SAFETY PAYS: DANGEROUS POWER OF ARC FLASH

Kent Grange began his presentation at the Sept. 21 Ag Cooperative Safety Directors of Iowa (ACSDIA) meeting in silence. Instead of speaking, he clicked on a YouTube video showing a man working on an electrical panel in a commercial facility. ACSDIA members watched the man cranking a breaker on the huge panel, wearing little personal protective equipment (PPE) other than a helmet. All of a sudden, the screen is filled with a huge fireball and blast, and the man disappears. “Where did he go?” asked one of the members in amazement. “He vaporized,” said Kent. “He’s gone.”

The video provided a stark reminder of the power—and danger—of arc flash, an electrical hazard that is often little understood and underestimated by businesses like agricultural cooperatives that depend on three-phase electrical power. Kent, director of business development for Iowa-based Thompson Electric Company, is making it his business to spread the word that the arc flash hazard should not be ignored.

WHAT IS AN ARC FLASH?
Arc flash is a dangerous condition associated with an electrical explosion or the release of energy caused by an electrical arc. Kent said an incident like the one captured in the YouTube video can result in temperatures of 35,000°F—four times hotter than the sun. The accompanying blast can collapse lungs and send shrapnel traveling at 700 mph; and the flash can create deadly molten metals and vaporized copper. This all happens in a fraction of a second.

Not all arc flash incidents are this catastrophic, but, according to Kent, the potential is real. It is estimated that 5 to 10 arc flash incidents occur every day in the United States, resulting in varying degrees of burns and injuries. Kent said that the incident number could actually be higher, since some arc flash injuries may simply be reported as an electric burn.

In 2014, in an effort to reduce the risk to employees, OSHA mandated that employers conduct assessments of their workplace in terms of electric arc hazards and provide employees at risk with appropriate PPE. It also requires that safety signs, symbols or accident prevention tags be used to warn employees about electrical hazards. In 2015, OSHA added the requirement that a risk assessment be conducted every five years.

“Arc flash happens every day,” said Kent, explaining we sometimes experience it on a small scale when we plug into an outlet and see a small spark.

Kent added, “While we can experience arc flash in a home where single-phase electricity is used, its power is limited. The potential for dangerous arc flash exists with three-phase power.”

“In three-phase, we’re dealing with more power, and the arc can jump between contacts,” said Kent.

Arc flash is set off, he added, by many things, including accidental touching, dropping of tools, mechanical failure, dust, condensation, corrosion, insulation failure or poor maintenance—occurrences that can be common to ag facilities.

THE RISK ASSESSMENT PROCESS
Arc flash wasn’t identified as a hazard until the early 1970s. And it wasn’t until the 1990s that experts identified a formula

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Labeling your facility's electrical hazards is an important part of an electric arc risk assessment.

for calculating the amount of energy that can be created out of an electrical panel. Today, utilizing trained licensed electricians and specialized software, Thompson Specialty Services, a division of Thompson Electric, is one provider of arc flash risk assessments to help protect employees and meet the OSHA requirement.

The assessment process includes a walk-through of a facility and data collection from the utility company and the facility's equipment and electrical system, creation of a professional report summarizing the findings of the assessment, installation of new equipment labels in compliance with NFPA 70E standards, an updated one-line diagram of the electrical system analyzed and access to online data for storage of the company's report and drawings. In addition, Thompson provides training for employees conducted by a qualified OSHA trainer on the dangers of arc flash and the proper use of PPE in compliance with OSHA.

The dollar cost of an assessment can be high, Kent explained, but he added that should a company experience an arc flash incident, the cost in terms of facility damage, downtime, liability, fines and, most important, the injury or death of an employee, can be catastrophic.

"Arc flash is that big unknown out there," said Kent, "and it's deadly." In the case of the fatality in the YouTube video, had the employee understood the hazards, the need for appropriate PPE, safe boundaries and practices, he might still be alive today.

Watch the YouTube video and learn more about arc flash and the assessment process at thompsonelectriccompany.com/arc-flash-risk-assessment.html.

NEBRASKA - The Ag Cooperative Safety Directors of Nebraska met Oct. 14. Marvin Turpen, loss control manager at United Suppliers, provided training on workers' compensation, including information on new rules for electronic reporting, injury reporting, reportable injuries and OSHA logs. The next meeting is scheduled for Feb. 7 at the Quality Inn Conference Center in Grand Island.