



CASE STUDY  
**HELLA ELECTRONICS**

## Cobots Make Hella Factory Automation More Agile & Efficient

The concept of collaborative robots, or “cobots,” isn’t new, but it has taken a couple of decades for cobots to become light and agile enough to be attractive for a company like Hella Electronics Corporation. Located in Flora, Illinois, Hella designs and manufactures a range of lighting and electronics products for the fast-moving automotive industry.

Curtis Garrard, Head of Technical Services at Hella, says the combination of ASSISTA robotic arms from Mitsubishi Electric Automation plus visual programming and dynamic path planning from Realtime Robotics is changing the company’s approach to factory automation.

Initially, Curtis says, the decision to go with the Mitsubishi Electric ASSISTA industrial cobots was based on a long-standing relationship with Mitsubishi Electric. He explains, “When we started looking at collaborative robots, sticking with Mitsubishi was a no brainer. We have a very good relationship. We’ve got several of their robotic product offerings already deployed, and for us, finding a collaborative robot that fits with our current technology makes it not only easier for us to support but easier for us to integrate, as well.”



ASSISTA collaborative robots are adding agility, safety and flexibility to the factory automation capabilities at Hella Electronics Corporation.

## Visual Programming

The ASSISTA Collaborative Robot is designed to change the perception of what a robot can be. Light, agile and low-maintenance, the ASSISTA requires less safety guarding than a traditional industrial robot. Not only can human employees work around it safely, there is less hardware that needs to be moved along with the robotic arm. The arm can be more easily re-deployed and “trained” for new tasks in other locations.

ASSISTA offers direct teaching, as well. Moving the robotic arm by hand sets each memorized position, which works to cut set-up and commissioning times to a minimum.

To meet Hella’s unique requirements, Mitsubishi Electric Automation worked with Boston-based Realtime Robotics for two sophisticated functions: visual programming and dynamic path planning. The two companies also collaborated with Power Motion, an authorized Mitsubishi Electric distributor, who supported Hella throughout the entire process.

“When Mitsubishi came to us and explained their relationship with Realtime Robotics, it was a very, very interesting concept,” Curtis remembers. “We had several use cases where we felt like the ASSISTA cobot could solve specific problems. The tie in with the Realtime Robotics solution really expands the problem solving capabilities.”

Tim Kalthorn, a Mitsubishi Electric Automation Channel Account Manager working with Hella, says the ease of visual programming is incredible. “Ten years ago, you almost needed a PhD to program robots. Now, with the graphical programming environment, you could program an ASSISTA cobot from a tablet PC. It uses pinch, zoom and drag commands.

Hella Automation Engineer Ralph Barbre agrees. For example, Ralph says, reassigning tasks is simple. “All I have to do is go into the graphical screen and change where a pick point is. In the PLC code, each point is identified by a name. I don’t have to reprogram the PLC code. All I have to do is move that point to another location. The robot just takes off and runs in a matter of a few minutes.”

The ability of the system to identify and remember named pick-and-place points also allows the robot arm to be relocated, then brought back to the same table without reprogramming. “As long as I put the robot back in the same spot where it’s pinned on the table,” Ralph explains, “the pick or place point is going to be the same. The point is identified within the environment of that location.”

## Easy Multi-Robot Setup

While the ease of programming and reprogramming pick-and-place points saves time and adds flexibility to single-arm applications, the Realtime Robotics dynamic path planning saves even more time as the robot operates in situations where more than one robotic arm operates in the same work cell.

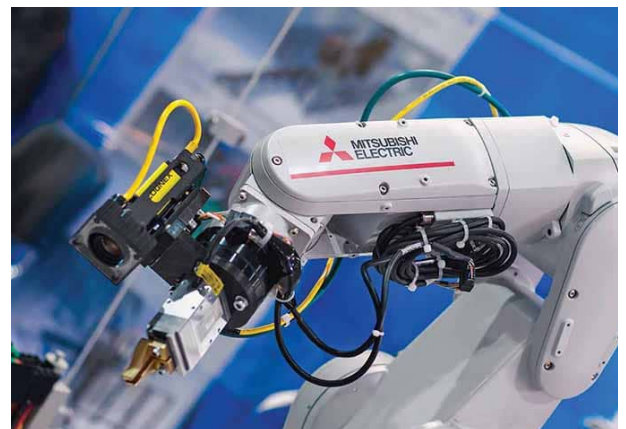
“In the past,” Ralph Barbre recalls, “you would have to have several lines of code to keep the robots from coming in contact with each other. You’d try to predict where one is over the other and then write the code for a path to keep them separate at all times. That creates a problem with latency so you have issues with speed.”

Even worse, if the robots do end up hitting each other, which Barbre says used to occur several times in a shift, “the production line would be down for the time it takes for a technician to come and reset the robot, get everything in the cell back to a home position and then restart it.”

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As Tom Munger, Director of Sales for Realtime Robotics, points out, shutting down a line to reset a robot is an expensive proposition. “Typically in an automotive plant, the minute the line goes down, you’re experiencing tens of thousands of dollars in potential costs every minute. The Realtime Robotics technology keeps that line running longer because of our automatic collision avoidance behavior.”

Munger continues, “When end users are deploying multi-robot cells, they utilize a process known as ‘interlocks’ to ensure that robots in a shared space never collide with one another. Realtime Robotics employs that concept in a much more dynamic way. Our dynamic path planning system, which includes our Realtime Robotics Controller and RapidPlan software, automatically manages all the robot motions in a given work cell and communicates where each robot is going in real time.”

As a result, Munger says, end users have experienced up to an 80% reduction in time spent motion planning during programming and optimization.

For the Hella plant in Illinois, Curtis Garrard estimates, “we’ve taken what probably should have been about a two-week integration time frame down to just a couple of days. What’s more, we’ve been able to do most of that work offline where we’re not having to impact our production environment to fine tune things.”

Time savings also apply to the factory floor with benefits such as automated fault recovery and automatic reboot. In the end, Tom Munger says, “users achieve much higher robot uptime, and they don’t require expensive robot programmers to come and make modifications to work cells if something goes wrong. In time savings on the factory floor, our technology typically pays for itself in the first fault recovery instance.”

## Bottom Line: Greater Safety and Efficiency

Munger explains dynamic path planning with this analogy: “It’s like GPS for cars. We simply give the robot a start goal and an end goal and the robot will calculate multiple different paths to get there. If an obstacle is recognized along one path, the robot will evaluate what other paths it can take that would result in a non-collision behavior.”

And it’s not only another robot that might force a different path. It could also be a human entering the robot’s work space. Ultimately, that’s what enables the ASSISTA cobot to be truly collaborative with a human employee. It can handle the awkward, risky or tedious tasks while the employee works safely alongside to manage the operation and do other, more appropriate tasks.

Curtis Garrard notes that letting robots take over some work is good for business, and good for Hella employees. “A lot of people don’t take into account what an injury costs your business. Put a collaborative robot where maybe an operator would be doing some weird twisting, turning or very, very repetitive tasks and you mitigate that risk from an injury standpoint.”

Even before the COVID pandemic, Curtis notes, factory workers were hard to find. In 2021, the labor shortage became even worse. A Chamber of Commerce survey published in June of 2021 found that 90.5% of companies reported a lack of available workers was slowing the economy in their area, twice as many as cited before the pandemic.

Curtis says cobots like the Mitsubishi Electric ASSISTA help Hella find and retain good employees because they make factory floor jobs safer and more attractive to potential employees.

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- Curtis Garrard, Head of Technical Services  
Hella Electronics Corporation

He adds that those benefits work in tandem with the bottom-line efficiency of factory automation. “A lot of your cost benefit comes from how much you can run and how fast you can run. So break times, lunch times, things that aren’t there with a collaborative robot really help drive your overall efficiency up and your costs down.”

Curtis concludes that working with Power Motion to implement Mitsubishi Electric’s ASSISTA collaborative robots with the Realtime Robotics visual programming and dynamic path planning has been a winner for Hella all around. “The Realtime Robotics solution allows two robots to work dynamically around one another, so you get closer to cutting your cycle times in half. Plus, the robots being able to move around work environment obstacles, such as incoming or outgoing material, or maybe an operator coming in to do a quality check, that really helps maximize efficiency and safety. It’s a very effective, agile, flexible manufacturing solution.”

### AUTOMATION SOLUTION INGREDIENTS

- [ASSISTA Collaborative Robots](#)
- [Realtime Robotics Realtime Controller](#)
- [Realtime Robotics RapidPlan Software](#)

### NEXT STEPS

For more information or a free consultation with an automation engineer, please

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Learn more about Hella Electronics Corporation:  
[hellausa.com](http://hellausa.com)



Learn more about Realtime Robotics:  
[rtr.ai](http://rtr.ai)

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