

Ajax Innovator

News & Insight From Ajax Metal Forming Solutions

Robots @ Work



Leader's Message

From Kent Djubek, Ajax President

**"We don't pay you to think.
We pay you to work."**

Now there's an old line that doesn't apply anymore. Did it ever? I'm not so sure.

The truth is, we *do* want Ajax colleagues to share their thinking about Ajax quality, safety, productivity and efficiency. Why? Well, first off, we only hire people we believe we can trust. So when a colleague offers up an idea, we listen.

Secondly, our colleagues are closer to the parts we ship to our customers. They're in a good position to spot issues with machines, materials, and processes. We encourage and reward any initiative to make those improvements.

Colleague initiative matters a ton these days, because my responsibilities as company president keep me office-bound more than I'd like. I can't be on the plant floor bird-dogging quality, safety, and productivity as I did years ago as plant manager. Others on the Ajax leadership team face the same issue.

So we count on our machine operators, tooling team, maintenance team, and

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A New Era Of Metal Forming Production Has Arrived

Skills gap, meet industrial robot. You two should get along fine.

Time was, only the largest manufacturers, mainly automakers, could justify the price of industrial robots. But recent technology developments have flipped that script. Today's robots are smarter, faster, more versatile, and less expensive.

From the perspective of the smaller manufacturer, investing in industrial robots now makes financial sense, and it shows in the sales numbers. In 2021 alone, nearly 400,000 new industrial robots were installed in plants worldwide, adding to the 3+ million currently in operation. By 2024, new robot installations are expected to exceed 500,000 units annually. Much of that growth will come from industries other than automotive, such as metal forming.

Why Metal Forming, Why Now?

Metal forming customers, especially larger OEMs, love all types of automation. From the customer's perspective, automation provides what they want most: consistent quality, steady throughput, and the lowest possible cost.

For new customers, the big plus is versatility. New customers want to know their metal forming partner can handle anything thrown at them.

Industrial robots meet these needs. From prototyping to short-run to high-volume, robots perform superbly across a broad spectrum of production assignments.

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Ajax will install a Yaskawa AR1440 robot with a welding effector this summer. Visit [Ajaxmfs.com/robots](https://ajaxmfs.com/robots) for an operational animation.

Upcoming Ajax Events

Meet Ajax Vice President of Sales Don Wellman and Sales Engineer Jayson Marcott at these industry events:

Design 2 Part Shows:

- * Minneapolis, MN
- * Greenville, SC

The Ajax crew will bring along all of our latest parts to display at Midwest and Southeast Design2Part shows.



Minneapolis Convention Center

2023 AHR Expo

February 6 - 8, 2023

Georgia World Congress Center
Atlanta, GA

Held in conjunction with the ASHRAE Winter Conference, the AHR Expo is America's largest industry trade event dedicated to HVACR professionals. Register at ahrexpo.com.



Georgia World Congress Center

A New Era (cont.)

"We've invested heavily in new automation over the years," said Ajax Vice President of Sales and Marketing Don Wellman. "Our stamping and fabrication groups have both seen significant machinery upgrades lately. But we've been more cautious in our approach to industrial robots. We've tracked robot evolution, and it's impressive. But historically, there's always been good reasons to tap the brakes."

Investing in people, Don said, has always been the priority. "Investing in workforce training has a longer-lasting return," he said. "A fully-trained and experienced metal forming pro can perform at a high level for decades and can lead and inspire teams and teach important skills to youngsters. Robots can't do that."



The first industrial robot, called Unimate, was installed at GM's Inland Fisher Guide Plant in New Jersey in 1961. It was a pick and place robot that transferred hot, die-cast auto parts into a cooling pool. Unimate operated for ten years and is now on display at the Smithsonian.

Secondly, as the saying goes, timing is everything. "Technology is the big robot industry driver. Controllers, pneumatics, servo drives, and all the other gear that goes in them has improved a lot," Don said. "As that tech kept getting better and better, robots began to make sense for us. We've been patient, but the time for Ajax to get into industrial robots is now."

The Metal Forming Benefits of Industrial Robots

From the metal former's perspective, the benefits of industrial robots are significant and multi-faceted. Primary among them are safety, quality, speed, versatility, and resource allocation. Here's more detail on each of these benefits:

1. Operator Safety

These days, operator safety is the nut hand¹. Many Ajax colleagues have been working together for years and are good friends. No one wants to see a friend get hurt. Robotics can reduce the risk of repetitive motion injury, burn, toxic inhalation, eye damage, and cutting or crushing injury. (Two thumbs up!)

There's also practical aspects: accidents and injuries can shut down production lines, resulting in late shipments to customers and increased insurance premiums. Anything Ajax can do to reduce that risk is generally worth the expense and effort.

¹In poker, the "nut hand" is the strongest possible hand in a given situation and a guaranteed winner. As the story goes, in the old days, a player with such a hand might bet beyond his stake and place the nuts from his wagon wheel on the table, thus assuring other players that he would be unable to flee and would have to make good on his wager.

2. Consistent Quality

Because robotic movements are so precise – generally within 0.02 mm of repeatable accuracy – quality issues are very rare. In fact, it's far more likely that any non-conformance is related to flaws in materials, fixtures, machine setup, or electrical power interruptions rather than the robotic machinery. Robots make few mistakes, so there's very little material waste, adding to overall efficiency.

In both production and material handling applications, industrial robots utilize end-of-arm tools (EOATs), also known as end effectors, to hold and manipulate the work. Robotic effectors, often provided separately by third-party companies, include grippers, magnets, sensors, clamps, suction cups, cameras, welding torches, sanders, and more. The third-party companies that make effectors have come a long way in the past few years and can design their products to take full advantage of the vast range of robotic capabilities.

3. Production Speed

Industrial robots are fast. The volume of parts a robot can crank out in an hour relative to manual production is truly impressive. Even moderately-sized robots offer thousands of pounds of payload capacity and a reach of 10-20 feet or more. With this kind of range, process improvement engineers can configure robotic solutions that get the job done quickly.

In addition, the fatigue that humans can experience over an eight or ten-hour shift often leads to speed reduction and mistakes. Robots can go at it 24-7 with no performance degradation.

4. Versatility

Industrial robot operating systems are much improved these days, enabling operators to program a wide variety of metal forming tasks. The custom fixtures that hold the workpieces are created in-house, adding to versatility.

Motion controllers, the brains of robots, can be scaled or adapted to meet customer needs relatively quickly. Up to four robots can be added to a single controller to multiply part production. Plus, robots can be programmed to perform multiple jobs in a single setup, reducing project transition times.

5. Operator Assignment Flexibility

When it's hard to find good colleagues (like now), robots help shorthanded shifts keep up the pace. A job that might have taken three welders can now be performed by a single robot operator, freeing two workers for other fabrication projects. That's a huge advantage, especially now.

Conclusion

The manufacturing skills gap persists, despite our best efforts to attract, educate, and grow our manufacturing workforce, making the arrival of industrial robots on the plant floor a welcome sight indeed. Robots bring safety, quality, speed, versatility and other production benefits that are too important to ignore. And for the metal forming customer: consistent conformance, on-time deliveries, and the lowest possible cost.

Yet automation success still hinges on humans. Critical thinking, problem-solving, process engineering, and fine-tuned people skills are needed to amplify the benefits of robots. It's ironic that industrial automation, often labeled a job-killer in decades past, will instead enhance and extend career opportunities for colleagues willing to learn a new skill set.

Automated production solutions such as industrial robots are a hit because they're win-win. Both Ajax and our customers will realize the benefits. By investing in industrial robots, and the people we need to engineer and operate them, Ajax is taking yet another big step toward ongoing continuous improvement and maximized customer satisfaction.

Robotic Weld Quality

Industrial robotic welders produce consistently amazing welds. The precise movements of the robotic arm and end effector would be nearly impossible to reproduce manually.



This top-view of a pair of steel lift-off hinges provides a clear example of the precision of robotic welding. The hinge on the left was welded manually, while the hinge on the right was robotically welded. Some difference!



We at Ajax would like to pass along a note of thanks to our ownership group, Heartland Equity Partners, for their enthusiastic support of our ongoing investments in new machinery, automation, robotics, plant capacity, and people. Ajax is on a good track. Our partners at Heartland are making that possible.

This 1985 photo of former Ajax co-owner Sheldon Ajax, then 51, was taken as the company moved from the Northtown train yards in Minneapolis to its current location in Fridley, Minnesota. The move paved the way for further expansion throughout the following 27 years. Sheldon and his wife Barbara, also a co-owner, retired in 1997.

The presses shown are (L-R) a 60-ton Bliss, two 30-ton Blisses, and a 40-ton Minster. The 30-ton Blisses were the first presses purchased by company founder Erick J. Ajax in 1945. The 40-ton Minster was the company's first variable-speed press, which enabled operators to optimize the cycle rate and maximize the number of parts produced without stoppage.

Today's servo presses, fiber lasers, and press brakes are far more productive and versatile. But the biggest difference between then and now is operator safety. At the time of their manufacture, the presses in this photo offered none of the safety measures found in today's modern machinery.

Nor were there any material handling systems. Operators of that era fed material directly into the machine and removed workpieces and scrap **by hand**. Protective equipment such as safety glasses, ear plugs, and gloves were not required and provided freely as they are today.

These old machines paint a sharp contrast to the new era of industrial robots and plant automation that the future holds at Ajax.

We salute Sheldon, Barbara, Erick, Tom, and all the Ajax family members who came before. Their hard work, vision, and sacrifice has made Ajax a safe, modern place to build a career.



Leader's Message (cont.)

production and fabrication leads to cover those bases. That's where Continuous Improvement comes in. This program has generated terrific results for Ajax.

The key to our CI success has been to encourage a high rate of participation. To that end, we try to make the whole thing fun and rewarding. For instance, whenever one of our Ajax colleagues submits a Continuous Improvement idea that passes muster, the colleague's name is entered into a drawing. Winners receive gift cards, pro-grade power tools, and other valuable goodies. We also post the winners on the plant's local network to give them recognition. Our approach seems to be working, because Ajax now completes about a dozen CIs each month.

But let's circle back to the reason we're running a CI program in the first place, and that's customer satisfaction. If we're not seeing an uptick there, then we're just spinning our wheels.

These days, though, customer satisfaction is more event-driven than ever. From material prices to labor shortages to supply chain issues, it seems like one problem after another tries to wrap itself around our axle. In this environment, it's awfully easy to become reactive rather than proactive. In that mode, we spend our time "putting out fires" instead of being at our best and serving customers as we'd like.

Fortunately, things seem to be leveling out a bit. I'm able to spend more time motivating and coaching. When I and other leaders at Ajax succeed in those capacities, there are far fewer "fires" to extinguish. Then we have more time to think creatively about ways to improve our processes and better serve our customers.

As reported in this newsletter, a significant process improvement we're making is to add an industrial robot with a welding effector to our fabrication department. Take a moment and visit ajaxmfs.com/robots to watch an animation of this robot in action.

It's been gratifying to see how many Ajax colleagues are involved in our Continuous Improvement program. By working on CIs, they can spread their leadership wings and build confidence in their abilities. Plus, over time, the CI process is getting woven into our corporate fabric. And that's a very good thing.

So yes, we are indeed paying our colleagues to think. I wouldn't have it any other way.



Ajax President Kent Djubek