

# AGVs Keep Fiberglass Plant's Product Moving

PPG is the second-largest global manufacturer of continuous-strand fiberglass. The Chester, SC, plant opened in 1996 and is dedicated to fiberglass rovings production. "Our goal is to push the winding process," says Bernd Brockmueller, manager, automation and machine design for the fiberglass division. "Once the ovens start melting the glass, we constantly pull the strands through the winders. Considering the number of ovens and yarn-types, all running continuously, this task is daunting."

The plant uses robotics and automation in production, adds Brockmueller. To keep the winding process up and running 24/7, 365 days a year, PPG decided to implement integrated automated systems in 1997. Supplied by AGV Products, Inc., Charlotte, NC, the AGV (automated guided vehicle) system features vehicles, software, control packages, and retrofits. Wire guidance is used at the PPG plant, while laser guidance is also available.

"The task of the AGV system is to pull the product through the processing stages," says Brockmueller. "It is critical to keep the molten product moving."

The customized AGVs handle standard fiberglass transport carts to do this. Each cart is inducted into the system by operator barcoding to identify product type. Once the control system is given the order, it will signal the AGVs to move product. The control system is designed to "shake hands" with robots that load and unload processing equipment. The off-board controller reads this information and automatically generates the transport orders for the next process step. Once the product reaches the work-in-process (WIP) area, the time is recorded in a Microsoft database by the off-board controller. The product will remain until its time has expired.

"The high-speed winders are the critical point," says Brockmueller. "We make sure empty trucks are always available to pull the product spools through the system. We have eight AGVs that handle the job."

After winding, AGV outrigger forks fit under the hand trucks and lift the yarn spools slightly off the ground for transporting to the conditioning/drying area. Each yarn type has a specific drying time in the oven and it may take up to 14 hours for certain types. The AGV control system tracks the drying time for each truck in all ovens. As the truck exits the oven, another AGV carries it to the cool-down area. The yarn will stay in the cooling area until there are enough spools to fill an order. It may take as long as 24 hours to accumulate three pallet loads of a specific yarn. Once the yarns needed for a specific order are accumulated, they are palletized and ready for shipment. Again, AGVs carry the palletized packages, weighing up to 2,000 lbs., from the processing lines to the packing area.

In addition to moving product through the manufacturing process, the AGV system includes opportunity charging. When not doing work, the AGV will travel to designated areas equipped with two single-pole charge plates mounted on the floor. The unit will park over one of these charge plates so that its "shoes" are aligned for charging. It remains there until more work is requested.

"For the most part, this system is an operator-driven system," says Brockmueller, "meaning the operators request the system to do something for them." The

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operator will request a setup from the stationary controller system, which is always in communication with the AGVs monitoring their locations and directing them to complete specified work. "The AGV system was a major addition to our processing operations and helps us meet our customer service goals," says Brockmueller. "Inventory, traffic-control and operational status of our processing system is now fully automated with robotic systems and AGVs."

Since implementing the AGV system Brockmueller says the plant has "reached production goals never realized before. Now, with a simple double-click of a mouse, at any point in time, the control system will tell us location and status of each product. Our facility has attained maximum efficiency. Operators set basic parameters and the control systems take over."

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