



TenStep Supplemental Paper

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Do You Accept Defects as Inevitable?

The saying 'You cannot do what you cannot imagine' is true for promising ideas, as well as failures and problems as well. If you cannot image a process that is free from problems, or if you believe that defects are an unavoidable part of the business process, you are accepting the fact that you are powerless to prevent its occurrence. You might believe that all you can do is try to predict where and when the failure will occur, do your best to prepare, and then sit back and wait. This kind of attitude hinders progress. If you believe errors are inevitable, you will find that, for you, they are.

In fact, the only way to make real progress in managing quality is to understand the root causes of problems and prevent them from occurring. In today's world of complexities, it is easy to become so immersed in your daily routine that you may overlook the basic causes of problems. You must look at the work from another perspective to keep possible failures at a minimum.

If you believe that defects are inevitable, the best you can do is use predictive methods to detect signs of impending failure and work out solutions to overcome the failure. Consider areas like designing equipment. Designers invariably build in tolerances. These tolerances are designed to provide a safety margin to compensate for a lack of precision. In other words, a tolerance compensates for planned failure and implies a willingness to accept less than perfect precision. (Of course, the cost of a perfect solution may be prohibitive, but that is for another discussion.)

Manufacturing equipment can be difficult to install, operate, and maintain, even when built to exact specifications. However, in many cases, human error creeps in and diminishes the equipment's ability to operate even further. For example, most manufacturing companies keep some spare equipment so that if the primary piece of equipment fails, the secondary can provide backup. This type of redundancy comes with a costly price tag. Further, by maintaining two pieces of equipment for the same task, companies know that they have a safety net if the first should fail. They may therefore feel less obligated to keep the first in perfect working condition.

Parts are similar to equipment. Most do not last for their designated life-span, because they are not designed and manufactured to perfect precision, installed in a perfect environment, and maintained properly. For example, look at a simple roller bearing. A roller bearing should last many years. However, they are precision components that are affected by their imperfect environments. Some typical causes for failure include improper installation, poor handling, misaligned equipment, and inadequate lubrication. These causes are typical of other types of machinery as well. In fact, maintenance statistics report that less than 10% of industrial equipment ever reaches the wear-out stage. This means that 90% of the mechanical failures that are occurring are potentially avoidable. These failures are typically related to human error.



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To control the effects of human error, quality and precision concepts should be applied to the human processes as well. Precision should not only be the responsibility of the manufacturing personnel. Everyone should incorporate the responsibility for quality into his or her daily tasks.

For instance, when bearings are consistently failing due to misalignment, hiring an external contractor to align them perfectly is not the final solution. The focus ought to be on the cause of misalignment. Was it lack of proper alignment procedures or inadequate knowledge or training? Options to increase the level of quality include.

- Rewriting product specifications to be clearer on final expectations and minimizing the tolerances that are acceptable.
- Exploring the root causes of problems and working to eliminate the problems to prevent recurrence.
- Introducing skill-based training through lectures, workshops, and demonstrations.
- Making sure that all related equipment, supplies and processes are held to these same quality standards. For instance, your product cannot be held to the highest standards if your raw materials are inferior.

It is essential to look at the ‘big picture’ rather than taking a microscopic view of the problem. Most problems arise from poor processes, procedures, policies, and specifications. If the processes were perfect, effective and efficient, it is probably that there will still be quality problems because of the human factor. That is, it is doubtful that a perfect process will be executed perfectly in every case. However, if the processes (policies, specifications, etc.) are poor or non-existent, it is just about impossible to build a perfectly precise product.

Precision and quality should be a part of the job, not the buzzword of the moment. It is a way of looking at our environment and how you operate within it. If you see failures as inevitable, then the best you can do is improve your responses to failure. However, if you look at the bigger picture, you do not have to accept failures as the cost of doing business. An industry expert has aptly described the essence of quality and precision: ‘If (all of us) did our jobs with a mastery level of precision, then the only failures we would have would be wear-out failures’. That alone would dramatically increase the level of quality of everything we produce.