

Instrumentation Strategies

“TOOL BOX TRAINING”



Introduction:

Control systems have evolved significantly over the past 50 years and today these systems provide major improvements in many areas, such as the human-machine interface, flexibility, ease of configuration, reliability, and communications with the process. When compared to older equipment, today's high technology control systems seem wonderful but when looking closer, appearance is not always what it seems to be.

With all of the advanced technology the question remains, “What are the benefits of improved control?” Management invests greatly in the most modern control systems and assumes that the investments will lead to better control yielding in higher OEE. Although things are improving, there are still four major problems that limit the maximum benefits. They are: Design, Installation, Calibration, and Maintenance.

Does this sound familiar?

All too often, control loops are added to processes as an afterthought which leads to improper installation procedures because “that's all the room we had to install the equipment in the existing piping”.

A major valve manufacturer presented a paper where they tested 31 valves on a paper machine steam and condensate system. Their study showed that 35.5% of the valves didn't have the correct travel set, another 35.5% had insufficient actuator thrust for smooth operation, 38.7% had improper bench set, 35.5% had excessive friction, 35.5% had I/P calibration problems, 71% needed position calibration, and 15% had loop design problems.

It has been suggested that more than 30% of process controllers installed operate in manual. Why do you think this is? Well, more than 30% of automatic controlled loops actually increase variability over manual control due to poor tuning and maintenance.

Maintenance Considerations:

- Calibration:
 - Every piece of instrumentation requires periodic calibration to ensure they are accurately measuring and reporting process values.
 - The particular calibration interval will depend upon the device and specific manufacturer so be sure to gather this information and implement PM calibrations accordingly.
- Control Loop Inspections (tuning):
 - As mentioned earlier, control loops are seldom operated as designed and typically result in increased variability and impact both product uniformity and plant efficiency.
 - Many plant operators operate reactively making fast changes based upon experience to manually overcome inherent problems in the control system.
 - E/I technician's and Control engineers should work together to perform true system tuning rather than “SWAG” or “Looks Right” tuning.
- Routine Equipment Care:
 - As with all equipment, routine checks and care can prevent many problems from become catastrophic events.
 - Visual inspection routes for instrumentation should be a part of your strategy. Such inspections will pinpoint physical problems and identify areas where special attention is required.
- Training and certification are instrumental
 - Operator Care training
 - Instrumentation Tech (ISA's – CCST)

If you have questions send me an email at rsmith@gpallied.com or you can contact Chris Colson at colsonc@alliedreliability.com