

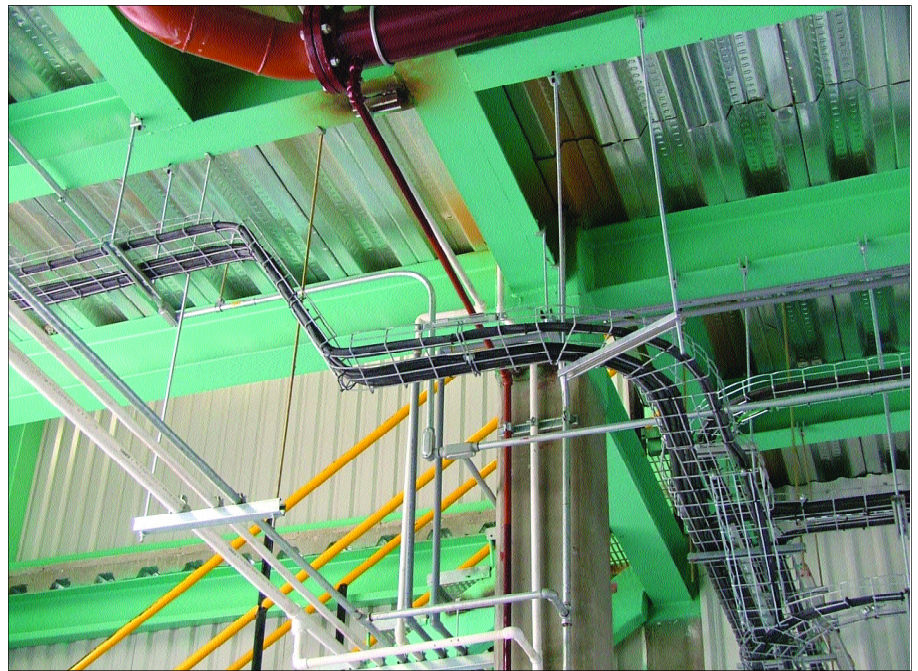
Newer Cable Approval Reduces Installation Time By 40% or More

BY RICK ORSINI

The Industrial market place is spending capital again on new plant construction and expanding their current production facilities. In a recent report from www.industrialinfo.com, plant construction has made a huge comeback compared to 2002 & 2003. On average, 161 plants were built per year during that time. Already for 2006, www.industrialinfo.com estimates over 370 plants are scheduled to begin operations.

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One area that can be both time consuming and a high percentage of cost is buying and installing wire & cable, and trays and conduit to connect all the manufacturing equipment. When installing ca-



bles for new installations, there are two very common ways to wire. One is to pull THHN wire through conduit. With this method, the conduit is supported from the ceiling using struts and runs from control

panel to control panel. Another method is to use a tray approved cable. With this option, the cables are placed in wire trays that are suspended from the ceiling. The cables lay exposed in the trays and are fed through conduit from the tray to a control panel per code. In both cases, there are high material costs and labor hours to complete an installation. Both are common and somewhat antiquated.

Many new installations have a goal to keep the floor design open for changes on the fly. Having a more modular installation is preferred. One way to keep your options open and save on installation costs is by using tray cables with UL Type TC-ER approval. Type TC-ER stands for a tray cable with the additional approval: Exposed Run. In order to attain TC-ER approval, you must pass a crush and impact test outlined by NEC codes. This newer approval for tray cable allows you to run your cable from the tray to your equipment without using conduit per NEC codes. Adding this approval increases the costs of cable, thus the per foot cost increases. But by significantly reducing material costs like conduit and labor time for

installation, the result is roughly a 40% savings overall for the complete wire installation.

Some basic installation rules (NEC) are:

- **Cable must be secured a maximum of every six feet.**
- **There is an unlimited distance the cable can be run without conduit from the tray to your equipment.**

We say newer approval because it is newer for cables without armor. This approval has been around for a long time but was mostly used with armored cables.

There are many different cable applications using UL Type TC-ER:

- **VFD & Servo motors & drives**
- **AC or DC control wiring**
- **300 volt, low voltage (16 & 18 AWG)**
- **Power**
- **Instrumentation**

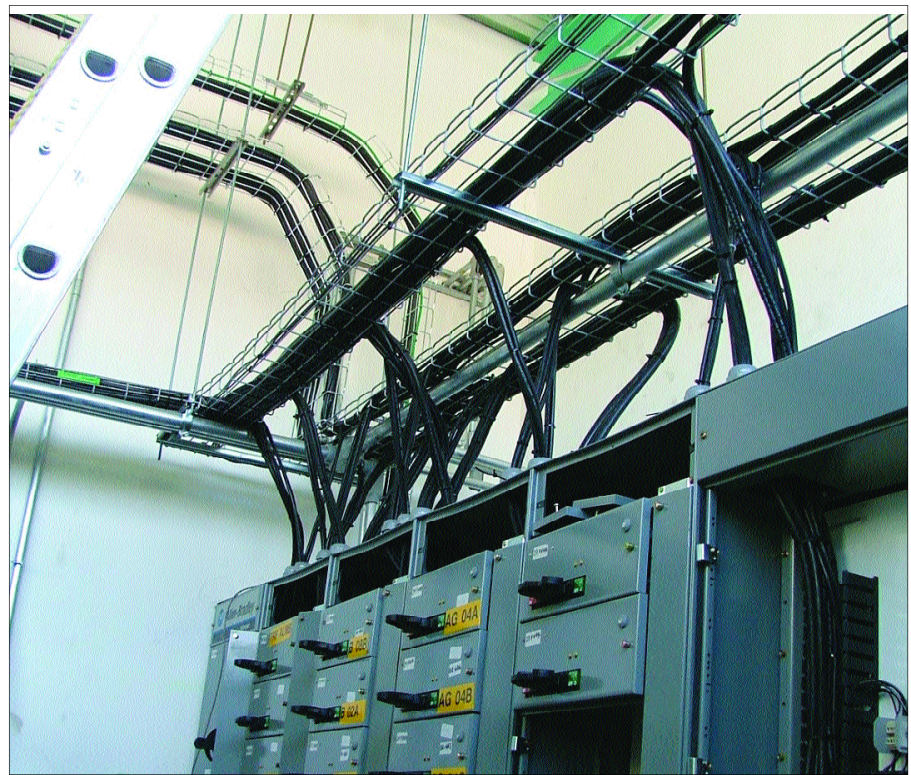
The result of using a tray cable with Exposed Run is a large reduction in material and labor costs. The approval eliminates the need for conduit in most cases and the need for associated conduit parts such as clamps. Another positive result is the reduction in installation time making you more productive. The installation is done sooner, so production can begin sooner.

It is not uncommon for plans to change or improvements and additions to be made on the factory floor. Having to tear down pipe to replace or redirect a cable is time consuming and costly. By using a TC-ER approved cable, your factory floor is more modular. You can quickly and easily re-position equipment at installation or add in equipment later.

This type of installation is beneficial if you retrofit your assembly line to produce various goods. For example, some car producing plants will run two or more style cars through the same assembly line. Having a modular, plug-and-play type of installation makes this change over much more efficient, again allowing you to get back to production faster.

There will come a time when repairs may be needed. If your factory floor is wired with conduit, the Maintenance Department will need more time to feed new wires or cables through the conduit. Using a Type TC-ER cable makes the replacement much easier and will greatly reduce downtime.

Another increasing demand is for better cable marking, especially in the case of a repair. In Germany, the Federation of



German Machine Tool Manufacturers developed a color coding scheme called DESINA®. It basically specifies the application of the cable by a jacket color. For example, servo cables are orange, sensor cables are yellow, while Bus cables are violet. This same philosophy is growing here as well. Having your cable easily identified makes repairs much faster and easier. Plus, knowing what the cables are used for reduces the chance of someone being hurt. Safety comes first.

Different people have different ways of wiring. The people responsible for cable repairs are typically not the same people who did the original installation. Unmarked cables can lead to confusion and wasted time to determine how to repair/replace a cable. Specifying how cables will be marked can prevent potentially dangerous situations.

Not only have there been advancements with approvals on cables but there have been huge advancements with jacket compounds. Some achievements with material compounds have resulted in better oil performance for a more industrial grade cable at comparable prices. You can save money on the installation with the correct approvals and your productivity greatly increases because your cables hold up drastically longer. In short, the cables hold up longer saving money on downtime needed to replace cable failures.

Other approvals that have not been mentioned yet are global approvals such as CSA, CE & NOM to name a few. Many companies have multiple locations

that can be in another country. There are options out there to get TC-ER for UL & CSA, oil performance to UL Oil Res 1, and global approvals.

Speaking about global approvals, there is a new standard coming out of Europe called RoHS. This standard requires the removal of certain substances for human safety.

They include: Lead, Cadmium, Mercury, Polybrominated Diphenyl ethers (PBDE), Polybrominated Biphenyls (PBB) & Hexavalent Chromium.

This new standard is starting to be adopted by countries in Asia and by certain states in the U.S. So the trend is for RoHS to become a requirement in the U.S. in the years to come. All TC-ER cables from Lapp Group already meet this standard and pass UL standard 83 for wet applications.

In summary, taking advantage of the following cable innovations will help you meet your goals for new equipment installations and plant expansions:

- **Shorter time for installation leading to the equipment being productive sooner;**
- **Cost reduction by eliminating material costs and labor hours;**
- **Easy repair and retrofitting for future needs by eliminating pipe; and**
- **Superior materials leading to longer life and less downtime in more industrial environments.**

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