

# Flex Boasts Showpiece Material Handling System

## Leading Medical Molder Relies on WITTMANN BATTENFELD Material Handling Systems for Resin Distribution, Drying

With four buildings and almost 150,000 square feet of manufacturing space, Flex in Manchester, CT is a leading medical molder, with 70+ injection molding machines ranging in size from 35-500 tons. 65 of those machines operate in clean rooms. Flex Manchester produces exclusively medical parts, including high volumes of medical disposable components, bioscience, surgical, pharmaceutical, and insulin delivery products.

"We specialize in smaller parts," said Zachary Brodeur, General Manager at Flex Manchester. "Most of our parts are the size of a fist, or smaller, including micromolded parts that are 1/10 of a gram part weight."

Since 2010, Flex has worked with WITTMANN BATTENFELD, whose US headquarters are in nearby Torrington, CT. WITTMANN supplies Flex with robots, which are operating on nearly every one of the company's 70+ machines, and centralized materials handling systems, which are installed and operating in all three of the company's molding facilities on the Manchester campus.

### Over Four Miles of Pipes



Flex Manchester's newest material handling system, front and center in building 3

Instead of operating in the background or out of sight, as many MH systems do, the newest WITTMANN MH system, installed in Building 3 at Flex Manchester, is front and center in the facility. "We needed this system to show well, as we designed this building with an open concept," said Cory Beaupre, Automation Engineer at Flex. "We wanted everything [outside of the cleanroom] visible and exposed on purpose, with nothing hidden, in accordance with lean principles."

But besides looking good, which it certainly does, the WITTMANN system is truly a feat of engineering. "This system is quite large and has over four miles of piping in the building, serving 30+ molding machines," said Joe Norco, Northeast Regional Sales Manager-Material Handling & Auxiliaries at WITTMANN BATTENFELD. "Flex came to us asking for no plumbing or piping to be exposed in the clean room areas. So, the pipes were designed to run from the distribution manifold through the ceiling, then down through the walls, to a service area for each machine."

The distribution manifold at the heart of the WITTMANN MH has over 200 connections, said Norco. "We also were an integral part of the designed 'machine services centers' to allow customization to each machine in this facility," he said. "Connectors at each machine allow flexibility. Any machine could be moved and used in any bay in the building."

There are a few things that are not in plain sight on the WITTMANN MH; all heat and noise-generating components were separated and installed in their own dedicated room with ventilation on the mezzanine of the MH system to improve plant conditions



Five WITTMANN XMB vacuum pumps in their own dedicated room

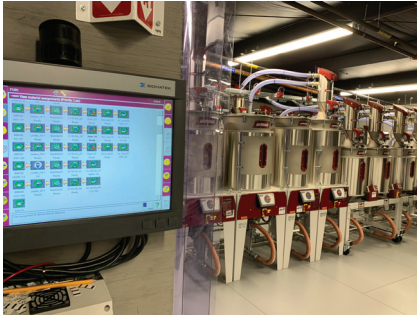
### Advanced Monitoring Capabilities

Besides its impressive appearance and engineering, it's the performance of the WITTMANN MHS that matters the most to Flex. Since



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➤ (Continued from page 1: Cleanliness Leads to Quality at Flex)



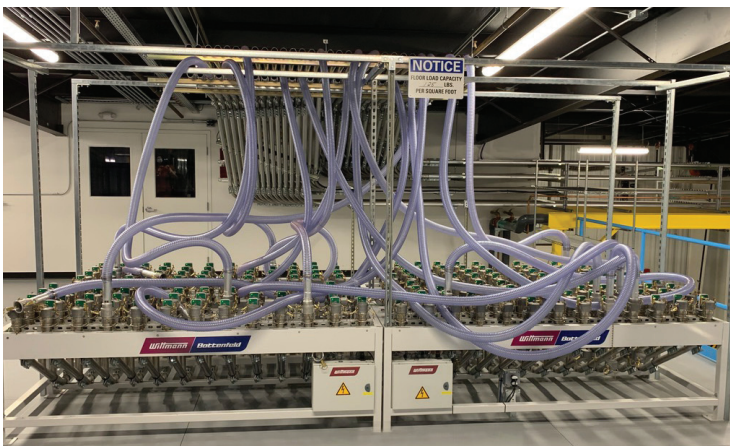
WITTMANN's M7.3 network control system with two rows of 10 drying hoppers

▶ M.7.3 Network Control gives you full customization and traceability

are super reliable, they just perform really well. We learned a lot from the first system, which led to even better performance and capabilities in our second and third systems."

Those capabilities include remote monitoring, humidity control and monitoring in the clean rooms, particulate, pressure control & temperature monitoring as well. The newest WITTMANN MHS features RFID capabilities and an automated spare pump for change-on-the-fly if necessary.

All 30+ machine bays in their newest building are designed to accommodate two-shot molding, and the WITTMANN MHS system is designed accordingly with complete RFID capabilities. "We designed the system for maximum capacity," said Joe Norco, "but Flex is taking a modular-phased approach for drying and material distribution. They started with operating 10 machines, then phased in 10 more, and currently this system serves 25 machines, with five more to go."



At the heart of the MH System, the RFID distribution manifold, CODEMAX, has over 200 connections.

Flex purchased their first WITTMANN MHS in 2010, they estimate they've seen a total of 72 hours downtime from that system - in 11 years. "And we know that the downtime was, in part, caused by power quality events (surges/phase drop, etc)," said Cory Beaupre.

"The WITTMANN systems



WITTMANN robots are also a big part of their success with over 45 in their Manchester facility

The WITTMANN MHS delivers a wide variety of materials to the Flex molding machines. These include PP 30%, PC, COC, LCP, filled resins, CGF nylons, GF PC's, and more. In addition, engineering grade resins are commonly used and include ABS/TPE (hard/soft), and also PC/PC for colors (rigid/flexible) for 2-shot molding.

### Growth

Flex Manchester has come a long way since it was founded in 1959 as Advance Mold & Manufacturing in East Hartford, CT. Shortly after Advance created Vision Technical Molding in 1996, the company moved

to its current location in 2004, with 10-15 machines and a clean room. Privately held until 2014, the company was purchased by Flex at that time.

Since 2014, Flex Manchester has grown to over 350+ employees, according to Zachary Brodeur.

"Flex is a strong global company, and we track all of our performance for OEE," he said. "So anywhere you are in the world, you can call up and view performance metrics for a particular Flex plant. We are proud that Flex Manchester regularly achieves top performance OEE scores."

WITTMANN BATTENFELD robots and MHS are a big part of Flex Manchester's success, said Brodeur. "We have a great partnership with WITTMANN," he said. "Not only are they local to us, but they also provide great service, they have replacement parts in stock, and all their MHS systems are state-of-the-art when purchased. WITTMANN BATTENFELD is a Flex Preferred Supplier, and there is a reason for that."

# WITTMANN BATTENFELD SmartPower: Best energy efficiency with "Drive-on-Demand"

*Intelligent and economical use of energy*



In addition to its compact design, the servo-hydraulic SmartPower injection molding machine from WITTMANN BATTENFELD stands out for its user friendliness, and above all for its intelligent, economical use of energy. Its high level of energy efficiency is primarily due to the combination of a responsive, speed-controlled, air-cooled servo motor with a robust fixed displacement pump, known as the "Drive-on-Demand" system.

"Drive-on-Demand" means that the drive unit is only activated when this is required for movements and pressure generation. During cooling times and cycle breaks for parts handling, the servo drive is switched off and consumes no energy. In operation, "Drive-on-Demand" allows highly dynamically controlled machine movements and minimized cycle times. This results in high-quality control performance and better repeatability, as well as saving time in axis movements.

"Drive on Demand" generates a verifiably lower energy consumption rate than systems using servo-controlled two-circuit pump technology or electro-hydraulic drives. "Drive-on-Demand" actually reduces energy consumption by up to 35% compared to modern control pump systems.

The SmartPower is also equipped with the same amplifier system as the all-electric Wittmann Battenfeld EcoPower molding machine. This drive technology makes it possible for the SmartPower to use the KERS (Kinetic Energy Recovery System), originally developed for the EcoPower. In braking processes, KERS transforms kinetic energy into electrical energy. The electrical energy thus gained is partly stored, partly transferred to barrel heating and partly used for control voltage generation. The entire deceleration energy is thus completely utilized within the machine.

The option with parallel machine movements comes with a second servo drive laid out specifically to meet the requirements for the ejector

and core pull. This ensures optimal energy efficiency and dynamism for this type of application as well.

Thanks to the significant reduction in heat generation achieved by using this modern drive technology, an additional amount of energy is saved through a reduced demand for cooling performance. This, in turn, results in less strain on the hydraulic oil, thus preserving the quality of the oil for longer and minimizing maintenance expenses.

Additional energy cost cuts are achieved by a reduction of electrical reactive power and an intelligent, performance-optimized control electronics system.

One long-standing WITTMANN BATTENFELD customer has based its decision to replace an older hydraulic machine model with a machine from the SmartPower series based on its energy savings. This customer reports an average cycle time reduction of 33% and massive energy savings compared to the older machine by using the SmartPower. They estimate an annual cost savings of about \$2,500 .



*'With our responsive and speed-controlled combination of servo motor and fixed displacement pump, our customers get a powerful, innovative and low-noise drive.*

*Among other advantages, it activates only when movements and pressure build-up require it. This can save up to 35% of energy consumption.'*

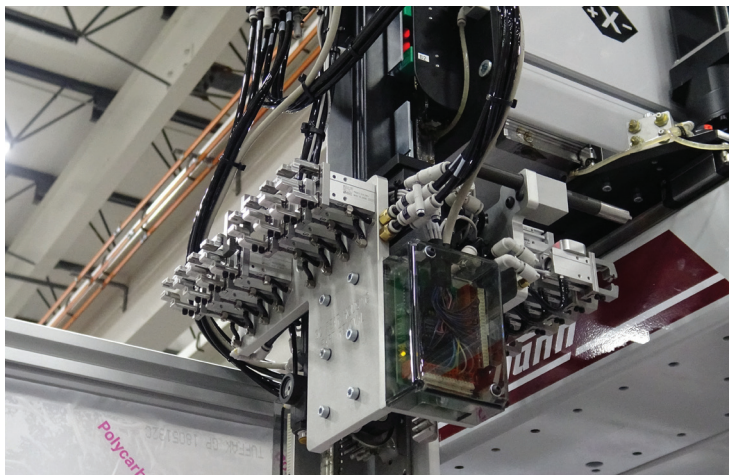
Franz Wilfing,  
Head of the Technical Department  
at WITTMANN BATTENFELD



## High Precision "Micro" Insert Molding

**Editor's Note:** This technical article by Joe Varone of WITTMANN BATTENFELD examines details related to automation techniques for high-precision micro insert molding. Part 1 of the article appears below; Part 2 will appear in the next issue of WITTMANN's USA Newsletter.

Injection molding insert over-molding has been around for years but early on it was rarely handled by a robot. The robot technology and expertise for these applications was not yet very capable and premature. It was done and sometimes still is handled manually by workcell operators especially for challenging inserts. For years, horizontal machine press-side operators would wait for the mold to fully open, let the parts fall, swing open the operator side gate and carefully orientate and hand load the inserts in to the mold cavity, close the gate and continue the over-molding cycle. The Issue: It was an inefficient process with opening / closing gates, had longer cycle times, was direct labor intensive and was potentially insert miss-orientation prone. Vertical molding machines had similar challenges but because top entry robot design favors horizontal machines; vertical machines did not experience the benefit of top entry robot technological advances.



WITTMANN W822 Robot with Micro Insert EOAT

As far as common insert / pre-mold materials; these could be one of many materials although metal or plastic substrates are the most common insert "pre-molds" although today "exotic" materials in medical and electronic parts are being explored more all the time. And the size of these inserts typically ranged from a common threaded metal bushing to a plastic pre-mold easily grabbed with one hand with no eye glasses or scopes required to handle them as with micro sized inserts.

But time is technology's friend and over the years robot technology improved, particularly with horizontal injection molding and "top" entry injection molding linear robots and now most molders with higher production runs for over-molded insert parts have successfully partnered with their top entry robot suppliers to streamline the process, save operator direct labor cost, improved quality control and have automated it. But these "common" over-molding applications were usually processing "normal" sized inserts and parts. At the other end of the scale are micro-sized inserts and parts; this creates a greater challenge to mold-

ers, robot technology and robot suppliers/integrators alike.

At the micro scale, of say less than 3mm, quite often, the insert over-molding process is still done manually (or not at all) because of the challenges of automated handling for inserts at such a tiny scale and thus the idea of automation is avoided. This means the part often defaults to an assembled two-piece part rather than an integrated over-molded part i.e. two part numbers versus one. Why? Because molders and part designers aren't always aware of the capability of the latest generation of injection molding robots or the capability of the suppliers' custom automation engineering groups to manage and successfully implement such workcells.



Scale example of Micro Inserts

Today's top-entry linear robots have evolved and are more technologically advanced with higher precision drivetrains (< .1mm), multi-axis precision servo technology and software control. But, interestingly, from a distance,



WITTMANN BATTENFELD's W822 Robot, commonly used in Micro applications

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on a shop floor, today's higher technology top entry robots don't appear much different from earlier models of even twenty years ago. But they are in fact, more accurate, more programmable, more capable and are easily "integratable" with custom automation and as importantly, some robot supplier's custom automation engineering capabilities have grown to match the more advanced new generation robots that they supply. And so micro applications are not best suited for your existing older generation "20 year old" robot that still "goes through the motions"; the latest generation robot will probably be needed to handle the accuracies, circuits and control software required.

Further, not only has the robot's technology improved and value-added suppliers engineering core-competency improved in tandem with it but also "in-workcell" devices, sensors and quality control technology has also improved for precise insert applications. For example, the use of more advanced yet cost effective modern vision sensors, proximity sen-



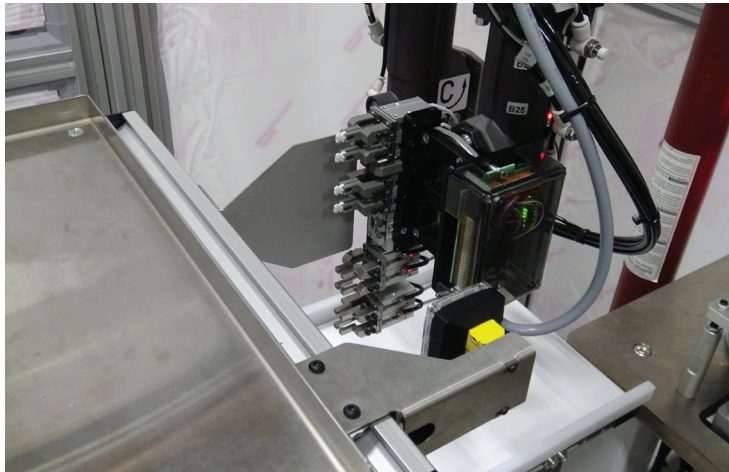
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sors and other technologies to ensure the inserts are present, in the correct location and orientation with very high precision. Combine this with advances in the use of insert feeders, escapements, End of Arm Tooling technology and the critical supplier engineering design "know-how"; work-cells have advanced to become very efficient and cost effective for even the most challenging of micro inserts over-molding applications.

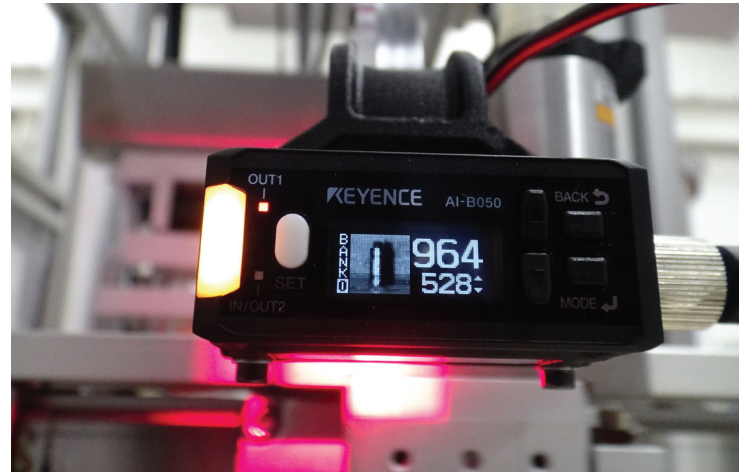
And critically, in terms of project management, the molder can have the confidence in their qualified "vetted" primary robot supplier to completely handle the robot and automation work-cell and they do not have to go to a separate third party integrator for special insert molding applications. They can partner the project with their "qualified" primary part take-out demolding robot supplier...Managing a robot and automation project with one supplier has to be better than managing two, Right?

And so micro-insert over-molding, where, in terms of scale, the insert could be at a size where a dozen micro inserts can fit on a penny, is now being considered, implemented and put in production by design progressive cost-conscious molders who have taken the technology lead. This is being done on precision horizontal injection molding machines in the 15 ton to 165 ton range with molds that are "smartly" designed to facilitate automation for such applications before mold steel is cut; not as an after-thought. While these applications cannot be managed or implemented by all robot suppliers, there are a few US based suppliers with the resources and expertise that can handle all the robot, automation specifications and engineering requirements to make the application a market leading success story.

(Watch for Part 2 of this article in the next issue of the WITTMANN USA Newsletter)!

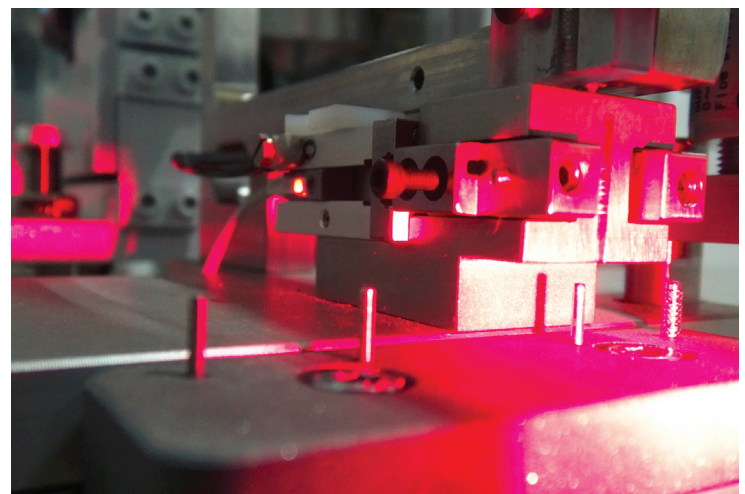
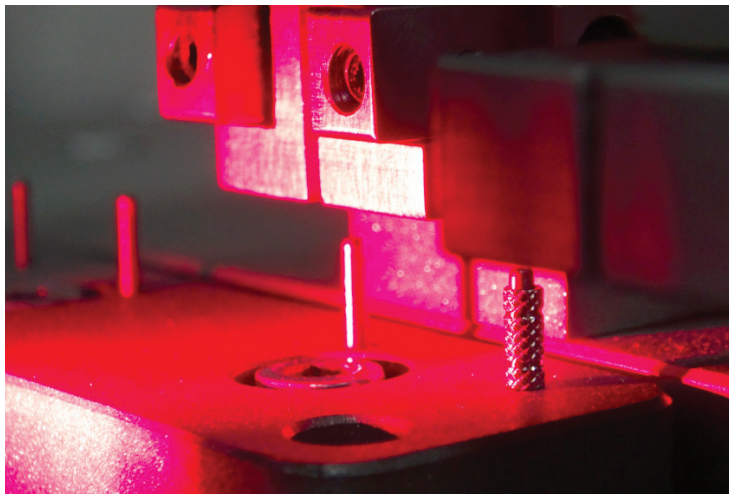


EOAT presenting parts to single Cognex camera



Insert Orientation Check

### Example Fine High Precision Tooling with Camera Inspection

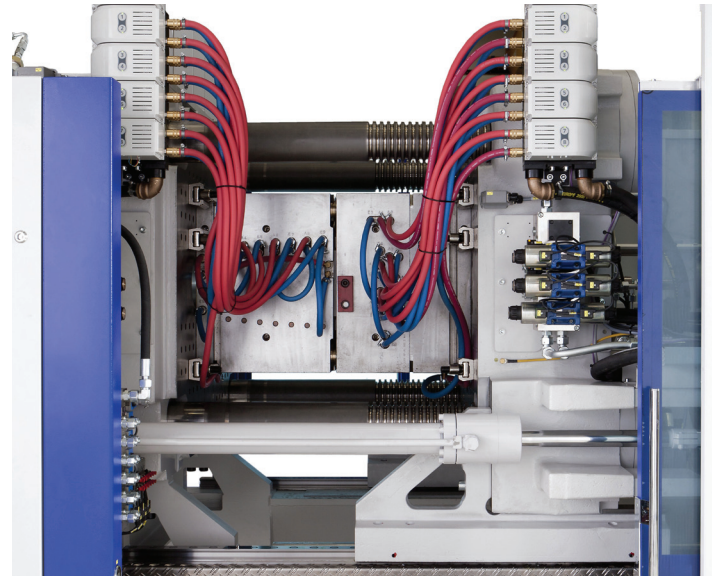


## Automatic water flow control

There are many advantages that come from plumbing a tooling's cooling lines in parallel. However, many molders often find this impractical because to do it properly one needs a flow regulator installed to balance the flow. This adds cost, complexity to the setup, and maintenance to the process, but can bear great fruit in terms of cycle time improvements and process consistency.

The future is an automated system, integrated into the molding machine, running in the background of your mold set up. The flows and temperatures are set when the mold is qualified, and now those settings follow the mold wherever its program goes. That future is here now with the WITTMANN BATTENFELD Flowcon plus automatic flow regulator. The key advantage of this type of flow regulator over a manually adjustable one is that it permits continuous electronic monitoring of the preset flow and temperature values. All data are logged and can be automatically adjusted proportionally via control valves. The proven WITTMANN 301 Series fine regulating valve performs the flow regulation function. Generously dimensioned channels in the casing blocks guarantee the lowest possible pressure loss and high flow rates. The net benefit is being able to easily manage parallel plumbing of your cooling channels, balanced temperatures and flows throughout the mold, or zoned temperatures if you need them. This leads to a much higher level of process repeatability.

Working with a multi-cavity tool? No problem - automatic flow regulation ensures uniform cavity filling due to a consistent heat profile



throughout the mold and its cavities. Lastly, if there is degradation in flow due to a blockage, the system will identify this, pinpoint its location, and indicate to the operator that there is a problem. This allows a technician to proactively clean a cooling channel before a failure occurs.

Learn more about Flowcon Plus here: [https://www.wittmann-group.com/en\\_us/water-flow-regulators](https://www.wittmann-group.com/en_us/water-flow-regulators)

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## WITTMANN BATTENFELD USA Academy Welcomes Its Newest Trainee

WITTMANN BATTENFELD USA is pleased to announce the newest addition to the Wittmann US family, as we're joined by our newest Wittmann Academy Trainee - Cole Phelps.

Cole was a student/athlete at Central Connecticut University and recently graduated with a Bachelor of Science degree in Mechanical Engineering.

In the WITTMANN Academy program, Cole will spend time in various departments within the company to learn all about the plastics industry, Wittmann Battenfeld's products and services, and the different roles everyone plays to make this company great.

It was only fitting that Cole spent his first week with one of the original WITTMANN Academy successes, Ricky Heckbert, who gave Cole a nice introduction to plastics and WITTMANN BATTENFELD Molding Machines.

The WITTMANN Academy helps teach students about the many job opportunities available at WITTMANN BATTENFELD and in the plastics industry. We have welcomed numerous recent trade school and college graduates as interns. Upon graduating from our training programs, many of these interns have accepted full time positions at WITTMANN BATTENFELD.



Newest Academy student Cole Phelps (Left) and past Academy trainee and current Plastics Engineer, Ricky Heckbert (right)



## WITTMANN BATTENFELD USA Sets New Company Record for Monthly Robot Sales

WITTMANN BATTENFELD Inc. has set a new company record for USA monthly robot sales. The company sold over 80 robots in June.

WITTMANN began selling robots in the USA in 1986. Since then, the company has built and shipped over 8,000 robots in the USA and is once again on track to have a record year in 2021. Worldwide, WITTMANN BATTENFELD has built and shipped over 55,000 robots since it began operations in 1976.

"Our robot and automation business in 2021 has just taken off," said Jason Long, WITTMANN BATTENFELD Inc.'s National Sales Manager – Robots and Automation. "We are hearing more and more from our customers that they need to automate."

Sonny Morneault, WITTMANN BATTENFELD's Vice President of Sales, said, "One customer recently told us that the struggle to find workers has prompted them to rethink their business model, and they



are now looking to deploy robots and automation wherever possible. Another told us a recent automation system we provided will perform the labor of 11 workers."

Besides the increase in demand in the plastics industry for robots and automation, there is also the issue of global delays in the supply chain for the components and raw materials needed to build these systems, said Morneault. "We're excited to see the increased adoption of robotics in our industry, and we're working hard to keep up with the demand," he said. "Unfortunately, we are also dealing with significant cost increases and delays in materials. We hope this situation improves soon, but in the meantime our corporate headquarters is doing whatever it can to keep our factories producing equipment."

"This is a real milestone and a tribute to our great team of robotics and automation specialists," said David Preusse, President of WITTMANN BATTENFELD Inc. "Customers come to us looking for ways to improve their productivity, and we are happy to help them find creative ways to automate their molding operations. We are proud to be the leading supplier of robots to the plastics industry, in the USA and worldwide."



WITTMANN BATTENFELD USA's Robot Assembly Area has been very busy in 2021

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## Upcoming Events

**Our Innovations Roadshow Truck is sanitized and on the road and ready to visit your shop so you can check out our products up close!**



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Contact Us Today for more information:  
Crystal Gagnon, Marketing Communications,  
Crystal.Gagnon@wittmann-group.com



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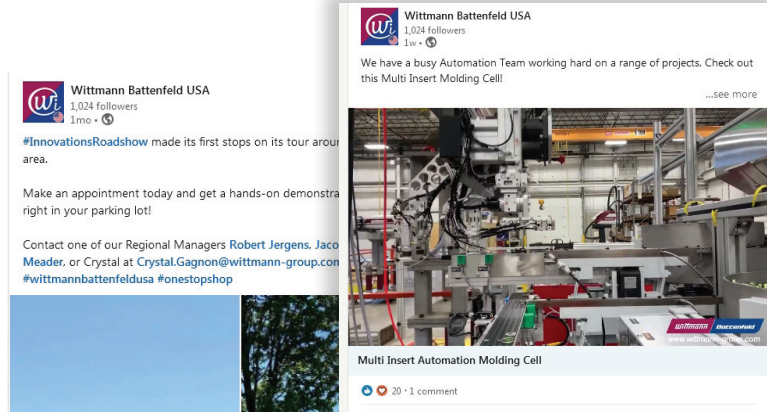
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Make sure to connect with WITTMANN BATTENFELD USA on our social media channels! Here is some of our recent activity:



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We have a busy Automation Team working hard on a range of projects. Check out this Multi Insert Molding Cell! ...see more

#InnovationsRoadshow made its first stops on its tour around the area.

Make an appointment today and get a hands-on demonstration right in your parking lot!

Contact one of our Regional Managers Robert Jergens, Jacob Meader, or Crystal at Crystal.Gagnon@wittmann-group.com #wittmannbattenfeldusa #onestopshop

Multi Insert Automation Molding Cell

20 • 1 comment





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Did you know we have a quarterly Company magazine? Check out our latest "Innovations" magazine (03/2021) and get great success stories from around the world, and valuable product information! ...see more


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## WITTMANN BATTENFELD Training

### In-Person Robot Classes Starting Up Again!

We are happy to announce that WITTMANN BATTENFELD USA is starting up its in-person robot training classes again. While we have been happy to provide complete training services remotely over the past year, it will be a welcome sight to have customers visiting us at our three USA locations in Torrington, CT, South Elgin, IL, and Placentia, CA.

Please visit our new website for dates for upcoming training classes:

[https://www.wittmann-group.com/en\\_us/training](https://www.wittmann-group.com/en_us/training)