

presses, sometimes we have to go back and retrofit controls—which we can do.”

#### 4) Tooling is King

Whatever the system’s components are, the critical common denominator to any smoothly running system is proper (and properly maintained) gripper tooling.

**Proper size.** When a shop initially determines which part families are prime candidates for automation, it also can figure out how many different sizes of end-of-arm tooling it would need to handle the necessary billets.

For a certain amount of stroke, one set of gripper fingers can cover a range of billet sizes. To go bigger, a shop would change over to a second set of fingers; to go smaller, it would change to a third, and so on. When a shop streamlines its process by grouping parts according to raw material sizes, it finds that automating its production gets a lot easier than it might have thought possible.

“To cover a great big, broad family of parts, you’ll have some tooling changes on the robot,” Morris says. “And we can make that pretty painless and straightforward.”



For example, an organized operator can swap gripper fingers, put the old tools away, close the tool drawer and get the robot running again in 10 minutes.

**Proper maintenance.** Morris says the primary problem he gets calls on is gripper tools malfunctioning in some way, either

from age or mechanical failure or just plain neglect.

“Your operators need to maintain the robot if that’s their job,” Morris says. “Normal weekly maintenance is going to be cleaning off the robot a little bit, making sure it’s not getting covered with scale, especially in the end-of-arm tool. That’s really where your problems are going to occur if you don’t maintain. So make sure you aren’t getting too much scale and die spray buildup. We know it’s in a forge environment, so things are going to get dirty really quick. But you can’t let it get so caked up that it starts interfering with operation.”

#### 5) The Human Factor

**The Champion.** So let’s say a shop makes the decision to buy into automation. One critical decision remains before one component hits the shop floor, Morris says: Somebody has to be the robot champion.

“Somebody’s got to be the guy to keep it running, no matter what,” Morris says. “You just spent a lot of money. I would recommend it’s at least two people. In case one decides to leave the company, you’re just backing him up.”

**The Programmers.** Morris also says a shop could get a couple of people trained to program the robot—probably project engineers. “They should be the guys bringing it in,” he says.

**The Operators.** Morris also believes deeply in a business’s need to include operators in the automation decisions from the very beginning. After all, they’re the folks who actually make the shop run.

“Don’t surprise them,” Morris says. “You walk out on the floor and you say, ‘Hey, we’re thinking about doing this, guys. It’s going to be a change, but let’s give it a shot. It looks like it could help us with productivity and make us more competitive.’”

“You’ve got to get the operators to want to work with you,” he adds. “And no matter what, make sure nobody loses their job. I haven’t seen that happen for 20 years. Nobody loses their job; they just move around in the plant. They get a different job. And it’s important to make sure everybody understands that’s what’s going to happen.”

In addition, a company has to decide who’s going to add parts to the robot’s repertoire. It’s easy to have the automation vendor do it, but “I think good programming involves giving the end user a shell program, and they can add information to the shell program to generate a new part,” Morris says.

“Maybe we will program the first three parts,” he says. “But maybe they’re running 20 parts in that family. So you can pay us to do it; we’re glad to do it. But to make the job more economical, we always try to train our customers to add the parts.”

And finally, a shop simply must have people who are willing to learn how to operate the robot—not necessarily how to program the robot but know backward and forwards how to operate it. Automated Cells goes so far as to design the system so that when a problem arises, instead of picking up a teach pendant to jog a robot out of trouble, an operator can hit a button or two, and the robot will back up to a safe position. However, that doesn’t eliminate the need for some experts on the floor.

“The thing that you’ve got to have is somebody who’s willing to read the teach pendant and operator interface that will come with the package,” Morris says. “These devices tell them what’s going wrong and how to troubleshoot it and get back up and running.”

If a shop prepares its people and its equipment for success, the ROI will come, Morris says—predictably and reliably.

“If the job is programmed to run at 400 parts an hour, you can count on it,” Morris says. “You’re going to get 400 parts an hour. You turn on the robot, the parts are going to come out at that rate.”

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