

Plastics Education and Workforce Development – A WITTMANN USA Priority

Southern Union State Community College Uses WITTMANN Injection Molding Workcell to Train the Next Generation of Plastics Industry Processors

For many years, WITTMANN has supported plastics education throughout the USA. Many well-known plastics engineering programs at universities throughout the country have benefited from the use of WITTMANN machinery and equipment in its labs and training centers. *See related story on p. 4.*

A plastics education program that is perhaps not as well-known is at Southern Union State Community College. Just east of Auburn, Alabama in the city of Opelika, SUSCC boasts a state-of-the-art plastics training facility. SUSCC offers Associate's Degree programs, where students can earn an AS in Plastics Technology in 2 years. "Our program runs for 5 consecutive semesters for an AS degree," said Bill Clifton, Plastics Engineering Instructor at SUSCC. "Many of our students go on to obtain 4-year engineering degrees, often at nearby Auburn University." SUSCC also provides adult education in the industrial trades, CNC machinery training, and more.

"This is a beautiful facility," said Jim Mitchell, WITTMANN USA's IMM Sales Manager. "We are proud to support SUSCC. They are using a complete WITTMANN Industry 4.0 workcell to train students on best practices for injection molding."

The WITTMANN workcell at SUSCC consists of SmartPower120 molding machine with an integrated robot, temperature control unit (TCU), and drying unit. In addition to the robot on the machine, a separate Wittmann robot sits on a pedestal and is used for training.

WITTMANN Integrated Workcell for Industry 4.0

Because the WITTMANN workcell is fully integrated, it is ideal for teaching Industry 4.0 for plastics processing. The WITTMANN SmartPower machine, robot, and all auxiliaries were supplied by Wittmann and provide complete connectivity.

"The WITTMANN machinery runs extremely well, and we've had no issues with it at all," said Bill Clifton. "Not only does it run well, but it provides us with a great advantage, as it allows WITTMANN to perform remote troubleshooting. We have access codes for WITTMANN technicians to do live look-ins to see how the machinery is operating."

In addition to training SUSCC students, the WITTMANN workcell is also used by RJG, who uses the SUSCC facility for their training classes.



WITTMANN USA's Jim Mitchell and Ricky Heckbert leads a recent training session at SUSCC

"WITTMANN added an RJG interface to their machine, which is a big plus for us," said Bill Clifton. Clifton said that RJG uses the WITTMANN workcell to teach their Master Molder 1 training courses at SUSCC, and RJG just recently completed their 'Train the Trainer' qualification course there.

A Hotbed for Plastics – and Job Opportunities

Eastern Alabama is a hotbed for plastics. Leading custom and captive molders including medical, automotive, leisure equipment and other suppliers are located nearby, providing ample job opportunities.

"There are more available jobs in this area than students we can turn out", said Bill Clifton. "The plastics industry provides stable, good-paying jobs, and graduates from our program are in high demand."

Clifton also is appreciative of the technical support that he and SUSCC receive from WITTMANN. "Jim Mitchell, Nick Millsaps, Wes Moffitt and others at WITTMANN have been fantastic," he said. "They are always there for us to help us get the best performance out of the WITTMANN machinery, which in turn helps us do the best job we can to train the next generation of plastics industry workers."



An E-newsletter from WITTMANN USA



From the President

David Preusse, President, WITTMANN USA

As we enter the holiday season and the end of 2022, I'd like to provide an update on some of the many positive developments happening here at WITTMANN USA.

Record Order Backlog

One year ago, I wrote in this company newsletter that WITTMANN USA was entering 2022 with an all-time high backlog of orders. I am happy to report that as we enter 2023, our order backlog is up substantially from last year, breaking yet another company record.

While we are seeing a slowdown in overall order activity, we shall work through our backlog to carry us well into 2023. As is the case with many global markets, the US plastics industry overall saw greater than 20% reduction of new orders in 2022, from the unusual spike in 2022 demand. The simmering economy should help alleviate the global supply chain issues in 2023. It's unclear what lies ahead for our economy, between the post mid-terms moving us back to legislative gridlock, and the efforts to rein in our inflation rate from an epic stimulus spend policy. The Automotive sector still has a pent up demand that could help our plastics industry outlook if it became unleashed, while the medical sector can still support our aging demography. As is the case with many global markets, the US plastics industry overall saw 15-20% reduction of new orders in 2022. However, many companies are also reporting strong backlogs. Shipments of machinery and equipment continue to be delayed due to the global supply chain slowdown, but these issues are projected to ease in 2023.

The Positives of Plastics - and Our Support for Plastics Education

You'll see the lead story in this issue of the WITTMANN USA newsletter is about Southern Union State Community College (SUSCC) in Alabama. SUSCC uses a fully-integrated WITTMANN injection molding workcell to train its students in best practices for plastics processing.

Support for training and educating the next generation of plastics industry workers is something we at WITTMANN are passionate about. We have supported programs like SUSCC all across the country, and will continue to do so.

Many years ago, I graduated from the University of Massachusetts-Lowell with a degree in engineering. I have spent my entire career in, and continue to be amazed at the technological advancements that happen in our industry. From medical to automotive, from food packaging to home building materials, plastics is everywhere, and it is improving people's lives.

We are proud of the positive role that plastics plays in our global society. Yes, we are aware of the negative impacts of plastic pollution, and we are committed to being part of the solution to this problem. Right now, WITTMANN machinery and equipment is being used to create better plastic parts, made from recyclable and biodegradable materials. Our engineers are working with our customers to create better ways to recycle materials so they can be reused in new applications.

Our commitment to sustainability is unwavering. At the recently held K-Show in Germany in October, WITTMANN led the way with numerous sustainably-themed exhibits of its machinery and equipment and we will continue to report on these exciting developments at WITTMANN in the future.

WITTMANN USA Headquarters Expansion

Also in this issue is a short update on our expansion at our Torrington, CT headquarters. The new addition is coming along nicely, and once it's complete, we will have expanded our WITTMANN USA Plant 1 by 11,000 sq ft to handle more production of our Automation Systems, as well as our IMM+Robot+Automation Workcell 4.0 Integrations. Follow us on social media, where we will continue to update you on our progress.

Giving Thanks

This holiday season, we are thankful for you, our customers - we appreciate your continued business. We continue to work hard to reduce our lead times, which have been stretched out due to high market demands, and our manufacturing continues to work through many supply chain disruptions. We remain thankful to our dedicated employees during these unique 40 year inflation high prices and that WITTMANN has 9.4 years average years employee retention, which is more than twice the National Average.



From all of us at WITTMANN USA, Happy Holidays and Best Wishes for a healthy and prosperous 2023.

Thank you to all of our customers for your continued support. I encourage you to contact me anytime at David.preusse@wittmann-group.com.

K 2022 – A Complete Success for the WITTMANN Group

The K2022 Fair in Dusseldorf was held from October 19-26, and the show attracted over 180,000 visitors. Under the motto "It's all WITTMANN", the WITTMANN Group showed its machinery and equipment to a broad international audience for the first time in the new, uniform WITTMANN design. The main focus of our exhibits were to show the company's contribution to the circular economy, digitization and climate protection.



From the first to the last day of the fair, WITTMANN enjoyed an enormous amount of interest in its exhibits at both of its trade fair booths, and also at the shared booth in the VDMA Circular Economy Forum.

Rainer Weingraber, Managing Director of WITTMANN BATTENFELD, comments: "The K 2022 was a complete success. The response of the public to our exhibits was excellent. In the area of machines, special interest was shown in our trade fair highlight, an EcoPower driven by direct current from solar energy, and in the options for processing alternative materials which we demonstrated on several exhibits."

Michael Wittmann, CEO of the WITTMANN Group, expresses great satisfaction with the results of the fair as well: "At this K fair we were also able to present to visitors numerous novelties in all areas of auxiliaries and automation, and we were impressed by the response from interested parties. We can say without reservation that this year's K fair was a complete success for the entire WITTMANN Group."

There were numerous product highlights at WITTMANN's booths at K, most of which focused on

sustainability. A partial list is below; watch upcoming issues of the WITTMANN USA newsletter for more details on these exciting new developments.

- IMAGOxt Measuring tool- allows companies to measure and visualize multiple variables and process parameters of the equipment, including power consumption.
- NEW QuickLook 4.0 – now provides a view into the entire WITTMANN 4.0 work cell. In addition to the IMM and the parts removal robot, it also supports the entire range of WITTMANN 4.0 auxiliaries. View information such as overall status of all participating work cells, color-coded display of operating mode of every unit, and specific close-up views of essential operating data.
- Multi-Component work cell molding with renewable raw materials
- Processing of alternative materials with HiQ
- Injection-Compression Molding (ICM)- allows for extremely thin, and precise parts
- MacroPower 1100/12800 with Cellmould and equipped with CMS Lite (Condition Monitoring System)- extremely light part with natural fibers





An E-newsletter from WITTMANN USA



US Colleges and Universities Using WITTMANN Machinery and Equipment

WITTMANN USA supports numerous colleges, universities and plastics educational programs throughout the country. Below is a partial list of locations where WITTMANN machinery and equipment is in operation.

Complete IMM Work Cells

- UMass Lowell (Lowell, MA)
- Southern Union State Community College (Opelika, AL)
- Manufacturing Alliance Service Corporation (Waterbury, CT)

Injection Molding Machines

- Ohio State University (Columbus, OH)
- Iowa State University (Ames, IA)

Robots and Automation

- The Polymers Center of Excellence (Charlotte, NC)
- Ferris State University (Big Rapids, MI)
- Southern Union State Community College (Opelika, AL)



Turnkey work cell at Manufacturing Alliance Service Corporate (Waterbury, CT)


Material Handling Equipment

- Iowa State University (Ames, IA)
- The Polymers Centers of Excellence (Charlotte, NC)

WITTMANN USA Facility Expansion Update



Our all-new, 11,000 square foot addition to Plant 1 at our USA headquarters in Torrington, CT is well underway. When complete, this extra space will be utilized for manufacturing our Automation Systems and our WITTMANN 4.0 Integrated Smart Factory Workcells, consisting of our IMMs, Robots and Automation, and Material Handling Systems.

 **Follow us** on social media, where we will continue to update you on our progress.

Upcoming Events



Booth 3708

March 28 - 30, 2023
Rosemont, IL

Check out the latest technology and our One-Stop-Shop offerings!

Get your FREE Expo Hall Only Pass by using code: EXH2197



Booth 3939

February 7 - 9
Anaheim, CA

Check out the latest technology and our One-Stop-Shop offerings!

Add us to your show planner!

WITTMANN USA Training

Training Updates

With the introduction of our newest robot control system, the CNC-9/R9, we have begun offering classroom instruction geared to the new control.

The "R9 Operation and QN Wizard Programming" class includes general operation of the robot and the use of our newest QuickNew Wizard, allowing fast creation of simple programs. This new version of the Wizard is greatly expanded, providing a larger array of choices in the creation of application programs without the need for programming.

For those who require instruction in the use of our Text Editor, the "R9 Text and Advanced Programming" class provides students with hands-on training in our powerful text programming language, continuing our long tradition of highly flexible programming. Our "Robot Maintenance Training" class has now been expanded to include the CNC-9/R9 hardware, in addition to previous models, for individuals responsible for maintenance and repair of our robot systems.



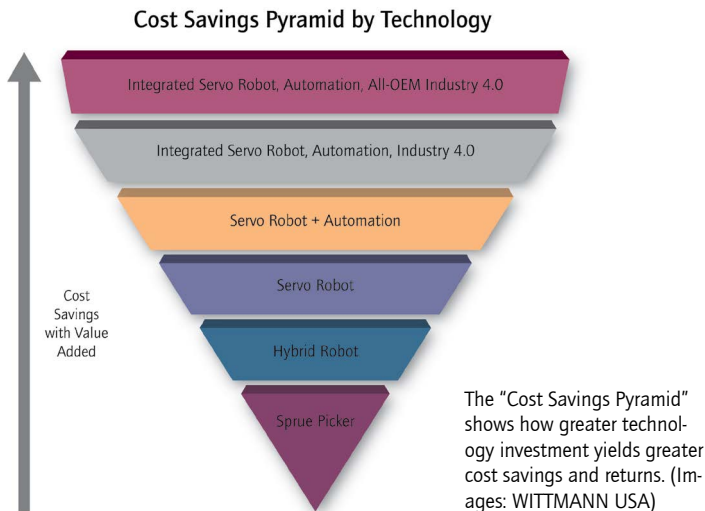
Visit Our Website for Schedule and Details, including for Our New R9 Training Classes!

Check out our Training/Tutorial Videos on our YouTube Page

Automation Evolution: From Robots to Work Cells, Solo Devices to Integrated Systems

Editor's Note: This technical article by Joe Varone of WITTMANN BATTENFELD examines the evolution of injection molding cost-saving automation. Part 1 of the article appears below; Part 2 will appear in the next issue of WITTMANN's USA Newsletter.

Injection molding automation has progressed from devices to systems, from simplicity to more complex capabilities. The author traces this development through various levels of automation – all still available choices today – and analyzes the costs and capabilities for each level.



In today's global economy, where plastics molders are constantly pressured to squeeze their prices and their profit margins, it's important for them to find the best ways to increase their efficiency and productivity. This can be difficult for molders using outdated machinery and equipment. While adding robots and automation to their process is certainly a helpful step that reaps immediate benefits, even greater cost savings can be realized when molders take the leap into fully integrated and automated Industry 4.0 workcells.

This article will examine the evolution of injection molding cost-saving automation, starting with the early implementation of robots and automation, to today's fully integrated Industry 4.0 workcells. Six key stages of technology and cost savings will be examined:

1. Sprue picker;
2. Hybrid robot;
3. Servo robot;
4. Advanced servo robot + automation;
5. Fully integrated Industry 4.0 workcell;
6. Fully integrated "all-OEM" Industry 4.0 workcell.

We will also show the actual cost savings and benefits for each of these areas, and examine what new technologies may be on the horizon that will help molders continue to compete and succeed in the 21st century.

Sprue Pickers – Where It All Began

Let's start at the beginning. The idea of automating injection molding for cost savings has been around for decades, and today robots are found in virtually every molding shop, in one form or another. Thirty-

plus years ago, at the early stages of this technology, simple pneumatic sprue pickers were bolted on top of molding machines to remove runners while the plastic parts dropped under the mold area and collected in bins or were carried out by conveyors.

Robot suppliers often had to prove the pickers' value to injection molders based on cost savings, even for these simple, relatively inexpensive devices. The purchase justification for the sprue picker was based on the labor savings of molding machine operators not having to handle the sprue and runners for separation from actual molded parts. With "pickers," the molding machine operators could now focus on the parts themselves. By today's standards the savings in direct labor were minor, but they were real. It was just the beginning of the key role that robots and automation would play in providing major cost savings for molders.



Cost savings with simple sprue picker:

- Direct labor: ¼-operator annual labor cost savings ~\$5000 to \$15,000;
- No operator hand sorting of runners from parts;
- No marred parts from parts-to-runner contact;
- Mold protection from "stuck" runners and mold pin damage.

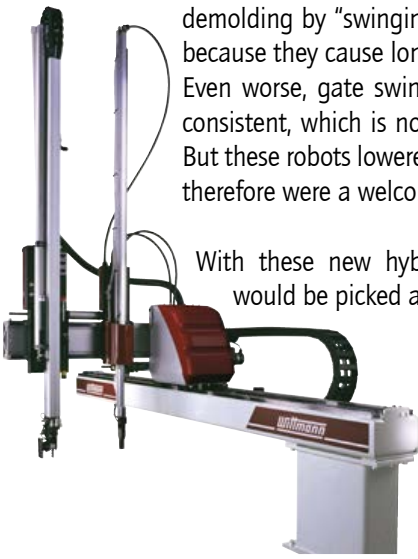
Hybrid Robots – a Step Up

At about the same time that sprue pickers hit the injection molding market in scale, more advanced top-entry linear pneumatic and simple electric/pneumatic hybrid robots were being offered to the injection molding market for whole-shot "pick-and-place" demolding. These robots were not just limited to demolding sprues and runners; they could do a bit more.

With top-entry hybrid robots, cost justifications were based on the plastic parts being gently and cleanly demolded without the parts having to go through the potentially dirty and violent event of "free-fall" dropping at mold ejection. These early robots were comparatively slow by today's standards and not very user-programmable, but they did yield fewer damaged parts and rejects, which resulted in higher quality and higher throughput efficiency, and thus cost savings for the molder.

With these top-entry robots, operators were no longer needed to open machine gates at every molding cycle and demold by hand. Manually

demolding by "swinging gates" are cycle-time parasitic because they cause longer, profit-punishing cycle times. Even worse, gate swinging creates cycle times are inconsistent, which is not good for the molding process. But these robots lowered and regulated cycle times and therefore were a welcome relief for molders.



With these new hybrid top-entry robots, the parts would be picked and placed on a table or exit conveyor while the runners were dropped into bins or directly into granulators for reclaim or proportional hopper feeding. This process would feed an operator via conveyed lanes of plastic parts that they would

inspect, possibly add value to the parts, and then package them in a box for WIP or shipment. Mold damage risks were reduced by verifying that parts and runners were removed from the mold. All considered, it was a good technology advance with good cost savings.

At a price several times that of top-entry sprue pickers, hybrid robots needed to pay for themselves within one to two years on average, as dictated by most molders to be a sufficient ROI. These simple robots, primitive by today's standards, were more expensive than sprue pickers but they yielded more savings. Like any investment, it's only expensive if it doesn't pay for itself within an economically reasonable period of time. As a business decision, the cost justification was sound and made the molder more competitive.

The hybrid top-entry robot cost-savings math was primarily the same formula as a sprue picker, but it also saved a greater percentage of parts from getting damaged, as it would gently pick and place them on an exit conveyor. Eliminating damaged parts and or contamination risks of dirt and grease, had great QC value, though savings varied according to the material cost, machine tonnage and end-user requirements. The hybrid robot proved its value in its era, and thousands were purchased and put to work industry-wide.

Cost savings with top-entry hybrid robots:

- Direct labor: ½-operator annual labor cost savings ~\$25,000 to \$50,000;
- No marred parts from runners;
- No sorting runners from parts;
- No mold damage;
- Clean, damage-free parts with conveyor placing;
- Cycle-time savings (no manual gate swinging).

Servo Robots – More Performance, More Savings

Over time, there were orders of magnitude greater cost savings from evolving machine-tending robots. The late 1980s and early 1990s were the early stages of a permanent large-scale trend in molding automation in the U.S. and the world. With each successive year,

the robots grew more advanced and proved they could do more and more work for molders. Cost savings increased as the robot technology capability increased.

By the mid-1990s, the full-servo CNC linear robot appeared. This robot type was far more advanced than any simple pneumatic or hybrid electric robots; it could do more than pick and place, was more accurate and was much faster. But the purchase price was double or triple that of hybrid robots. The justification math for molders needed to be carefully considered. Early on it was not an easy "sell" for molders to purchase servo robots; there was some "sticker shock."

The linear or Cartesian servo robot average price range of \$25,000 for a model to service small injection machines to \$100,000 for one to serve large machines required careful ROI study; but the math, in fact, worked. It was usually a smart investment for molders. The value-added capability that servo robots brought to the table with the ability to sort parts, box, inspect, weigh, count, label, insert etc. was far more than any picker or hybrid robot could perform. In addition, they had more servo axes for greater motion control (three-plus axes and five axes are common) for use in more tedious value-added operations, had far faster speed and were becoming fully custom programmable by the user. Over time molders experienced this value and learned to plan their production with the capabilities of the servo robot in mind rather than just a molding-machine "bolt-on" afterthought.

Cost savings for the more advanced servo robot included all the value that the hybrid robots and pickers offer plus what they could do to reduce molding cycle times, increase machine throughput and do more value-added work at the machine. Cost savings from these more capable robots still had the robot paying for itself in a year or so. Molders who implemented servo robots as early adopters had a market edge and became the market leaders. Thousands of servo robots were (and continue to be) purchased for injection molding parts handling; they are now ubiquitous in the industry by necessity for molders to compete.

Cost Savings with Servo Linear Robots:

- Direct labor: one to two operators annual labor-cost savings of ~\$50,000 to \$125,000+;
- All the benefits of hybrid robots, plus;
- Less risk of health-insurance claims for repetitive operator motions (e.g., carpal tunnel);
 - Faster molding cycles, greater production throughput;
 - Value-added cost savings such as degating, sorting, inspection, boxing, labeling, insert loading, assembly.



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

WITTMANN USA Inc. Personnel News

Evelyn Gambino, Accounting Manager



Evelyn recently joined our USA Headquarters in Torrington, CT as Accounting Manager. She comes to WITTMANN USA with a BS in Accounting, and 16 years of manufacturing experience in accounting.

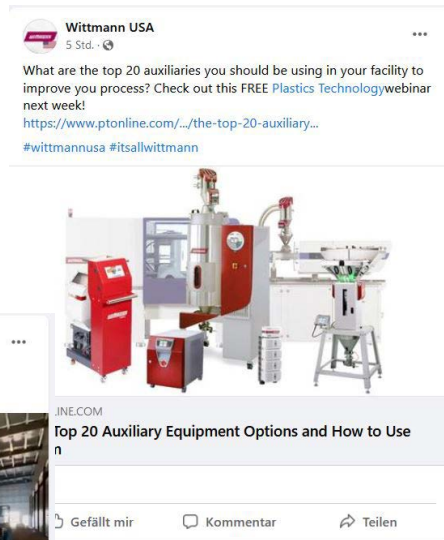
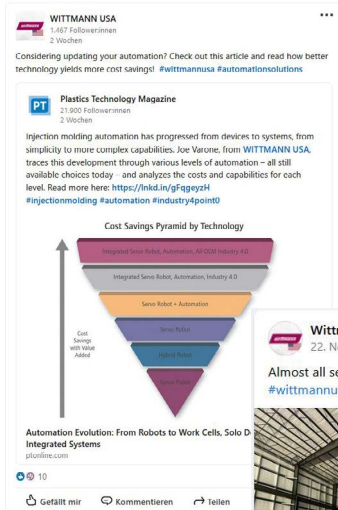
Paige O'Meara, Product Coordinator/Sales Support MH & Auxiliaries



Paige recently joined our USA headquarters in Torrington, CT as the Product Coordinator/Sales Support for our Material Handling & Auxiliaries Division. She comes to WITTMANN USA with 10 years in customer service and is currently studying engineering science at Northwestern Connecticut Community College.

Connect With Us on Social Media!

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



-  facebook.com/WittmannUSA
-  linkedin.com/company/wittmannusa
-  [Youtube /WittmannUSA](https://Youtube/WittmannUSA)
-  twitter.com/WittmannUSA

