

AUTOMOTIVE MODULAR MACHINE CONTROL



From NASCAR rallies to efficient EVs, the automotive industry thrives on a “compete or get out” attitude and automotive manufacturing is no exception. Every OEM supplied component is critical to the manufacturer, accepting nothing short of timely perfection. Recently, a California-based OEM was selected as an exclusive supplier of a critical component to one of the world’s largest automotive manufacturers, an opportunity too profitable to pass up.



Despite the new automotive contract, past problems with their conventional motion control system haunted the OEM’s confidence. Part of their component assembly process involved taking pieces 90 degrees off the assembly line onto an index table where several axes of motion, employing servos, inspect and reposition the parts. Coordination and synchronization were required between each axis of motion and several points of I/O were located on the index table, including sensors and thermocouples. Breakdowns meant the OEM had to run costly overtime

schedules to meet delivery deadlines, the cause of which was usually the wear-and-tear of the wiring harness to both the I/O and motion controller on the index table.

The OEM quickly realized the new solution must keep the controller and I/O wire harness of the index table to an absolute minimum or be eliminated altogether because not meeting manufacturer standards meant losing their largest account to date.

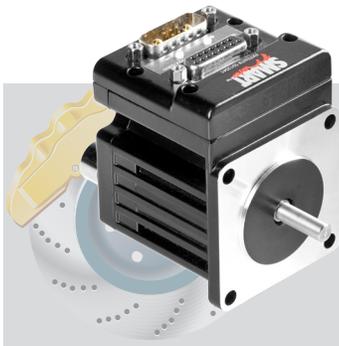
After much deliberation, the OEM chose SmartMotor technology to replace their previous design. The SmartMotor, a complete motion control system with a brushless servo, programmable motion controller, drive-amplifier and I/O networking integrated into one package, meant fewer cables and wiring in the design. In addition, no separate cabinet enclosures are needed compared to a conventional motion system.

The entire system’s tuning and performance parameters were saved and replicated from the first to the last axis with the SmartMotor’s internal, non-volatile memory, effectively eliminating multiple application programs. This created a single programming environment: no more learning to program and synchronize multiple controllers for each function. All I/O and internal status information was accessible through defined

variables for program monitoring and conditioning with all I/O being controlled directly from the SmartMotor.

A 5-pole slip ring was all that was needed to complete the design since only power and communications cables to the SmartMotor servos on the index table were required. The new design reduced both electrical noise and disturbances because the wiring was minimized.

What was the result? A cost savings of over 30% utilizing the SmartMotor servos. Eliminating the wear-and-tear of the wiring harness and the ability to troubleshoot problems quickly and efficiently (reducing downtime) meant the OEM met deadlines and quality standards of their biggest account...all with lower prices than their competitors.



"The new design reduced both electrical noise and disturbances because wiring was minimized by utilizing SmartMotor's integrated design and creating a single programming environment. The result was over 30% cost savings and meeting the quality standards of their biggest customer account."