

5 STEPS *to Automation*

A pre-automation checklist

➔ Machines shops, small and large alike, struggle with increasing throughput, decreasing costs and improving quality. Automating CNC machining processes can help achieve all three—the trifecta of productivity improvements. But many shop owners are afraid automation will be too costly or complex. That doesn't have to be the case.

Automation comes in various forms, as simple as barfeeding and parts catching, and as complex as robotic integration and pallet systems. Even the smallest shops can benefit from some level of automation, and with the potential for productivity increases of 30 per cent or more, there's a lot of upside to automating CNC machining processes. But before you flip the switch on that bar feeder or robot, check out the surrounding tools and processes. Make sure they are compatible to your level and type of automation and appropriate for the parts you will cut now, and in the future. If you address these areas first, you'll create a stable process and improve productivity.

There are five key considerations to take into account that will minimize process pains and boost productivity gains:

1 WORKHOLDING: Is your workholding agile and adaptable for quick changes? Look into quick-change, three-jaw chucks or collet systems. Consider end-of-arm tooling on the automation system and its compatibility with the types of parts you will load and unload.

2 TOOL MANAGEMENT: To ensure you get the most from the automation, set up and staging of assemblies and tools is important. To ensure the CNC machine will be able to cut in an automated environment, tool monitoring is helpful to monitor tool life and breakage. Additionally, consider whether or not the machine's tool capacity is conducive to redundant tooling. If so, the machine can be programmed



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to automatically index a redundant tool (in the case of original tool breakage) thereby keeping the machine (and the robot) operational.

3 GAUGING: Automated, in-machine gauging is helpful in making sure you are consistently cutting good parts. Using auto-compensation software gets CNC machining feedback back into the machine as quickly as possible and can help ensure consistently in-specification parts, thus improving quality and efficiency.

4 CHIP CONTROL: Seems obvious, but worth stating—if you have messy chips in your chuck, the system will stop. Keeping the process clean and free from chips will improve the effectiveness of the automated system.

5 MATERIAL: To make automation work, make sure you have a solid infeed and outfeed system. Automation increases throughput and therefore you need to ensure that you are feeding the system with raw material and have a good system for moving finished parts out of the system.

As with anything, proper planning will improve the likelihood of success. And in the case of automation, a few simple considerations drastically affect the ease of integration, the level of productivity improvements and payback on the cost of automating. Working upfront with your CNC machine tool provider and that provider's automation integrator will help identify the key automation strategies and tactics best suited to your organization and the parts being produced. The improvements can be dramatic and the payoffs tremendous. SMT

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