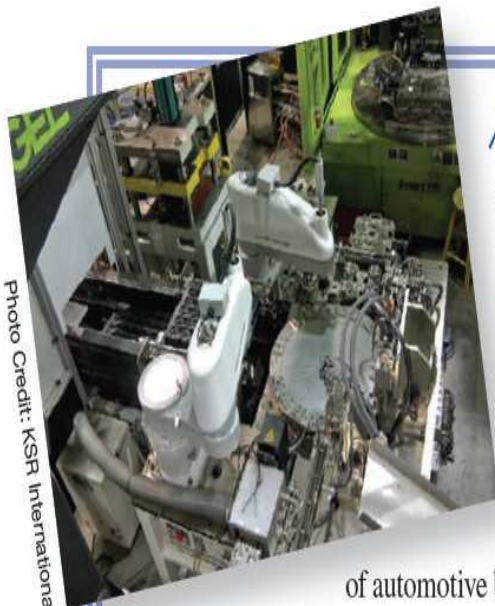


Canadian Plastics

Photo Credit: KSR International



Accelerating production on brake pedal modules

While a lot of manufacturers were hunkering down during the depths of the Great Recession of 2009, injection molder KSR International decided it was time to beef up its throughput

of automotive brake pedal modules, elec-

tronic sensors, and electronic throttle controls by investing.

Almost three years ago, the Ridgetown, Ont.-based company first turned to Engel Inc. to supply it with overmolding work cells to speed up production of the 15 million pedals and sensor assemblies that it manufactures annually.

The process involves overmolding terminal pins inside of plastic connector housings, which then receive a circuit board. (In case you're wondering, the pins are used for anything that has an angular motion, such as accelerator connector housings, throttle position sensors, and brake position sensors.) "Before installing the work cells, we were pre-molding a cluster of pins in a smaller process and then overmolding them in the main sensor housing," said Joe Grasso, the company's manufacturing engineering manager. "Now we're able to remove that step. Our terminal pins come plated on a coil; we uncoil them, run them through a forming die, and then singulate them. While they're singulated, we pick them up with a gripper on a SCARA robot, take them out of the forming die, and load them onto a staging nest."

The parts, mated primarily from polybutylene terephthalate, are dropped onto a continuity tester after molding, to ensure there's no bridging or other defects. "We have an

automated vacuum-form tray handler that spits out a full tray and sends out an empty one to receive the parts," Grasso said.

The cell, which allows KSR to meet production requirements without an operator, is based on a 175-ton Engel vertical injection molding machine with an indexing table. "The table lets us load and unload product while the machine is running, to maximize throughput," Grasso said. Because not even production cells are carved in stone, the system's automation has evolved over the years. "The first cells used Engel's ERC robots," Grasso said. "We then changed our design and went with a different vendor, but migrated back to Engel's new Viper cartesian robot, which is more robust." The Viper is designed to offer ultra-fast cycle times and low energy consumption, and is available in several models with load-bearing capacities ranging from 55 lbs. to 120 lbs. The KSR cells also use third-party automation from equipment supplier Edge Automation.

Currently, KSR has six of the vertical overmold cells in its Ridgetown facility; one each in its plants in Bahia, Brazil, and Yokohama, Japan; and one soon to be added in Hanover, Germany.

"The cells have made a big difference for us," Grasso said. "The typical cycle time is anywhere from 30 to 40 seconds, which is a substantial improvement from before. And prior to installing the cells, we were buying sensors from other companies. The cells allow us to bring the work in-house, which wasn't possible before."

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