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Basic Elements: Automating your mold manufacturing plant

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It wasn't too many years ago that moldmakers resisted the idea of "lights out" manufacturing. With the competitive challenges from offshore mold companies, most mold manufacturers have changed their tune. Automation is becoming standard shop equipment and lights out is a way of life.

Looking at automating your mold shop? Start here:

1) Ask yourself, do I really need to automate? A moldmaker's biggest mistake, says Wade Clark, president of moldmaker Electroform Co. (Rockford, IL), is allowing salespeople to sell him automation before evaluating current machine utilization. "If you have three machines not running now, do you need automation?" Clark asks. "First, evaluate whether you are using the machines that you have, and focus on maximizing your utilization."

Ask yourself:

- Do I have enough work to generate the throughput to maximize an automated system?
- Do I have the support systems in place to handle the increased volume that automation is capable of generating?
- Do I have the type of work that is conducive to automation (high volume, multicavity)?
- Can I maximize automation use in a one-off situation?

2) Be an informed shopper. Before you contact a supplier, be ready to convey your needs clearly based on the type and size of molds you make. Look for flexible equipment that can integrate with other system components. Also, equipment suppliers are a good resource for help in setting up a cell. Many work with automation companies and together can provide you with the right setup. In many cases, your current equipment might be suitable for automation depending on its capabilities.

Ask your system supplier:

- What type of equipment do I need to do the job I need to do?
- What can I expect in the way of extra costs such as tooling, customized software, and so forth?
- What can I expect in the way of ROI?
- How long from installation until the automation is fully operational?
- What type of support can I expect from you to get my system operational?

3) Watch for hidden costs. Pricing can range from \$200,000 to automate one or two machines to upwards of \$1 million for a full-blown multimachine manufacturing cell that features a variety of equipment such as EDM, sinker EDM, high-speed machining centers, racking/rotary carousels, a vision system for remote viewing of the cell during lights-out hours, and a coordinate measuring machine (CMM), as well as additional seats of 3-D CAD and software programs. Be aware that the price of an automated manufacturing cell may be only half of what

you spend when you make the switch. "If you spend \$100,000 on equipment, you'll probably spend another \$100,000 on fixturing and tooling," Clark cautions.

Also, you may need to add salespeople to get the amount of work required to keep an automated manufacturing environment busy—another possible unexpected cost.

4) Get ready for the flood. As expected, automation will exponentially increase the rate of throughput in your plant—so be ready. "When we automated our EDM department, we had electrodes up the wazoo because the CMM department couldn't

check them fast enough to keep up with production," says Donna Koebel, CEO of Prestige Mold (Rancho Cucamonga, CA). "Make sure you have adequate support from the other departments to prevent these types of bottlenecks." Additionally, cutter paths and inspection locations will need to be preprogrammed.

5) Consider the entire process. Automation doesn't begin and end on the production floor. It generally means a company will need more and/or better front-end equipment such as 3-D CAD stations to accommodate the increased programming workload.

6) Educate your employees. Employees who don't understand why automation is being implemented and what their roles are in the overall scheme can feel threatened. Clark says the first thing he did when making the move toward automation was to focus on the mindset of the moldmakers and machinists, long before the equipment showed up.

Adds Koebel, "Be sensitive to your employees so they don't get the idea that you're automating just so you can get rid of people. Put training programs in place to retrain those whose jobs may change in the new methods that automation brings."

It's critical that employees be trained for an automated environment where things happen exponentially faster than they do in a nonautomated one. "If your operator doesn't have that first part right, you'll have a lot of bad parts very quickly," Clark stresses. "Automation can make you a lot of money, but it can also cost you a lot of money. Without proper procedure protocol it can take you down the wrong path."

7) Have patience. Automation doesn't happen overnight. All three companies mentioned here spent months getting their systems installed, the software programs talking to each other, and the bugs worked out. Often moldmakers need custom software written to sync all of the systems. It can be frustrating at times, warns Jason Van Noy, managing partner at JK Mold. "Automation integration is a fairly new discipline in the moldmaking industry," he says. "Although progress is being made, there are still avenues to be explored that we haven't even touched on yet."

So, is automation worth the price to get a competitive edge against low-cost countries like China? Sure, concludes Clark, but there's more to being competitive than just throwing money at equipment. "It's very easy to get excited about automation," he says, "but at the end of the day, it's not a cure-all against offshore sourcing."

Equipment

Electrical discharge machine (EDM): Machines unconventional shapes into mold inserts using an electrode.

High-speed mill: CNC machine that cuts materials (e.g., graphite, steel) to form electrodes or mold inserts at a high rate of speed and high feedrate.

Robot: Used to pick, place, remove, and shuttle components between machines or from machine to the carousel or rack.

Rotary carousel or rack system: A unit that holds the workpieces and allows the robot access.

Contact information

Editor's note: The following companies provided information for this report. For a list of suppliers that provide equipment for automated moldmaking cells, visit www.immalmanac.com.

Charmilles Technologies Corp.
Lincolnshire, IL
(847) 913-5300
www.charmilles.com

Electroform Co.
Rockford, IL
Wade Clark
(815) 633-1113
www.injectionmoldmaking.com

JK Molds Inc., Upland, CA
Jason Van Noy
(909) 981-0993, ext. 325
www.jkmolds.com

Makino Die/Mold Technologies
Auburn Hills, MI
(248) 232-6200
www.makino.com

Mikron Bostomatic Corp.
Holliston, MA
(508) 474-1100
www.bostomatic.com

Prestige Mold Inc.
Rancho Cucamonga, CA
Donna Koebel
(909) 980-6600
www.prestigemold.com

System 3R USA Inc.
Totowa, NJ
(973) 785-8200
www.system3rusa.com

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