

Stober Survey

Examines Manufacturing Infrastructure Updates

Matthew Jaster, Senior Editor

Updating your shop floor with new equipment and personnel is standard trade magazine fodder today—and for obvious reasons.

Any feasible upgrades can make a significant impact on a company's bottom line. So you'll find an article or two (or three or four) in our industry that will examine the importance of investing and upgrading in your personnel and your machines.

Stober, a company specializing in motion control and power transmission, recently published the following article to help plant managers determine if a manufacturing infrastructure update is necessary. Following the article, there's a Q&A with Scott Alles, manufacturing manager and Landon Garrison, manufacturing engineer at Stober.

Does Your Manufacturing Infrastructure Need an Update?

Some original equipment manufacturers in the U.S. may be operating with machinery and processes that can be as old as 50 to 70 years old. And with the surge in improved manufacturing technology, gauging and machining over the past 30 years, factory managers should conduct a manufacturing infrastructure update every 10 to 15 years, says Scott Alles, manufacturing manager at Stober Drives, Inc. in Maysville, Ky.

The average impact of unscheduled downtime in the process industries alone is \$20 billion, or almost five percent of annual production, making minimizing unscheduled downtime attributable to automation one of the best ways for industrial organizations to improve their return on (automation) assets (ROA), says Craig Resnick, vice president of ARC Advisory Group of Boston, a leading technology research and advisory firm for industry, infrastructure and cities.

"Manufacturers often keep old equipment operating by buying spare parts off eBay," says Resnick. "They are looking to justify a reason to upgrade and replace aging equipment, but they need a measurable return on investment to get funding approved for upgrading."

So how can a plant manager tell if his or her factory floor needs a manufacturing infrastructure update? Alles has created a five-question survey to help you decide.

1. When was the last time your manufacturing infrastructure was upgraded?

There are more than 250,000 firms in the U.S. manufacturing sector, and the vast majority are considered small, with less than 500 employees, according to the U.S. Census Bureau. In fact, about three-quarters of those firms have fewer than 20 employees. When you're busy meeting deadlines every day to make products for customers, it can be difficult to consider your infrastructure, Alles says.

"Just new lights and climate control

alone, with an HVAC upgrade, can boost employee productivity and morale," says Alles. "About three years ago, we were experiencing errors between the shop floor and the lab, especially during Kentucky's hot, humid summers. It was a constant struggle to have workers turn out what they thought was an excellent product, but inspectors were telling us the products were wrong-- especially when you run a tight tolerance to the micron level. We found that a relatively simple fix such as new lights and investing in climate control with HVAC reduced rejected parts and created a better working environment for employees. This has not only boosted employee productivity and morale, but also reduced gauge correlation errors. And the climate control helped tremendously with the humidity."

2. Are your employees cross-trained to run machines on the factory floor?

Cross-training can be a big asset in increasing productivity, says Alles. Team leaders should be able to step in and run a machine if a worker is sick





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or on vacation. At Stober, for example, 50 percent of employees can run more than one machine.

“Another key to increasing productivity is an apprenticeship program,” says Alles. “Our apprenticeship program allows us to build a

talent pool. Normally when we hire a new employee, it takes six to nine months for him or her to be able to run a machine alone. But recently an apprentice-turned-fulltime-employee was able to begin operating a machine by himself within four weeks. Then he

went on third shift, where employees tend to have less technical support than during the day. It’s been a win-win for him and Stober.”

Over the next decade, nearly 3.5 million manufacturing jobs will likely be needed in the U.S., yet two million may go unfilled due to a skills gap. Additionally, 80 percent of manufacturers report a moderate or serious shortage of qualified applicants for skilled and highly-skilled production positions, according to Deloitte and the Manufacturing Institute.

“We need to get more young workers trained for these jobs,” says Alles, “and they need to be motivated and eager to work.”

3 Are employees being used efficiently on the factory floor?

The technology explosion over the past few decades has made manufacturing leaner, with fewer employees performing more sophisticated tasks. “Having an operator standing at a machine programming for two or three hours is not



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efficient,” says Alles. “New CAD-CAM software can allow programming to be done while a machine is running. This can produce hours of work and keep productivity levels high.”

4 How would you rate your machinery’s accuracy and repeatability?

How accurate is your machinery? Does it hold tolerances? If it doesn’t, it may be time to look at new solutions. “With many manufacturing processes, components tend to wear down over time. Gearing, for example, is an important, never-ending need,” says Alles. “We perform capability studies for our customers on our equipment to make sure our machines and processes produce products that meet their accuracy needs.”

Stober not only manufactures many of its own parts, but also serves customers in the manufacturing world. Its new PS Two Speed gearbox was created to improve productivity and efficiency in machine tools. “The gearbox has the ability to create both high speed and high torque, which is ideal for lathes, turning centers and machining centers,” says Alles.

5 How would you rate your machinery’s flexibility? Can you optimize its setup time?

Manufacturers often need flexible people and machinery in order to meet customer demands. “Flexibility is crucial to Stober’s survival because we have a very short shipping time, which differentiates us from the competition,” says Alles. “Like many manufacturers, we bend over backwards to help customers. Stober has three manufacturing shifts, with two shifts focusing on dedicated processed and orders while the first shift focuses on being flexible to quickly turn around parts for customer orders.”

(Survey scoring: If you are satisfied with your answers for 4 to 5 questions: Congratulations! Your factory likely incorporates 21st century infrastructure technology and practices; 2-3: Your company is coping, but may need guidance to increase productivity by upgrading infrastructure; or 0-2: Talk

to upper management and schedule an infrastructure assessment for your factory today.)

Alles says factory managers who need additional resources on improving their manufacturing infrastructure can contact the Association for Manufacturing Excellence or visit the Stober website to see its solutions for the machine tool industry.

The U.S. faces a skills shortage over the next 10 years and skilled craftsmen, technicians, designers, planners,

researchers, engineers and managers will be in high demand, says Alles.

“If we’re going to compete with other manufacturers for employees in the coming years, Stober aims to offer workers a technologically-efficient workplace, good wages and benefits, and make products both our workers and customers can be proud of. Anything less is not the Stober way.”

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Q&A with Power Transmission Engineering

PTE: Besides taking this survey, what other signs or hints may suggest a company is in need of a serious infrastructure upgrade?

ALLES: Whenever you have a situation where there is excessive downtime, quality issues, or employee problems with high turnover or low morale, these



could be indicators that something is wrong on the factory floor.

PTE: How can small organizations compete with larger companies that have more employees, more machines and more skilled talent?

ALLES: Organizations of every size have problems. Small organizations have some advantages over larger companies in the marketplace, especially with flexibility, faster response

to customer needs and lower costs due to overhead.

PTE: Why is it so important to get involved with organizations like AME when improving your manufacturing infrastructure?

GARRISON: Organizations like AME allow you the opportunity to benchmark other companies and learn from their experiences. Experience from others can be invaluable on saving time and money. You can also potentially meet all of the key players when joining a group and networking.

PTE: What other organizations would benefit manufacturers in mechanical power transmission?

ALLES: Organizations like Society of Manufacturing Engineers (SME), LEAN Consortium and local roundtable events can also benefit manufacturers in mechanical power transmission.

PTE: What are some small, cost-effective solutions to consider if an organization can't afford an expensive infrastructure update?

ALLES: Have a local college—or other group—come in and evaluate the efficiency of your plant. Many groups will come and do a free



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evaluation. If cost-effective, you can update equipment versus buying equipment new.

PTE: What are the most efficient and productive ways to cross-train employees on new equipment on the shop floor?

GARRISON: We attempt to bargain up front for training credits for at least three people. If we can train three people who are able to operate/setup the machine, we have proven that we will be successful. Stober also uses offline training through a Learning Management System. Employees will perform prep work before the machine is delivered. We make every effort possible to be prepared to utilize the trainer's time efficiently.



PTE: Do you have suggestions for getting younger, motivated workers interested in these skilled positions on the shop floor? What can organizations do to attract future talent for these manufacturing positions?

ALLES: Stober is involved in the local community and the school systems to offer tours, participate in "Career Craze," and many other community

events to open our doors to the public. Management and engineers are members of the advisory board for an area technology school and our local university. Stober also offers pre-apprenticeships and apprenticeship opportunities within the organization. We also participate in the Kentucky Tech Ready Apprentices for Careers in Kentucky (TRACK) youth pre-apprenticeship program, which provides secondary students with career pathway opportunities into registered apprenticeship programs.

PTE: How can software, IIoT solutions and digital manufacturing tools be incorporated into a shop floor in 2017 and what are some of the benefits of this implementation?

GARRISON: Machine monitoring software and CAD/CAM offer great solutions to helping factory floors become more efficient. Machine monitoring software offers real-time productivity measurements, monitors downtimes to help justify new equipment and PM schedules, and monitors power usage and machine alarms. CAD/CAM offers flexibility so operators can operate the machine while a program is created offline; the goal is to increase spindle time. We do something similar with our *Zeiss Computerized Maintenance Management (CMM)* software. Programs can be created using a 3D model while the part is being manufactured; this helps cut at least 20 to 30 minutes off creating the CMM program.

PTE: How will manufacturing companies become more flexible and faster in the future?

ALLES: Offline programming is beneficial, but it's also important to have the ability to program at the machine. Cross training to cover absenteeism and keep employees engaged is also important. We'll also need flexible Enterprise Resource Planning (ERP) systems for scheduling. If it's feasible, build capacity into your planning. Ideally, you'd like to load your machines into two shifts to allow for downtime and influxes in the market.

PTE: How can organizations start getting to that point today? What tools will be necessary moving forward?

ALLES: All organizations will be different, but performing a gap analysis allows you to develop a plan that meets your financial and customer needs. Also, attend trade shows to learn about new tools and equipment. **PTE**

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