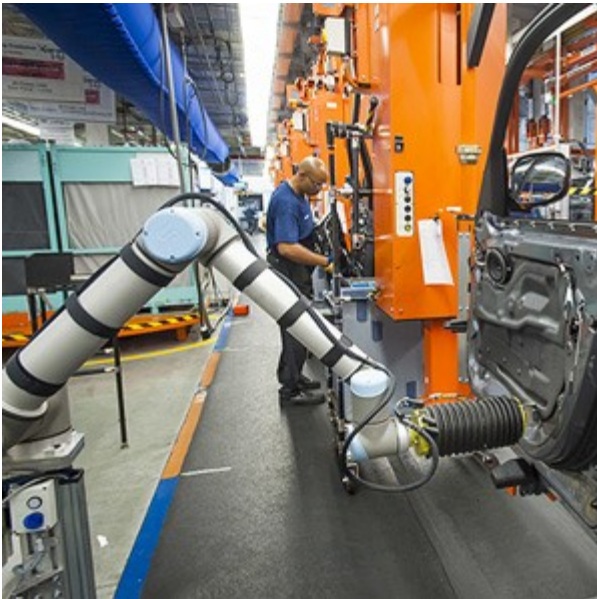


Smart Robots Can Now Work Right Next to Auto Workers

It used to be too dangerous to have a person work alongside a robot. But at a South Carolina BMW plant, next-generation robots are changing that.

By Will Knight on September 17, 2013

published by <http://www.technologyreview.com/news/518661/smart-robots-can-now-work-right-next-to-auto-workers/>



BMW has taken a huge step toward revolutionizing the role of robots in automotive manufacturing by having a handful of robots work side-by-side with human workers at its plant in Spartanburg, South Carolina.

As a new generation of safer, more user-friendly robots emerges, BMW's man-machine collaboration could be the first of many examples of robots taking on new human tasks, and working more closely alongside humans. While many fear that this trend could put people out of work (see "[How Technology Is Destroying Jobs](#)"), proponents argue it will instead make employees more productive, relieving them of the most unpleasant and burdensome jobs.

Robots have been a part of automotive manufacturing for decades. The first industrial robot—a hulking 4,000-pound arm called the [Unimate](#)—attached die castings to car doors at a GM production line in 1961. Such manufacturing robots have been powerful and extremely precise, but it's never been safe for humans to work alongside them. As a result, a significant number of final assembly tasks, in auto plants and

elsewhere, are still performed almost entirely by hand.

At BMW's South Carolina plant, robots made by the Danish company [Universal Robots](#) have broken through this barrier and are helping workers perform final door assembly. The robots are working with a door sealant that keeps sound and water out of the car, and is applied before the door casing is attached. "It's pretty heavy work because you have to roll this glue line to the door," says Stefan Bartscher, head of innovation at BMW. "If you do that several times a day, it's like playing a Wimbledon match."

According to Bartscher, final assembly robots will not replace human workers; they will extend their careers. "Our workers are getting older," Bartscher says. "The retirement age in Germany just rose from 65 to 67, and I'm pretty sure when I retire it'll be 72 or something. We actually need something to compensate and keep our workforce healthy, and keep them in labor for a long time. We want to get the robots to support the humans."

In recent years, robot manufacturers have realized that with the right software and safety controls, their products could be made to work in close proximity to humans. As a result, a new breed of more capable workplace robot is rapidly appearing.

One of the most prominent examples is Baxter, made by [Rethink Robotics](#), a Boston-based company founded by the robotics pioneer Rodney Brooks. Baxter has a torso, a head, and two arms; it is safe to work alongside, and it can be taught to perform new tasks simply by moving its arms through an operation (see "[This Robot Could Transform Manufacturing](#)"). So far, Baxter has largely been deployed in small U.S. factories, where it helps package items moving along a conveyor. BMW's effort represents a more significant push into heavy-duty manufacturing.

BMW is testing even more sophisticated final assembly robots that are mobile and capable of collaborating directly with human colleagues. These robots, which should be introduced in the next few years, could conceivably hand their human colleague a wrench when he or she needs it. The company is developing the newer robots in collaboration with [Julie Shah](#), a professor in MIT's department of aeronautics and astronautics. "Oftentimes, the robot will need to maneuver closely around people," says Shah. "It'll need to possibly straddle the moving floor—the actual assembly line; it'll need to track a person that is potentially standing on that assembly line and moving with it."

Shah's team has built robots capable of these tasks on a simulated production line at MIT. After the control software has been tested sufficiently at BMW's lab, the robot will be deployed on one of its real assembly lines. "It's a fantastic navigation and controls challenge, and it hasn't been solved before," Shah says.