



From Fantasy to Reality: Ford's New \$45 Million Advanced Manufacturing Center Bringing the Future to Life – Today

- Ford is making a big bet on futuristic technologies to help speed manufacturing innovation at its new Advanced Manufacturing Center in Redford, Mich.
- Ford, which leads North American automakers in manufacturing capacity utilization, will ramp up prototyping including 3D printing, augmented and virtual reality, robotics and much more at its new facility before bringing tested innovations to auto plants across the globe
- The company's \$45 million investment co-locates approximately 100 advanced manufacturing technology experts and their specialized equipment in one open space. For Ford, this combination of advanced manufacturing expertise and a skilled workforce will continue to support the company's drive to mass produce the highest quality vehicles

REDFORD, Mich., Dec. 4, 2018 – Inside Ford's new Advanced Manufacturing Center, an engineer stands in front of a 3D printing machine churning out brake parts for Ford's soon-to-be-introduced Shelby Mustang GT500. Across the room, two team members strap on virtual reality headsets to design and simulate production lines, while another is working alongside a collaborative robot, programming a safer way to install a vehicle part.

These technologies are no longer simply a Hollywood vision of the future. For Ford, which has been breaking new ground in auto production for more than a century, they are critical tools and technologies to improve the complex and demanding task of building cars and trucks. And this is all happening every day under one roof at the company's new \$45 million Advanced Manufacturing Center in Redford.

"More than 100 years ago, Ford created the moving assembly line, forever changing how vehicles would be mass-produced," said Joe Hinrichs, Ford's president of Global Operations. "Today, we are reinventing tomorrow's assembly line – tapping technologies once only dreamed of on the big screen – to increase our manufacturing efficiency and quality."

Approximately 100 experts work at the development hub for cutting-edge manufacturing technologies, including 3D printing, augmented and virtual reality, robotics, digital manufacturing and more.

New Horizons: 3D Printing

Today, Ford is driving the future of 3D printing in the automotive industry. The Advanced Manufacturing Center has 23 3D printing machines and is working with 10 3D manufacturing companies. This allows Ford experts to develop applications with different materials – from sand to nylon powder to carbon. One application currently under development has the potential to save the company more than \$2 million.

There are 3D printed parts in the manufacturing and production of Ford vehicles. The soon-to-be-revealed Shelby Mustang GT500, coming at the North American International Auto Show in January, has two 3D printed brake parts, while the F-150 Raptor built for China includes a 3D printed interior part. As 3D printing becomes more affordable, 3D parts will become more prevalent.

Three-dimensional printed parts also help employees improve vehicle quality. Assembly line workers at Michigan Assembly Plant, where Ford builds the Ranger pickup, use five different 3D printed tools. These tools played a critical role in the launch of Ranger, removing weeks from an already tight timeline and ensuring quality is built in – from the first vehicle that rolled off the line.

Ford, which purchased the third 3D printer ever made in 1988, now has 90 3D printers globally producing parts and tools. On the shop floor, workers team with advanced manufacturing experts to identify ways to save the company time and money, including how to 3D print replacement parts to keep lines running instead of waiting for parts that can take weeks to be fabricated.

Augmented and Virtual Reality

While millions of children catch fictional animals or capture portals in popular augmented reality video games, Ford is banking on augmented and virtual reality to help it simulate and design assembly lines to build millions of vehicles. Ford experts don specialized gaming equipment and configure a virtual reality production line without ever leaving the Advanced Manufacturing Center, allowing them to identify potentially hazardous maneuvers and fine tune workflows long before an assembly line is constructed.

Experts also develop specialized experiences in augmented and virtual reality to allow Ford manufacturing teams to work collaboratively in plants around the world. This enables people on different continents to work in the same virtual experience simultaneously. For instance, if a vehicle is intended to be produced globally, teams can work together to design optimal manufacturing workstations for all continents. This is advantageous because the technology allows teams from around the world to design a workstation for vehicle production as if they were standing in the same physical space.

Collaborative Robots

Ford has made significant advances during the last few years with collaborative robots – also known as cobots – with more than 100 of them in 24 Ford plants globally.

These robots are smaller and can work safely alongside people, without protective cages. In Livonia Transmission Plant, a cobot performs a job that was so ergonomically difficult for employees that they could only do that job for one hour at a time. The cobot was a welcome addition to the production line. These cobots also help Ford reduce costs by eliminating the need for expensive safety cages that larger robots require for safety reasons. Utilizing cobots in the Advanced Manufacturing Center allows the company to identify and address potential production issues before the cobots are installed in plants.

“While we are increasing our use of collaborative robots, we strongly believe there is a need for both people and robots,” said Hinrichs. “People are better at doing certain jobs, while robots are able to perform certain tasks, including those that are ergonomically taxing for people.”

About Ford Motor Company

Ford Motor Company is a global company based in Dearborn, Michigan. The company designs, manufactures, markets and services a full line of Ford cars, trucks, SUVs, electrified vehicles and Lincoln luxury vehicles, provides financial services through Ford Motor Credit Company and is pursuing leadership positions in electrification, autonomous vehicles and mobility solutions. Ford employs approximately 200,000 people worldwide. For more information regarding Ford, its products and Ford Motor Credit Company, please visit www.corporate.ford.com.