

How to Qualify, Quantify and Maximize Your Assembly Application

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Maximizing the fastening process by implementing an error-proofing strategy reduces costs, increases throughput and minimizes assembly errors. Typically, the process of final assembly is the last to be error-proofed. Attention is given to all of the preliminary operations first such as machining, molding, painting. The process of assembling all the pieces together is usually not given the detailed attention that the previous operations have received.

Potential bottlenecks or assembly flow process challenges can be costly if left uncorrected. These problems can include improper installation of fasteners (screws, nuts and rivets). When this problem occurs, loose or missing fasteners can result in product failures.

The question arises... How do you prevent these problems? The answer is to incorporate error-proofing equipment into your assembly processes. This could be defined as the ability to prevent an error or to detect the challenge prior to the next operations in the assembly process being implemented.

Implementing a process control device could have five general results:

- Install the fastener in the correct location
- Drive the fastener to the correct depth
- Minimize the number of equipment products needed to be used for the fastener installation
- Provide data collection
- Operator feedback for immediate resolution to improperly installed fasteners



ASG's Sequence Recognition System (patent pending) incorporated with the X-PAQ™ precision fastening system can remove operator error, resulting in significant savings.



How could process control products impact the manufacturing process?

- Monitoring equipment for determining if all fasteners are properly installed. This equipment can monitor electric or pneumatic torque drivers, riv-nut guns and rivet guns for proper function and have batch counting capabilities.
- Closed loop control systems for installing threaded fasteners to a specific torque and angle limits. These systems can also provide batch counts to ensure the correct number of fasteners is installed.
- Integrating a Vision system (such as ASG's Sequence Recognition System) to a process monitoring system or closed loop controlled product can insure complete fastening, correct position of the fastening device in correct order. Because of some applications requiring equal compression the fasteners must be installed in the proper sequence, thus insuring uniformed compression of all components.



All of these devices can be interfaced with line control and monitoring equipment. Some can report process statuses and some can report actual data for documentation through plant wide network systems.

So, where do you start?

- First, identify your problem areas. Where have you had failures? How often have these failures occurred?
- Determine the potential cost in dollars and reputation for potentially releasing goods with assembly problems out to your customers.
- Determine if any of these potential failures could present a legal liability. If so, adding documentation and networking features may be worthwhile so that proof of process can be obtained.
- Determine the level of error-proofing you will need to accomplish your goals. At this point you may need to conference with error-proofing equipment suppliers to find out exactly what equipment is available and its capabilities.
- Lastly, have in-plant or on-site customer lot inspections increased? If so, then possible improvements could be designed to improve assembled products.

After determining where your assembly challenges lie, where do you go for help?

One source of assistance is assembly equipment manufacturers and suppliers. Others ask the assembly product distributors for solutions. Another good source of help lies within your own company, where many times you can pull on the knowledge base of associates who have solved these types of problems before.

