

Emhart[®] Teknologies

A  **BLACK & DECKER** COMPANY

EDITORIAL BACKGROUNDER

September 27, 2005

CONTACT

Hugh Ryan
Catalyst Public Relations
Office: (401) 246-2300
Cell Phone: (401) 486-8048
hughryan@fullchannel.net

TEAM EFFORT TOPS IN SELECTING MECHANICAL FASTENERS

Sources:

Eymard J. Chitty, Vice President, Research & Development
and
Mark C. Baker, Manager, Application Engineering Group
Emhart[®] Teknologies
Shelton Technology Center
Shelton, Connecticut

Fastening technologies have evolved, but chances are your company's process for selecting fasteners or assembly systems has not. The introduction of technologies such as pneumatic torque wrenches and automated stud welders requires a re-thinking of fastening systems in the minds of design engineers, although not in their minds alone. Designers working alone and without input from others increase the probability of creating products that will be difficult to manufacture or that will require, following manufacture, considerable rework. For that reason, Emhart[®] Teknologies recommends the selection process be made by an interdepartmental team.

Following History

Think for a minute about how the first stud-welding robot might have found its way onto an automobile assembly line. Certainly it didn't happen because a design engineer called for studs on an auto body and a manufacturing engineer, thinking a robot would do the job best, asked purchasing to buy a robot while checking with the plant engineer to ensure that the appropriate utilities would be available. No, we can be sure that selecting the first welding robot was a team effort involving all affected departments: design, manufacturing, production, plant engineering, materials management, purchasing and service, among others.

If you consider what would happen if that same amount of teamwork went into the selection of every fastening system, you will realize why our engineers insist on working with interdepartmental teams.

A mechanical fastener typically commands little technical consideration at the design stage. So, a team approach provides checks and balances within the process as a new design moves from drawing to prototype to production. For example, because of a team setting, you might avoid the embarrassment of discovering, when putting a unit into production, that production workers on the line do not have the means to correctly install a critical fastener. Similarly, you might stay away from the humbling experience of finding, after purchasing a new pneumatic blind-rivet tool, that there is no plant air where the tool is supposed to operate.

Even when you do take fastener specifications seriously and crunch the numbers to ensure the mechanical integrity of the fastened joint in a particular application, the team approach is needed to provide insight into the manufacturability of the product or into hidden

or excessive costs that might be associated with the proposed fastening method. For example, manufacturing engineers can tell you whether and at what cost the company can produce that crucial tapped hole you specified or whether in-house systems can successfully drive that self-tapping screw that you placed so close to the frame. That's the power of a team environment. If your company has the foresight to add to the team a fastener supplier with a commitment to your design success, then you will have a truly productive combination.

Add a *consultative* supplier to the team

Not all suppliers of fastening systems are equal. Some have more diversified product lines than others – a factor that will probably be of interest to a purchasing department that likes to keep the number of suppliers at a manageable level. Look too, for a supplier with globally deployed resources, one that can easily provide on-site help when the situation demands it.

Still another factor to weigh in evaluating a fastener supplier is its sales approach. Is the supplier selling commodities or solutions? Suppliers selling solutions are sometimes referred to as *consultative* suppliers. They are willing to commit the expertise of their research and development (R&D) people to finding a solution to a particular problem. In fact, if they do not have a stock answer to a problem, they will turn their R&D people loose to develop a solution. One approach to developing such a solution might entail a teardown of a problematic unit at the supplier's R&D center in order to better make specific recommendations. This teardown approach is particularly fruitful when a new fastening technology is required to respond to quality or warranty problems.

Faced with the need to help a customer correct a problem in one of its existing products, the outstanding consultative supplier of fasteners and assembly systems will insist

on performing its work in the customer's facility. In that case, the supplier will want to study the present assembly methods for the current product. In this process, the supplier's personnel will observe equipment used, workstation layout, ergonomic and environmental considerations and the process flow. When Emhart personnel perform such an onsite assessment they also lay the groundwork for any cost-justification calculations you may need in order to validate suggested changes in fasteners, assembly equipment or assembly methods. Typically, there is no charge for this service.

Such calculations require knowledge about the number of fasteners used per unit, the number of units built annually, fastener costs, assembly time (fasteners/minute) and other data for comparison with *projected* assembly times and fastener use in a new process. In looking at the workstation area, our application engineers determine what utilities are available to power any new assembly equipment anticipated in a changeover. If, for example, plant air to required specifications is available in the plant but not in the assembly area, the extra cost to provide it must be added to the cost of the changeover and will affect justification and payback figures.

If your organization is not using an interdepartmental design-and-development team, the fastener supplier your company chooses may assist you to create one. That way your organization can better benefit from what the supplier has to offer. A supplier's offerings should include technology optimization that uses the supplier's own application engineers and innovation centers. These engineers and centers will match your organization's priorities, applications and manufacturing environment to the most appropriate assembly technologies and fastening systems.

For example, our company's Innovation Centers, which include stationary centers, mobile centers that can come to your plant and a virtual center at our company's Web site (www.emhart.com), provide visitors with many options for viewing problem-solving products and strategies tailored to the visitors' specific fastening needs.

If such services are not available from your current supplier, keep looking for the right supplier. Be sure to ask each candidate how much it invests in R&D, new materials and demonstrations of new techniques. Also ask how much of the information resulting from these investments is available to your organization as a customer and at what cost to you. A truly consultative supplier will not charge a customer for this kind information.

Justifying fastener selection

Think about how much easier it will be to get the optimum solutions for fastening applications when your consultative supplier is on your design team, which is now a design/development team. The supplier and the team will help with much of the specifying you once probably did on your own.

When you have at your disposal a supplier with a systems approach to fastener selection, the days of treating fasteners as commodities and choosing the lowest-cost option end in your plant. At the same time, productivity and quality problems attributed to fasteners end in your plant, too.

In this setting, chances are you will have complete cost/benefit analyses of previously troublesome applications based on a close look at the fasteners in place and at the assembly technology used. Your organization will understand that using the least expensive fastener in an application when it is the wrong one or using the wrong assembly process can result in

rejects and rework. The right fastener or the right assembly method, even if application specific, can often save manufacturers tens of thousands or even hundreds of thousands of dollars annually with paybacks in a matter of months.

Relying on the belief that your company has always used a certain kind of fastening system prevents you from taking advantage of newer technologies that may allow for the development of a more cost-effective process. Your supplier should work with you to develop data and prepare documentation to cost-justify the selection of the best solution for an application. It should also work with you to create an interdepartmental design-and-development team so your company can reap the maximum benefits from what the supplier has to offer.

#