

## TOOLBOX TALK #43

### WHAT IS AN ARC FLASH?



**What is Arc Flash?** Arc flash is the light and heat created from an arc fault explosion. Temperatures of an arc flash can reach as much as 5000 to 35000°F. To give you some perspective, the temperature of the surface of the sun is estimated at 9932°F. Temperatures that high can ignite the clothing and burn the skin of anyone within a few feet. The arc flash can also melt metal, cause lung and eyesight damage and even lead to hospitalization or death.

**What is Arc Blast?** The arc blast is the pressure wave created after an arc fault. These can be strong enough to throw a fully grown electrician/technician to the ground or cause additional equipment damage. Arc blast can cause damage to your hearing or brain functions. The blast can also cause loose equipment, tools, machinery and debris to go flying which can cause further damage or injury.

**What Causes Arc Faults?** One of the major causes of arc flash is voltage transients (spikes), resulting from switching reactive loads or lightning strikes. The transient might last only microseconds, but it can carry thousands of amps of energy. If this happens while measurements are being taken, a plasma arc can form, either inside the measuring tool or outside. Other causes of arc faults include:

- Touching a test probe to the wrong surface
- Worn or loose connections
- Gaps in insulation
- Improperly installed parts
- Dust
- Corrosion

The most common cause of arc flash accidents is human error. Regardless of how much electrical experience you may have, phase-to-phase and phase-to-ground contact often happens because an employee is distracted while performing energized work. Another typical cause is failure to use an insulated tool. Other causal factors include dropping conductive items into the enclosure (for example, panel board screws), the accumulation of conductive dust inside the enclosure and simple equipment failure.

**Work on equipment that's been de-energized!** It's the only way to eliminate hazards. Follow lockout/tagout procedures and, whenever possible, take measurements while the system is de-energized. Be sure to test for absence of voltage before conducting any tests without the necessary PPE. Until absence of voltage testing proves the circuits are dead, they must be considered energized.