Cobots: Start Simple, Then Add Complexity

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AS A PROVIDER, INSTALLER, AND INTEGRATOR of collaborative robotics (cobots), we've learned that certain best practices are coming to the forefront as cobots' popularity has grown exponentially over the last few years. Cobots are an ideal, entry-level robotic device for smaller shops to begin using automation in an economical way. Of course, as with any equipment integration, it takes a knowledgeable team with experience to make cobot integration as seamless and painless as possible. Considering a cobot is a big step for traditional shops that use machinists and operators for the tasks a cobot might perform, such as picking and placing workpieces in and out of a machine or cell.

We almost always suggest that creating a simple application for the first cobot is a smart approach. It's wise to have the very first experience be smooth from both a cultural and technical standpoint. Employees may naturally be a bit skeptical and perhaps even mildly threatened by the cobot. In every single case we have been a part of, however, employees evolve to be full supporters of the cobot once they understand its role and its functionality day after day.

The Cobot Fun Factor

For one thing, a cobot is fun to watch. Go to any trade show and the cobot/robot booths will have a lot of people watching the action. Further, staffers freed from doing the tiresome, boring, repetitive tasks that the cobot now does quickly feel relief as they are reassigned to more interesting roles in the shop or even in the same cell, working alongside the cobot. In some instances, the cobots take on the personas of work buddies and are even assigned cute nicknames. One shop calls theirs "Cobie."

The technical aspects of cobot integration are many and this is where experience and knowledge really come into play. The shop owner or manager will want to get reassurance that the cobot provider/integrator understands CNC machine tools and machine tool controls, the various ladder logic codes, and the M-code requirements of each major controller brand—such as FANUC, Mitsubishi, and Siemens. The integrator should be well-versed in sequencing the cobot and the machine tool(s)—starting the machine, readying the part for loading/unloading, and placing the part in an unloading station or bin.

Additional M-codes may be needed from the machine tool builder if the CNC machine is older. Newer machines—built within the last five years or so—generally have plenty of M-codes for adding peripheral equipment. The integrator will wire the input/output software communications of the cobot to the machine, program the cobot, and, depending on the application, design and make gripping devices and the load/unload stations.

The Difficulty of Making Things Easy

Even though the cobot's function might be "simple," it still takes a high level of know-how to make the "simple" easy to do. As a result, another important service that the integrator can provide is training. Again, especially for first-time cobot users, thorough training is one of the keys to success.

Once the new cobot is installed and functioning reliably for months, and the employees see that it's more interesting than threatening, we often get calls for additional cobots to be installed and integrated. It might be a similar setup in a different cell, or, with the shop's newfound confidence in cobots, we might tackle something a little more challenging, such as a welding or a vision inspection application. We've also seen certain staffers become the resident "cobot expert" in the shop to the point where he or she can install and integrate the next cobots on their own, or with just minor guidance from us.