluminum structures, Industrial Cranes, steel and aluminum hull welding for ships, aerospace welding, and a whole lot more.

The common thread that runs through all these code books is this:

Before any coded welding can begin, welding procedures need to be qualified

Welders need to be certified using the procedures that have been qualified

Welds need to be inspected by a qualified person

When it comes to Shielded Metal Arc Welding, There are AWS welding procedures for sale that are prequalified. They are not free. In fact, if you buy a pre-qualified welding procedure... for the

few pages you get, you might think you got ripped off. But odds are, you just saved yourself a whole bunch of money and headaches in the long run.

Prequalified welding procedures are produced with a lot of input from volunteers in the welding industry. Is a round robin kind of thing where several different companies produce welds to a given set of parameters and they all agree that acceptable welds can be done using the procedure.

There is safety in numbers. If company X, Y, and Z can all agree that good welds can be made that meet visual inspection criteria, non destructive, and destructive testing, as well as other mandated tests, it seems reasonable to believe that the procedure works.

Companies are free to re-invent the wheel and test their own procedures but it usually winds up costing more in the long run. It is wise to go ahead and buy the pre-qualified procedures. Especially when there is the likelihood of an audit from regulatory agencies. The AWS has more clout than you do.

Jody Collier writes about Welding Certification along with tons of Down and Dirty welding tips. For TIG, MIG, and STICK welding tips along with an abundance of other welding information, visit <http://www.weldingtipsandtricks.com/>



TigWeldingCertification-

Differences in the Pipe Welding, Aerospace, and Aviation Industries

By Jody Collier

2 industries that require tig welding certification are:

1. Industrial piping, (including boiler tubes)
2. Aerospace and aviation (manufacture and overhaul/repair)

For tig welding certification in piping, pressure vessels, and boilers, ASME section IX of the "Boiler and Pressure Vessel Code" specifies the criteria for acceptable welding tests.

For Aerospace tig welding, the American Welding Society (AWS) D17.1 - "Specification for Fusion welding for Aerospace Applications" is the code for welding certification tests.

More often than not, a 6G position welding test is required to certify for Pipe welding jobs. On many boiler jobs, 2" heavy wall tubing is tig welded all the way out in the 6G position making the welder either switch hands, or at least get in some uncomfortable positions. That is why 6G position Tig welding tests are considered the most difficult.

Most of the time, sheet metal test pieces in the 0.020"-0.125" thickness



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range are used for aerospace welder qualification testing. The 6G welding test is only used occasionally because it does not accurately represent the scope of welding tasks performed for most aerospace and aviation welding applications. AWS D17.1 even has a provision for welders to certify on a scrap part or mock up of a weld that is not represented well by a plain groove or fillet weld.

ASME section IX Boiler and Pressure Vessel Code has been around for a very long time, but AWS D17.1 is relatively new and was written to replace 2 old Mil standards... 1595a and 2219.

One thing both welding certification specifications have in common is that the test welds that are selected to be used for certification tests only qualify the welder for a range of positions, thicknesses, and joint types. No single test qualifies for all the possible material, thickness, positions, and joint types that are possible. That is why some welders hold a dozen or more certifications.

One main difference in welding tests for these 2 industries is that the initial welding test for Pipe welding jobs are largely done using low carbon steel or stainless steel. Other materials like inconel are sometimes used also but not nearly as much as carbon steel and stainless.

In the Aerospace and aviation industries, It is not uncommon for a welder to be tested on carbon or low alloy steels, stainless steels, nickel alloys, aluminum, magnesium, titanium, cobalt alloys, and even some refractory alloys like Niobium...with separate welding tests required for each material category.

One of the main differences in Tig welding pipe and tig welding aircraft or aerospace parts is in the thickness of material. In Aircraft welding , most everything is thinner. and that means smaller electrodes, smaller filler wire, smaller torches...and in Aircraft and Aviation tig welding, a 1/16" rod is considered pretty big.

Jody Collier writes about Welding Certification along with tons of Down and Dirty welding tips. For TIG, MIG, and STICK welding tips along with a buttload of other welding information, visit <http://www.weldingtipsandtricks.com/>

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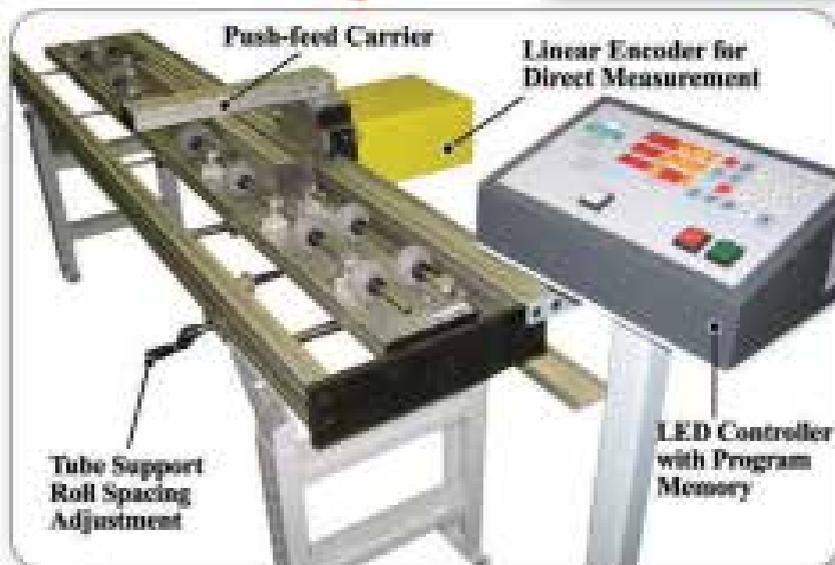


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Pipe Welding Procedures 101





By David Zielinski

There are many welding codes to choose from when it comes to pipe welding procedures. The good news is no matter what code you're talking about the procedures are very similar, if not the same. Some of the basics of these procedures are:

- Joint Preparation
- Root Weld
- Fill and Cap
- Testing

Joint preparation typically requires the welder to prepare the materials that will be welded. In most cases there will be "weld test coupons" already prepared for you. Once you receive the coupons, they will need the mill scale removed from the weld area and bevel angles checked. After that they are tack welded together and rechecked again. Most pipe welding procedures require a gap opening ranging from 1/16 to 1/8 of an inch. Then the test is put into position and cannot be moved from that position at any time during the test without the permission of the welding inspector.

The root of the weld is the most important part. Because of this fact, most tests require inspection of the root *before* moving on to the next part. If there are any defects, it may require a repair. Repairs are only allowed if the welding inspector says they can be done. At this point, you are at the mercy of the person overseeing the test.

When it comes to the fill and cap, it is pretty straight forward. In most cases nobody is going to see your fill and the cap until the test is completed. That is in most cases but not always. There are times the inspector *will* check and if you are struggling, you could fail on-the-spot. Some general rules for the cap are: no undercut greater than 1/32 of an inch, weld reinforcement should not exceed 1/8 of an inch, and the weld must be flush or higher than the test plates.

Pipe welding requires a lot of patience to learn but if you follow three rules you will find your welds will improve in just a few hours of practice. The three rules are:

1. Always find a comfortable position that you are able to sit, kneel, or stand with a good view of the weld joint.
2. Whenever possible lean on the pipe or anything else that will stabilize your body and hands.
3. Relax and never rush into welding the pipe.

Comfort is the key to welding pipe. Before jumping into the weld, find a position that you are able to sit, kneel, or stand comfortable without getting any cramps or shaking. I hate to say it but welding pipe is a lot like yoga! Many welds require the use of odd body positions and you must be able to hold

them for the time that you are welding. When finding a body position you need to get comfortable and then visualize making the weld. Practice the weld without actually welding. This will prepare you mentally and physically for the position you will need to be in. At the same time it will expose any areas of the pipe that may give you trouble accessing before the actual welding of it.

Lean on anything to stabilize your hands is one tip that will improve the appearance of your weld instantly. This is extremely important when taking an on-site job test or pipe welding certification. On-site pipe welding tests are typically done with short pipe coupons and many times they get to hot to lean on. The solution in this case is to use a vice grip or C clamp to lock onto the pipe. This will give you something that is not burning hot to lean on and at the same time give you full control over your welding technique.

Patience and relaxing are the golden rules when welding pipe. Rush a weld and chances are you will either make a less than perfect weld or even get fired for poor quality. If you ask anyone who has been welding pipe for a long time they will tell you to always take your time.

David Zielinski is a Certified Welder. For more information about pipe welding procedure then visit his welding website. All of the information is free and it is full of accurate, hard-to-find, real-life welding tutorials!

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Five Fastener Tips Every Manufacturer Should Know

Including the fastener supplier early in the design process helps reduce manufacturing costs, speed the fabrication process, and improve product durability

Manufacturers can overcome production challenges presented by fastening problems by utilizing the design expertise of fastener engineers and suppliers who can not only meet stringent specifications, but can incorporate design features which save on assembly time and costs while improving the quality and durability of finished assemblies. Here are five tips that can help

manufacturers work in partnership with their fastener suppliers to optimize design and production process of their products.

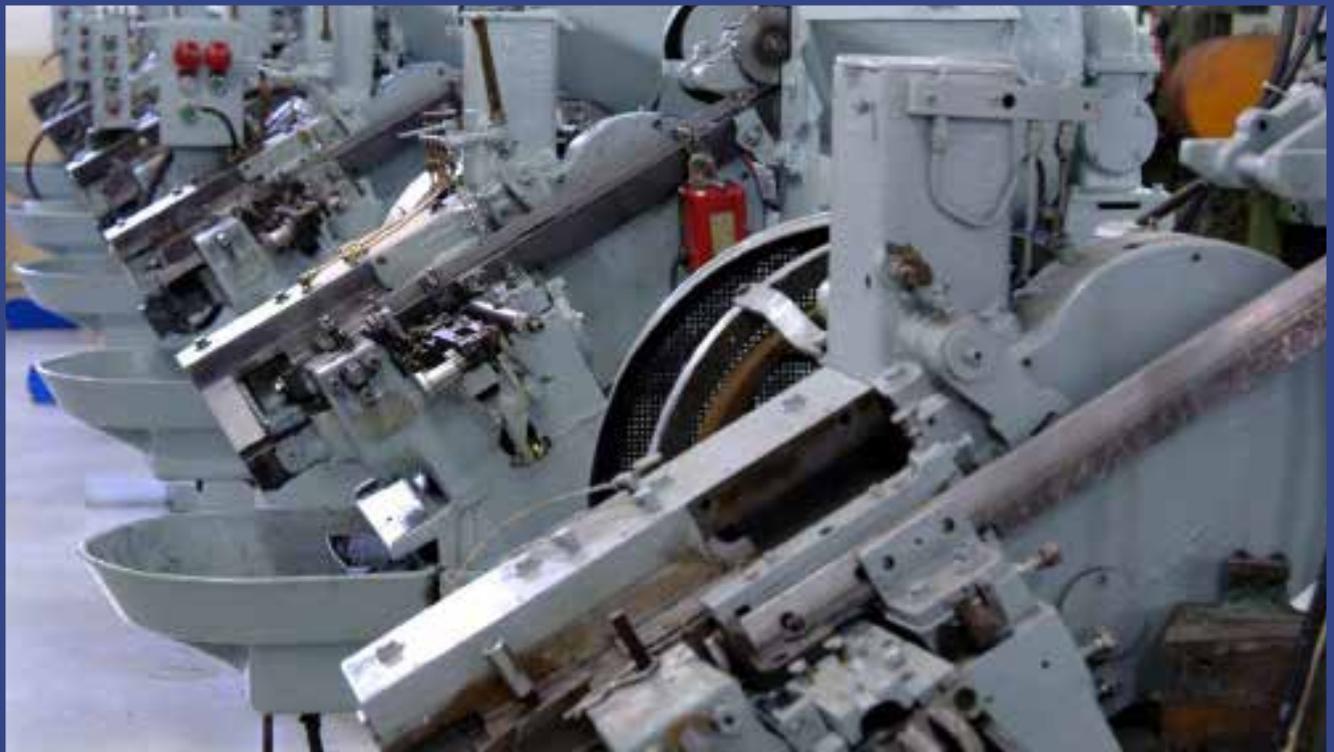
1. Bring in the fastener supplier early in the design phase.

Receiving early input from a fastener supplier's engineering staff can help develop a simpler design solution, saving

on fastener costs and production time.

For example, "over engineering" is oftentimes a chief cause of cost overruns. On the other hand, up-front design consideration of ergonomics, assembly efficiencies and durability can help avoid problems down-the-line.

"Getting the fastener supplier involved



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in the design process early on can provide significant cost savings,” says Lynnette Stacy, Purchasing Agent at Brooks Utility Products of Farmington Hills, MI—a specialist at providing custom, one-off solutions for the power generation, transmission and distribution markets.

“For example, we work with Holbrook Manufacturing’s engineering group on our new application, and they will take charge of the complete fastener design process,” says Stacy. “That makes the process simple and efficient.”

Holbrook Manufacturing, Inc., Wheeling, IL, is a manufacturer and distributor of standard and custom fasteners, including screws, bolts, nuts, studs, sub-assemblies & screw machine products. The company partners with customers to determine engineering specifications that will best suit an application in terms of simplicity, quality and minimal assembly requirements, while remaining competitively priced.

Choosing a fastener supplier who is proactive about product design can also be an important asset.

“We were purchasing a part with a so-called ‘turned head,’ which was a very specific configuration,” says Stacy. “But we had to do a secondary operation to get the turned head shape. One of Holbrook’s engineers asked why we were using that shape. It turned out that we didn’t need it, and we were able to eliminate that secondary operation. That level of customer support really means something to us.”

2. Opt for licensed products to ensure product robustness

The expense of recalls and other warranty issues—not to mention tarnished reputation—far exceeds that of investing in quality fasteners of proven durability in the first place.

Just as important, the proprietary designs of licensed products often address problems and issues that non-licensed designs cannot. Beyond that, look for a supplier that has the expertise and in-house capability to customize licensed products to meet unique challenges.

“We get a special fastener Ford Motor Company specs out on some of my assemblies,” says Mark Hetherington, Materials Manager at Multi Precision Detail of Auburn Hills, MI—which specializes in custom work-holding devices that are used mainly for automotive applications and specified by the Big Three automakers.

“You have to be licensed to make those screws, so that naturally affects your selection of fastener suppliers,” says Hetherington. “Holbrook is one of the companies that is licensed to make that particular item, so I have been buying from them for several years.”

3. Try to avoid the need for a custom fastener

Quite often a product design will force the OEM into requiring a custom fastener, but custom fasteners are more costly and take more time to produce. Numerous reviews may be required before the OEM approves the final design.

Instead, brainstorming with a fastener supplier might find a way to effect a design change that will allow a standard fastener to work. This is a huge time and cost saver, especially when considering the large number of fasteners often involved in production runs.

“Many of our applications require custom fasteners,” explains Stacy. “However, that doesn’t mean that we have prolonged design time or high costs. I simply turn the design, early on, over to our fastener supplier, and they give me the most practical solution.”

4. Keep it simple

That is, keep the design for which the fastener is made as simple as possible. One successful example involves a company that made residential faucets with a handle assembly of four pieces. Three of those pieces were screw-machined, which is an expensive process. Yet, they still had a problem with the handle loosening at the homeowner level.

To solve the problem, the fastener supplier’s engineering team reviewed the design, combined the four pieces into a two-piece assembly, and made it a “cold headed” part versus “screw machined.” The result was a more positive tightening feature, and loosening was no longer an issue. It was a large cost savings to the customer and it also improved the product.

“That’s where you can get added cost savings,” says Stacy, “by having the fastener supplier’s engineering group come in and take a look at your products and suggest alternate designs that save steps in the assembly process.”

5. Aim for fast and flexible

With lead-time being one of the biggest issues today, consider how quickly an order for fasteners can be filled. Aim for a lead-time of no longer than four to five weeks. Seek an even quicker response time for rush orders necessitated by a design change.

“Turnaround time is crucial,” says Hetherington. “Minimum order quantities are also important, and inventory requirements shouldn’t be overlooked. We get all of that from Holbrook, who supplies fasteners for some of our products.”

For more info, contact Holbrook Manufacturing, Inc., 288 Holbrook Drive, Wheeling, IL 60090; Phone: (847) 229-1999; Fax: (847) 229-0996; Email: <mailto:sales@holbrookinc.com>; or visit the web site: www.holbrookinc.com

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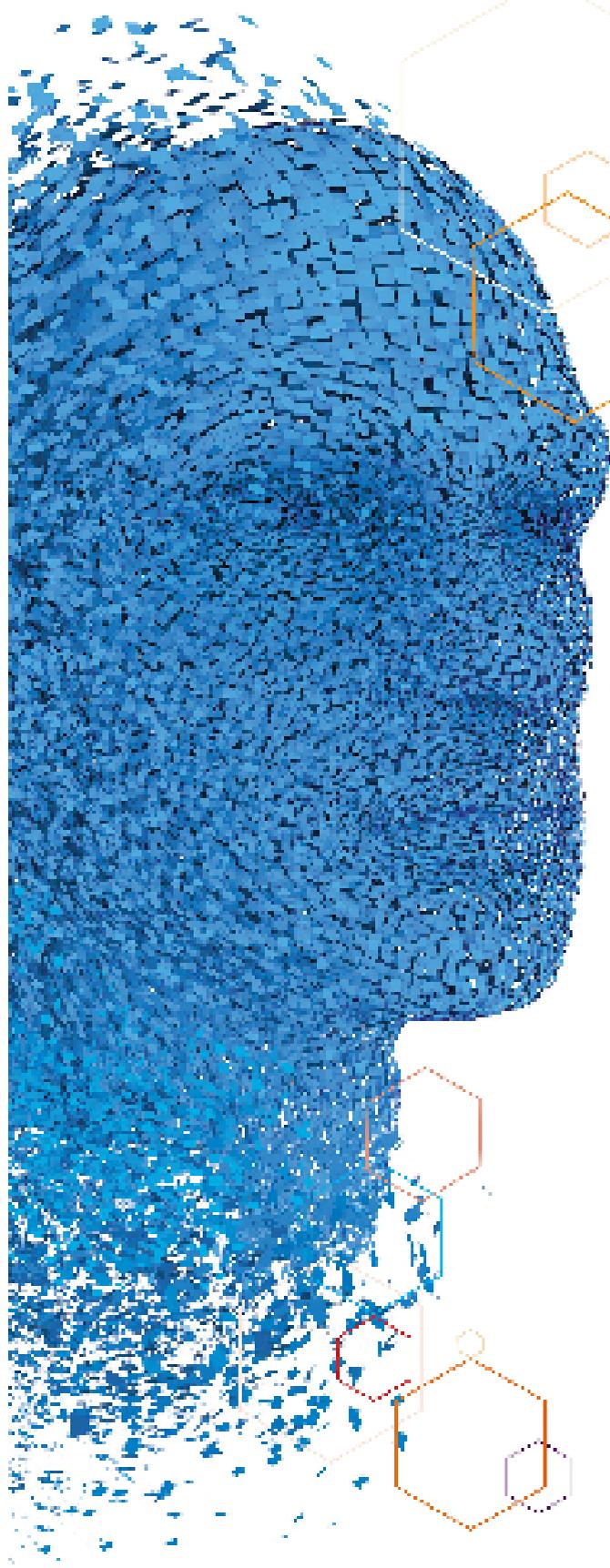
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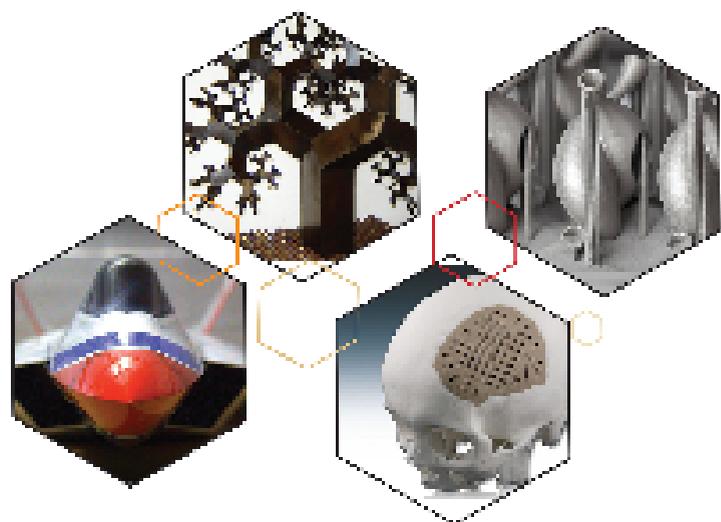
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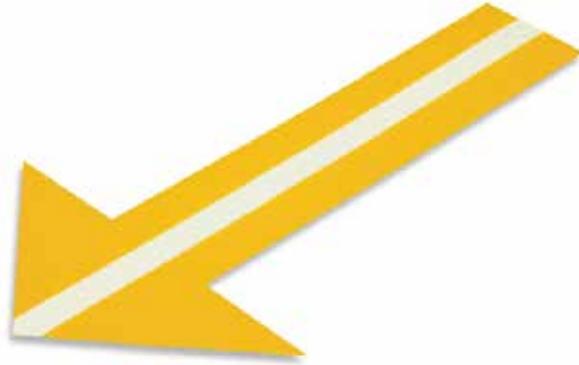
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WALKWAY / EXIT ROUTES:

Effective floor marking makes a physical space easier for occupants to understand and be more aware of traffic



patterns, work-flow routes, and hazardous work areas. Mighty Line floor markings are used to identify proper traffic flow routes, identify different departments/functional areas inside facilities, and identify proper storage locations of inventory and equipment. These markings are used to segregate motorized vehicles from pedestrian traffic and help prevent accidental collisions.

Mighty Line 5S floor tape products are available in nine standard colors and four different widths. Essential 5S products include: angles, T's, footprints, dots, and arrows.

5S INVENTORY / EQUIPMENT / ORGANIZATIONAL OPTIMIZATION:

The wide variety of Mighty Line colored floor marking 5S angles aid in facility layout, organizational control, and overall neatness by providing proper inventory and equipment placements. Placing the right items in the right places reduces the likelihood of misplaced pallets, inventories, and equipment—saving retrieval time and reducing non-productive searching activities.

Mighty Line's 5S floor marking products aid in optimizing overall facility organization and can have a significant positive impact on the efficiency of overall operations. Because of the product's quick installation, it's also easy to meet unplanned or last-minute inspections with a full-range of readily available Mighty Line floor tapes, floor angles markers, floor T's, dots, and footprints.





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HAZARD PREVENTION / SAFETY MAXIMIZATION:

It is critical for occupants to be aware of dangerous equipment, processes, and work areas and to understand how to remain aware and safe in these areas. Mighty Line's Diagonal Floor Tapes signify areas where heightened occupant awareness of danger is required. The diagonal tapes are readily available in bright standard colors of yellow with black diagonals, white with black diagonals, and white with red diagonals – in all four standard width sizes.

In the event of unexpected power failure, Mighty Line's luminescent (glow-in-the-dark) floor tape with a glow-in-the-dark center line tape illuminates egress aisle-ways during blackout power outages.

FLOOR SIGNS / SAFETY COMPLIANCE:

Floor safety compliance signs are an essential tool used by managers to notify building occupants to keep emergency equipment free from blockage, mark/assure quick access to emergency equipment, and warn them of dangerous work areas.

Mighty Line offers a variety of standard shapes and sizes of floor safety compliance signs – all in durable, non-slick, heavy duty adhesive formats. Floor Sign types include AED Defibrillator or CPR Station signs, caution/stop signs, hearing protection signs, etc. Custom floor signs are also available in different colors, languages, and design configurations.

FLOOR-GONE CONCLUSION / EXPANSION:

Effective floor marking makes a physical space safer and easier for occupants to understand and operate—while maximizing production efficiencies. ShieldMark's Mighty Line floor marking tapes are used as a tool to help managers run a safe, organized and productive facility. Mighty Line offers an expansive line of durable (3-Year Limited Warranty), easy to install, quick/clean to remove, and fume-free floor marking solutions.

The following additions/advancements to the Mighty Line spectrum of taping system solutions are planned for introduction during 2014:

- Cold Application Floor Tape
- Rodent / Sanitation Floor Tape
- Label protectors
- Mighty Line Cleaner



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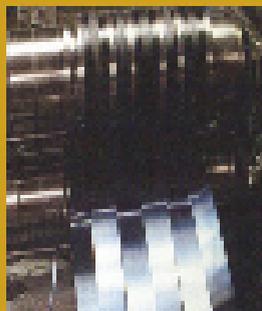
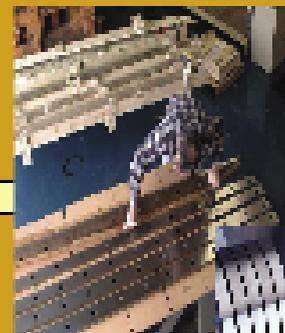
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