Buying Automation

The 10 most common mistakes made in purchasing automation equipment

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Buying a piece of automation can be a very long and difficult process. Here is a list of the 10 most common mistakes made when purchasing automation equipment, composed by a number of individuals who have both purchased and sold automation equipment.

No Equipment Specification. Failure to define your company's expectations regarding performance, aesthetics, and hardware preferences will eventually lead to confusion and misunderstanding. A detailed equipment specification will force the project engineer to examine all aspects of the project. And while you want to allow your vendor the opportunity to be creative in solving the automation problem for you, at the same time you need to be absolutely clear about your expectations.

A simple equipment specification could include the following:

- Project Objective,
- Performance Expectations (i.e., cycle time, yield, machine or system up-time, quality expectations, or other critical performance objectives),
- Preferred Hardware List (i.e., PLC, valves, robots; if you have preferred component suppliers, it's important to let your automation/integration partner know that as early as possible),
- Design Requirements (i.e., guarding, wiring, and plumbing requirements, ergonomics, as well as any in-plant obstacles or floor space constraints),
- Product Information (i.e., prints, current process information, or any other critical characteristics of the end product),
- Acceptance Criteria (i.e., what your expectations are before you'll take delivery of the machine or system).

Many automated systems require technical training, regular maintenance, or special skills to ensure long-term performance.

Failure to visit automation houses. Often requests for quotation are sent out to automation houses with very little prior knowledge about the company. A visit to one or more appropriate suppliers early in the process will help assure that you are looking at viable solutions from capable partners. This visit should also help you interpret the quotation much more clearly as a result of having seen the equipment; you should also get a much clearer understanding of the scope of work that will be performed to develop your solution. As a result, the price quoted for the equipment will have more meaning and allow for a better comparison.

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Incorrectly estimating costs of automation projects. Most of us know of a manager who has presented his supervisor a proposal for an automation project, sold the idea, and grossly underestimated the cost of the project. Now, to save face, the manager and his or her subordinates spend their time looking for the right price rather than the right solution. Without fail, this approach will force you to shortchange your objectives and compromise where you shouldn't.

A better idea is to get a quote before you parade your idea in front of the money men. Most automation houses would prefer to be involved at the earliest possible time. A good consultative problem-solving session with a potential automation supplier or suppliers will help all parties involved work through the best approach; you may even leave with several different options. As long as you're reasonably serious about pursuing a project, it shouldn't be hard to get a quick cost estimate before you go to your boss. In fact, careful planning, even if the initial quote seems more expensive, will invariably save money later.

Be sure to consider all the costs *associated with new and unfamiliar technology.*

Insufficient technical capabilities. Companies often purchase a piece of automation without considering the technical expertise required to maintain the equipment on a daily basis. Be sure to consider all the costs associated with new and unfamiliar technology.

We've seen quite a few companies decide to save the cost of system integration up front only to have to hire them later, after the project has already suffered unacceptable delays. If you're spending hundreds of thousands of dollars on new automation, getting it up and running fast helps your recoup your investment faster. Why put the market launch of your critical new product in jeopardy?

Failure to involve production in the process. The people responsible for ultimately operating a piece of automation can make the machine look good or bad. Allow the production people to be involved with the project early on. Give them an active role and a chance to take ownership.

In today's manufacturing environment, many people are involved in process improvements and lean manufacturing projects, and factory personnel offer a great source of creative ideas. Since they're closest to the process, they can save hours of wasted time by identifying problems early.

By taking a lean approach, you might also discover that you don't need quite as much automation as you originally thought. Or you may be able to re-purpose or reconfigure existing equipment as part of a lean concept.

Poor communication with automation suppliers. Even after a detailed equipment specification has been submitted to the vendor, constant constructive communication must be maintained. Note the word "constructive." Simply documenting all conversations and responding to written correspondence for the sake of maintaining good records is not nearly enough. Your company and your chosen vendor must form a team.

Review the progress of the project in detail with the vendor at certain points in the project and notify them of

Involve production personnel early in the project.

any perceived problems as soon as possible. Take advantage of modern technology, too. With all of the outstanding 3-D solid-modeling software available, Web-based meetings, and videoconferencing, it's possible to meet frequently and to get a very good look at what your automation vendor is designing. You'll catch errors early and ensure a superior final result.

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Don't accept automation equipment before it's ready. Do not allow the automation vendor to ship the machine before it is ready. Allowing this to happen usually prolongs time required for the automation to perform according to plan and damages the vendor/company relationship. Re-engineering and troubleshooting after installation are the biggest source of cost overruns with any project. If this happens, you'll end up paying not only for the on-site fix, but also for any lost revenue from the product you were hoping to introduce.

Failure to supply vendor with critical data. Maintaining proper and up-to-date documentation is an ongoing challenge for most companies. Failure to supply the vendor with sufficiently up-to-date drawings of the project will cause expensive delays.

Even the best automation houses will not always detect nonconformance from the parts to the prints until it is too late, making rework inevitable. Supplying parts which are within specification is also very important.

Failure to design for automation. Some products are not designed to be manufactured or assembled automatically. Some process components cannot be fed automatically, and depending on how frequently your product mix changes, it might not be economically feasible to produce the part automatically. When automation is difficult, perhaps a semi-automatic or even manual solution would be more feasible.

Using the wrong technology for your application. Failure of a project engineer to do his or her homework may result in the least efficient use of equipment, especially if it's not purchased as part of a long-term strategy.

Can your anticipated system accommodate future change without having to start from scratch each time? Is there an off-the-shelf piece of equipment available for your application? Should you employ flexible automation or hard automation? What about lean manufacturing and manual production? Do I really know if I need to automate? These are the types of questions that should be answered before building a machine or investing in automation. By taking a careful approach, you're sure to have a much more successful experience when you finally start producing parts with your new equipment.■

Some products may require a mix of manual and automated systems. When automation is difficult, a lean workcell with proper material, information, and people flow can be the most efficient solution.