

IMPLEMENTING SPC

SUMMARY

More and more customers are requiring tooling & machining companies to use Statistical Process Control (SPC). This BMA addresses some considerations for companies about to begin using SPC.

If you have a customer requirement for SPC, or if you are planning an SPC program at your own initiative, early planning can be the key to the success of your implementation. Poor planning can result in wasted time and money for inappropriate training, and can result in an ineffective system that will impede productivity and raise costs without necessarily improving quality significantly.

Your early planning should cover your management strategy, the design of your training program, and a plan for implementing, maintaining, and continuously improving the system.

If you have already been asked to use SPC by a major customer, your most immediate requirement of course, is to establish a system quickly. Here, caution must be used to avoid trying to do too much, too soon. You can start by addressing one particular job for that customer. As you become more familiar with the techniques, you can gradually extend the system to other work throughout the plant. If you are establishing the plan at your own initiative, you have the greater luxury of being able to plan your own schedule. You will have a competitive advantage and will be prepared to respond to likely future requirements for SPC.

In either case, establishing an SPC program provides an opportunity to develop and improve your overall quality system. Remember that statistical process control is one of many techniques for helping to manage quality. An SPC program by itself does not constitute a systematic management approach to quality. SPC encompasses more than just the familiar X-bar and R charts used for tracking repetitive parts, and includes techniques that can be used successfully in tool making and prototype work. Statistical process control can provide the measures to control your processes and systems to prevent defects and reduce inspections. SPC

can also provide the basis for a system to identify and track quality costs. Many companies have found that employee involvement in SPC has led to greater interest and attention to quality by the workforce.

Someone in the company should be designated as the SPC coordinator. This individual will require a solid background in SPC techniques. If no one in your company currently has this expertise, there are a number of short intensive seminars available from a variety of sources that will help get an individual familiarized quickly. The SPC coordinator should be someone who understands your company's processes and procedures well. The individual's responsibilities and goals should be described in writing, preferably as part of a job description.

Your SPC system should be described in writing as part of your overall quality manual and the SPC system itself should be subject to a continuous improvement effort also described in writing. Two books available from NTMA, *Doing Things Right* and *Tooling & Machining Quality System Assessment*, cover these areas in detail.

DESIGNING YOUR COURSE OF INSTRUCTION

Since Statistical Process Control can be practiced in a variety of different applications and styles, the course design must be tailored as specifically as possible to the intended applications. A number of questions need to be asked when designing the course:

How will SPC fit into the company's overall approach to quality management?

This will determine requirements for specific SPC techniques, management training and information systems. Mac-

hine shops, stampers, and others who make parts in quantity will have different requirements than prototype shops and tool makers.

Who will administer the SPC system ?

What role will supervisors play?

Supervisors will generally need a deeper understanding of the system than line workers, especially in the early part of your program. Supervisors should have a good working understanding of the system (but not necessarily all of the statistical math) even if the program is to be administered by a quality specialist or some other staff function. Those charged with administering the system will require the most intensive training, and should have input to the course design for line workers and others. Line workers will usually require training in collecting and reporting data, and in the concepts of variability and process improvement. Many companies have found success by introducing SPC on a few limited applications and gradually broadening applications as experience and reinforcement grow.

What will be required of workers in handling data ?

What latitude will workers have in making process corrections ?

Data handling by shop personnel is usually less time-consuming than most people expect. You can select simple but effective techniques at first, and develop them as your learning curve goes up. Some types of charts do not require operators to write down measurements, but to simply mark a chart with a tolerance zone. One such type of charting is described in detail in *Doing Things Right*. Other systems use hardware to automatically collect data from a probe or an electronic gage.

The leading quality gurus agree that it's best to allow skilled workers to make quality decisions at the work station. This kind of empowerment requires strong management support of training and communication to succeed. The degree of skill and authority of your people will influence the kinds of training needed to be able to make sound quality decisions on the spot.

Plan for a Continuing Program - Your SPC training must be a continuing effort like any other job-related training. New employees will need orientation and experienced workers will need refresher courses and upgrades. Your SPC techniques should change over time and training in the refinements will be required.

SOURCES FOR TRAINING

Community Colleges - Often, your local community college is the most readily-available source of help. In addition to offering regular scheduled courses, most of these institutions will develop short customized courses for employees of individual companies. If your company can't provide enough students to fill a class, you may consider starting a program involving other local NTMA member companies. In some cases, community colleges will even conduct customized training in your plant.

Seminars - A broad range of seminars are available on SPC and related subjects. These kinds of programs are suitable for managers, supervisors, and others who need to become quickly immersed in the subject. Sending someone to a single seminar is not a substitute for a continuing training effort. A seminar-type training session can also be useful for shop floor people for initial orientation or perhaps an annual refresher.

Consultants - There is a growing army of consultants on SPC and quality. A good consultant can help you focus your efforts and provide feedback as you go along. For best results, you will need to work with a consultant over a fairly long period of time - or even on a continuing basis. As your experience develops, you should need fewer hours of the consultant's services, however. Look for a consultant with experience in companies similar to your own.

Your Customers - Some customers are willing to provide substantial assistance to suppliers in establishing SPC programs. In any case, you should find out as much about your customers' expectations as possible. Different customers employ varying styles and methods in their approaches to SPC, and your system should be able to accommodate those requirements.

DO-IT-YOURSELF

It is possible to establish a functional SPC system completely on your own, but most companies will benefit from at least some outside input. In-plant training and self-study can be powerful elements of any training program, however.

More and more small companies are using video tapes for in-plant training. Where possible, videos should be purchased with a trial preview so you can determine if they are appropriate for your company. An excellent, practical book suitable for classroom or self-study, *SPC Simplified* is available from NTMA (see below). Other specialized books and videos are available from many sources, including the American Society for Quality Control.

RESOURCES

The following books and videos are available from NTMA's Publications Department:

SPC Simplified, Amsden, Butler, and Amsden. UNIPUB/Kraus International Publications, 1986, 262 pages, softcover. This is the most practical book on the subject that NTMA has found. It is suitable for anyone in the company who uses SPC.

Doing Things Right, Ruxton, National Tooling & Machining Foundation, 1984, 250 pages, softcover. This is the first book on the "total quality" approach specifically for smaller tooling and machining companies. The book follows a fictional small shop's experiences in establishing a quality program and cites examples of problems drawn from the real world of many companies. An accompanying set of six video cassettes and a study guide are also available. The material is presented for managers, supervisors, and engineers.

Tooling & Machining Quality System Assessment, National Tooling & Machining Foundation, 1990, 143 pages,

softcover. This assessment document is designed for companies to develop or improve a documented total quality approach that will meet and exceed requirements and audit criteria of customers. The assessment document is also available in PC-compatible software versions, which facilitate development of a customized quality manual.

OTHER RESOURCES

American Society for Quality

P.O. Box 3005, 611 East Wisconsin Ave., Milwaukee, WI 53201-3005, (800)248-1946.

ASQ (formerly ASQC) is a membership organization for individuals involved in quality. The organization offers many educational courses through its local chapters and national divisions. ASQ publishes an informative monthly magazine, *Quality Progress*, and has a comprehensive catalog of books and other training materials on quality.

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