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## Upgrading PLCs

By: Al Hastie

**Programmable logic controllers, or PLCs, are digital computers that are programmed to perform industrial plant process functions.** For many decades before the PLC was invented, processes were controlled by hard-wired networks of relays, contactors, timers and pneumatic controls. In the 1960s, the automotive industry went looking for a better alternative that would eliminate the need to undergo extensive rewiring on a yearly basis, and the first PLCs were developed. The technology was quickly embraced throughout the manufacturing industry.

PLC systems have enjoyed considerable longevity. A lot of facilities are still using first-generation PLCs after many years, but these systems are swiftly becoming obsolete. Parts are difficult to find for antiquated systems, not to mention expensive, and technical support is often no longer available, resulting in unforeseen PLC failure and costly downtime. Some older PLC systems are at or near their input/output and program capacity limit, and cannot handle changes or the addition of new equipment. Today's technology is far more advanced, and for companies that need to expand their manufacturing operations, upgrading to newer, safer, more accurate PLCs is a necessity.

Once the decision has been made to upgrade a PLC system, there are numerous details that must be considered through close collaboration between customer and contractor to determine what will best suit the needs of the facility. This is also a good time to consider upgrading other obsolete instrumentation and older field devices. If you are currently running antiquated PLC hardware and are interested in upgrading your PLC system to modern standards, please call Omni Instrumentation Services at (908) 412-7130.



## OMNI TECH TALK: Useful Technology at Your Fingertips By: Mike Kornas

**One recent Saturday afternoon, while trying to decide whether to call a professional to perform a home repair project or attempt it myself, I turned to my laptop computer for advice.** After typing "How to install garage door extension springs" into the search engine, I clicked a link to one of the many "how-to" YouTube videos that appeared. A short time later, using the video as a step-by-step guide, I was able to get my garage door working like new.

This positive experience led me to begin searching online for videos on instrumentation and controls, networks, and network wiring. While I fully expected to find a lot of videos on the subject, I was very surprised at the amount, quality, specificity, and depth of the information available. Manufacturers produce detailed videos about just about every model of every instrument they make, and independent technicians and contractors post videos as well, on topics such as calibrating a temperature transmitter to troubleshooting a level transmitter, and on and on.

While most of us think of YouTube primarily as a place for entertainment and we tend to overlook it as a serious source for information, there is, in fact, there is an astonishing wealth of it to be found. With smart phones, videos are readily accessible in the field (along with any other information that can be found on the internet). Though a video can't replace an experienced instrument technician, YouTube can be used as a valuable source for troubleshooting, how-to guidance, and as a training tool, especially for the "visual thinkers" among us. O&M manuals and spec sheets are certainly invaluable, but video provides an added dimension that can't be conveyed in words.



### TECH TIDBIT: Pocket Technology

**Smart phones in the field can provide instant online access to a wealth of information. Use your search engine to find:**

- \* O&M manuals (even for old, outdated equipment)
- \* Spec sheets
- \* Instructional videos
- \* Photos, charts, and diagrams
- \* Informational sites
- \* Industry message boards

Of course, always make sure your information comes from a reliable, accredited source.

### The OMNI Safety Corner

Omni Instrumentation boasts one of the best safety records in our industry, with 10 years of no recordable incidents.

Omni has participated in numerous OSHA VPP projects, and we are ISNetwork approved.



## FROM THE PANEL SHOP: Purge and Pressurization By Craig Drabyk

**Purge and pressurization is a method of explosion protection in which compressed air or inert gas is supplied to an equipment enclosure to ensure that it is free of flammable gas.** This method is generally used when intrinsic safety and explosion-proofing are unsuitable or impractical.

Before control panel power can be switched on, the housing must first be purged of flammable gas with pressurized air flow. A constant positive pressure is then maintained so that gas and dust are unable to enter. There are two basic control types. Constant Flow (CF) systems maintain the same flow rate during purge and afterward. Leakage Compensation (LC) systems provide an initial high flow rate to purge gases, then reduce the flow to just above leakage level. LC is the preferred method, as it minimizes compressed air or gas consumption and is less expensive to run.



Depending on the classification of the hazardous location, regulations dictate the number of purging volume changes, minimum pressure differential, and system status indication. In the event of pressure loss, many systems will initiate an alarm or interrupt power to the equipment to prevent explosion.

There are many different types of XP environments so it's good to know what your options are to save money while meeting safety codes.



## XP PLANNING

**Explosive (XP) environments always pose many unique challenges.** First, XP codes are exceptionally stringent, and strict adherence is required, so plan and install with close attention to detail. Take special care to choose appropriate devices for the type of hazards in your XP environment. Be aware that XP equipment is notoriously large and takes up a lot of valuable real estate. Meticulous planning is needed to coordinate placement of the cumbersome XP panels, equipment, and devices so they not only fit, but function at an optimum level.

