

# **Ajax Innovator**

News & Events From Ajax Metal Forming Solutions

2017 Issue #1



## Manager's Message From Erick Ajax

### Knowing What To Measure

I'm willing to bet that I've devoted more time (and money) to precise measurement than anyone I know. It's fair to say that a better part of the metal forming business is the pursuit of accurate measurement. How else will we know when we've achieved our quality goals and delivered the goods on spec?

Over my years in manufacturing, I've seen how the measurement goal line keeps moving. For instance, look how the tight tolerance definitions keep advancing. Indeed, there was a time not long ago when American

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## Tooling Innovation Gets Tight Results

We're Americans. It's in our nature to want to make things better.

For example, advanced manufacturers like Ajax Metal Forming Solutions have become experts at tight tolerance manufacturing.

In this manufacturing environment, the parts the company produces cannot vary more than +/- .002 of an inch. Parts produced to tight tolerances can reduce and even eliminate final product assembly problems. That, in turn, reduces production costs (and headaches).

But let's be practical. Tight tolerance manufacturing is really all about skilled professionals teaming up to find new ways to exceed customer expectations. More parts in less time, better

quality, more consistency, and faster turnaround. That result is measured not in thousandths of an inch, but in happy customers and business growth.



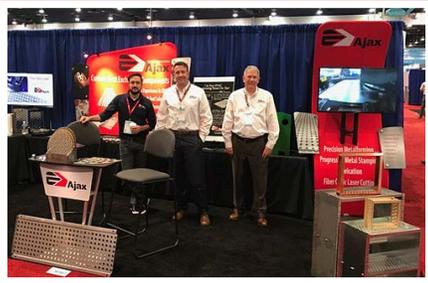
Jayson Marcott designed the tooling solution for this four-nut backing plate used on a refrigeration unit hinge.

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## 2017 Events

**AHR Expo 2017 Las Vegas is in the books, and Ajax Metal Forming had a great show.**

Dan McGee, Don Wellman and Erick Ajax had a great time at AHR Expo 2017 in Las Vegas. The Ajax exhibit was twice the size of last year's exhibit and included more part examples and more demonstrations.



*Pictured L to R: Dan McGee, Don Wellman, and Erick Ajax at AHR Expo 2016*

Next year, the AHR Expo event is in Chicago at McCormick Place, North America's largest convention center. See you there in 2018!

Also, plans are underway for the Ajax team to exhibit at several other industry trade shows and events during 2017.



Look for Ajax Metal Forming at the Design-2-Part show on March 29 and 30, 2017 at the Cobb Galleria Center in Atlanta, Georgia.

Ajax will also display at Design-2-Part on June 8 & 9, 2017 at the Convention Center in Minneapolis, Minnesota.

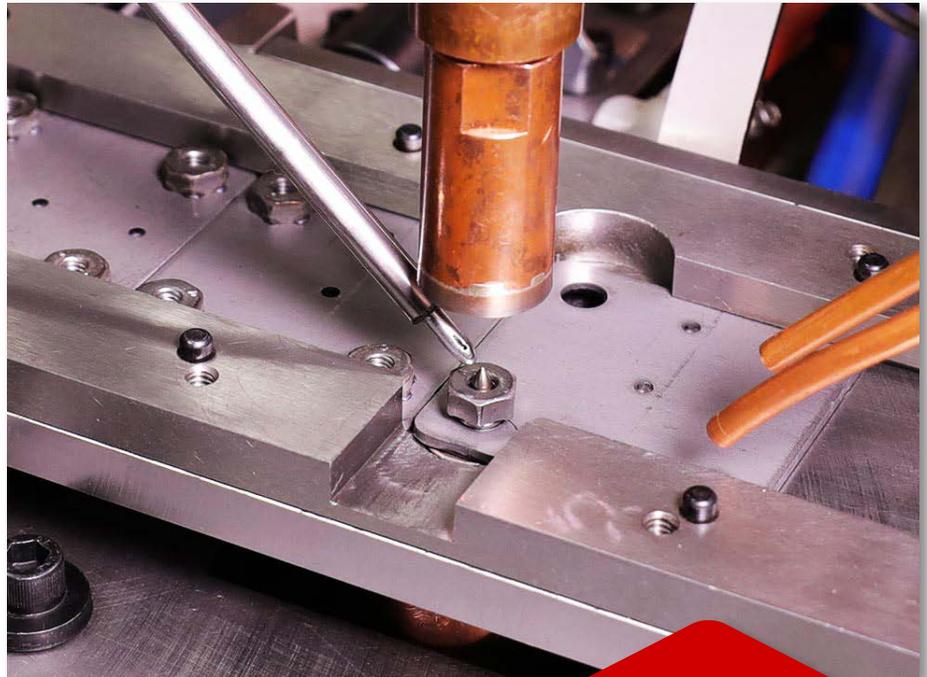
Please check [metalformingblog.com](http://metalformingblog.com) for more Ajax Metal Forming event dates and locations.

## Feature Story

# Tooling Innovation (cont.)

Jayson Marcott, Tool Designer at Ajax Metal Forming, was recently assigned to produce a four-nut backing plate to be used on a refrigeration unit hinge. In this case, the tolerance spec was +/- .005 of True Position. The solution he arrived at is impressive.

Jayson created a pneumatic feed system that can weld four locations on a material blank with only one electrode. This method produces far more parts than could be done manually, and with terrific quality results. A single operator can load material blanks and hardware into individual hoppers, initiate the production cycle, and the tool runs until the hoppers are empty.



"To me, the pilot pin on this tool is what makes it special," Jayson said. "It can pilot the blank and the nut hardware at the same time before applying weld pressure."

The pilot pin on this tool can pilot the blank and the nut hardware at the same time for spot-on weldments.

"If there is .001 of clearance between the nut and the pilot and the part and the pilot, then we're .002 inches of nominal. That's excellent."

Jayson designed this tooling solution using SOLIDWORKS CAD/CAE solid modeling software. SOLIDWORKS enables Jayson to create production tools rapidly while bringing creative solutions to bear on any design challenge. Computer simulation capabilities in SOLIDWORKS helps compress the design process and avoid delays.

### Innovation Counts

Jayson believes that tooling innovation will be increasingly important as tolerance demands increase over time. "At times in the past, we measured parts that were borderline on tolerance," Jayson said. "That's not good enough. With the tooling and other production improvements we've made, parts are very close to nominal all the time. Our non-conformance reports these days are minimal."

This tool needs to be kept in perfect operating condition, and due to the high volume of parts this machinery produces, it requires some troubleshooting and a well-trained operator to meet production goals.

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## Engineering From The Ground Up

The Ajax Metal Forming quality assurance team has continually invested in new scanning technology that enables them to meet and exceed tolerance specs.

The FARO ScanArm, a technology that the Ajax QA team has been working with for more than a year, features optically-superior blue laser technology with fast scanning speeds to deliver high-resolution point cloud data and the ability to seamlessly scan challenging materials.

The device is lightweight and very maneuverable for convenient desktop mounting in the QA lab. This is ideal for metal formed parts scanning.



What's new these days is that the Ajax QA team can now use the latest ScanArm software to generate CAD files and documentation as part of a reverse engineering process.

The QA team can quickly digitize a part and create a fully surfaced CAD model which can then be used for tooling, manufacture, project costing, and redesign.

This process is ideal for a multitude of metal forming and reverse engineering applications including the development of virtual simulations, rapid prototyping, and composite surface inspections.

The ScanArm's PolyWorks software is a full-featured reverse engineering software that combines history-based CAD with 3D scan data to create feature-based, editable solid modeling.

## Tooling Innovation (cont.)

### The Team Approach

Tight tolerance manufacturing tends to affect departments throughout the organization, Jayson said. "We prefer a team approach at Ajax," he said. "Getting the part right for our customer involves not only tooling, but materials selection, procurement, quality control, and especially customer and team communication."

Care has to be taken during the initial phases of the project to avoid cost and time frame issues, Jayson said. The benefits of tighter tolerances to the customer are obvious. Customers want their final assembly process to go smoothly with very little assembly fallout. "Costs can get out of line if we hit difficulties along the way. That's where planning and good team communication comes in."



### Future Ideas

Jayson plans to continue pursuing new tooling ideas related to tight tolerance manufacturing. "There's just no stopping advancements in metal forming," Jayson said.

"Our customers will continue to want more precision in their metal formed parts. The technologies are there. Our job is to learn better ways to apply them."

Jayson sums up future manufacturing challenges in two ways: quality and consistency. "There's really no standing still anymore," he said. "Today, there's ongoing market pressure to keep production costs low while improving the delivered result. I don't see that changing anytime soon."

Jayson's tooling solution uses a programmed series of pneumatic actuators to feed materials from the hopper into perfect position.



*Jayson Marcott is a tool designer at Ajax Metal Forming Solutions in Minneapolis, Minnesota. Jayson is certified in SOLIDWORKS, Logopress 3D tool & die design software, Mastercam Mill CNC applications, and Methods EDM (electronic discharge) machining. Jayson's credits also include a Class A 4-year apprenticeship in sheet metal. Workforce development programs at Ajax Metal Forming helped speed Jayson's career preparation along.*

A video of this machinery is on the Ajax Vimeo channel: [vimeo.com/208870568](https://vimeo.com/208870568)

## It's Official: We're a Six-Acre Campus!

Ajax Metal Forming last month finalized the purchase of a commercial building adjacent to the company's existing facility. This purchase increases the company's footprint to more than 70,000 square feet, with the ability to expand to more than 100,000 square feet. "We're clearly on track to outgrow our existing square footage," said company co-owner Erick Ajax.

Erick said the additional floorspace will initially be used to provide for logistics and production needs. The new location will also provide much-needed parking spaces. The latest communication, networking and security systems will tie the two buildings together.

"Our workforce development programs have succeeded in providing us with the capable people we will need to continue our growth," Erick said. "This is very exciting stuff. We're a six-acre manufacturing campus now!"



### Ajax Receives 2015 & 2016 Top Workplaces Award

For the second year in a row, Ajax Metal Forming has been named as a **Minnesota Top Workplaces** company by the Minneapolis Star Tribune newspaper. This recognition is awarded to companies who score highly on workplace culture, pay, training, work/life balance, and more.



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Ajax has also received the **2016 Anoka Country Employer of the Year** award. Ajax Metal Forming will continue to devote significant resources toward making our workplace the best it can be!

## Manager's Message (cont.)

manufacturers turned out hard goods with a ton of slop and called it good. These days, very tight tolerance is +/- .001 of an inch, and many of our tight tolerance project specs at Ajax are +/- .002. It's simply incredible to see how far we've come.



It's not just the numbers that amaze. It's the systems. Our new FARO ScanArm upgrade enables our QA team to reverse engineer virtually any metal formed part they encounter. With this system, we can digitally scan a part to create a fully-surfaced CAD model which can then be used to develop virtual simulations, initiate rapid prototyping, and more. What used to take days or even months now takes hours or sometimes even minutes. For a guy that keeps old-school micrometers and calipers in his desk drawer, this is simply jaw dropping stuff.

These new gizmos are well and good. Worth the investment for sure. But what made this state of affairs possible at Ajax Metal Forming? What's the driving force?

I'd like to think it's our management team. After all, we're

the ones who made the investments and bore the risk. We're the forward thinkers who look ahead and see what's over the next hill. We've gotten the ball rolling in the right direction. But there's more to this than just us management types.

Today, it seems, the ball is rolling forward on its own. And I think I know why: the things that are hardest to measure are paying off. In a big way.

Our dedication to workforce development has not only kept us competitive, it's keeping us ahead of the game in ways we didn't anticipate. I'm amazed at what Ajax people are doing!

To this point, I invite you to read over our cover story in this issue. In this article, tool designer Jayson Marcott explains how the combination of skills he acquired through our workforce development programs enabled him to innovate a manufacturing solution that checks pretty much every box on the manufacturer's happy list: faster, better, lower cost, satisfied customer, good teamwork, you name it.

You see, microns and thousandths are only part of the business we're in. It's mostly people. Develop the people and the measurements will take care of themselves.

Now that's a measurement that's easy to tolerate.