SIGNATURE TECHNOLOGIES

ROI from Signature-based Process Control (SbPC™)

Enhancing a process can be time-consuming and often requires a capital investment. Justifying such a venture must be done through quantitative methods so that a return on the investment is obtained which provides an advantage to a business. There are numerous benefits to implementing SbPC and the following is a highlight of some areas an organization might receive a competitive advantage by enhancing their process with this technology. Every business has varying degrees of problems within there manufacturing process; therefore, certain categories of ROI will be of greater significance when justifying the investment.

Tool Setup: Many customers use the master signature and the setup database information to achieve rapid and consistent setups of tools. At Kodak they use short runs and experienced a productivity increase of 300% since tools were setup correctly the first time and they could make parts confidently concurrently with production instead of waiting for SPC approval on the first 5 parts before starting production.

Quality Improvement: Quality assurance is achieved by verifying the process is consistent throughout the stroke with a statistically derived master process signature of a good part. Thus, any variation from the norm created by changes in material, machine, tool or operating parameters is not only logged and alarmed but can also be corrected immediately. Therefore, parts quality is guaranteed, reduction of scrap is achieved, and damage to tools/machine is avoided.

Process Problem Diagnosis: New tools or problem tools can be diagnosed while in operation instead of needing to be pulled and manually analyzed. This gets new products on line much faster and diagnosis of current problems and the effect of changes in operating parameters can be observed in real-time thus facilitating rapid problem correction.

Operator Process "Involvement": Due to the intimidating character of large mechanical presses most operators are oblivious to what is actually happening in the process. This is due primarily from a lack of understanding of what takes place within the machine yet they have a responsibility for problems which occur in a process they can't even "see". The real-time signatures displayed in SbPC quickly develop operator acceptance and correlation of what they see on the screen with what is happening in the process. This results in understanding and "involvement" with the process. Although hard to measure this one benefit produces the most return because it empowers those who are closest to the process with the means to understand and improve.

Machinery Health Monitoring: The ability to monitor the process is much more demanding than the requirements for monitoring the machines. By using a master signature of the machine with no tooling and comparing it at every setup before loading a tool, one can verify the condition of the machine and eliminate it's fluctuation from the variability of the process. This provides early detection of problems in the machine and also the means to determine what contribution to process quality the degradation represents.

Real Press and Die Protection: Since this product monitors the process throughout its' operation it can detect problems which load monitors and die-protection systems cannot. In most plants SbPC provides a payback in less than 3 months by reducing die/press damage. References can be provided for ROIs of 2 weeks to 3 months maximum at one facility alone.

Complete Process Event Logging: What happened and who was involved? The built-in event logging helps track down events that lead up to problems and who was involved so that more information can be gained to learn from the experience instead of experiencing it again.

Guidelines to remember:

- To ensure the quality of a part you need to ensure the quality of the process. Ensuring the quality of the process is achieved by measuring variables during the operation and controlling non-conforming variations.

- To improve the process you must be able to measure it. Quality assurance is applied to many discrete manufacturing processes by determining what is going into the process and what is coming out. Signature-based process Control (SbPC) measures what's going on *in* the process.