

Arc Flash and the Boundary

About 9 minutes to deliver

The hazard that burns without touching anything, why de-energising is the only real control, and what the label on the panel is telling you.

An arc flash is a short circuit through the air. The arc reaches temperatures several times hotter than the surface of the sun, and the blast that goes with it throws molten metal, a pressure wave that can knock a person across a room, and a sound loud enough to cause permanent hearing damage.

You do not have to touch anything. Being close enough is sufficient.

DE-ENERGISE. THAT IS THE CONTROL.

1910.333(a)(1): live parts to which an employee may be exposed shall be deenergised before work unless the employer can demonstrate that de-energising introduces additional or increased hazards, or is infeasible due to equipment design or operational limitations.

"It is quicker" is not on that list. Neither is "we'd have to shut the line down." Genuinely infeasible is rare, and where it applies it requires an energised work permit, a written plan, and qualified people.

QUALIFIED MEANS SOMETHING SPECIFIC

1910.333(c)(2): only qualified persons may work on circuit parts that have not been de-energised. A qualified person is trained on the construction and operation of that equipment, can identify and avoid its hazards, knows the approach distances, and can use the tools and PPE properly.

Being an experienced electrician in general does not make somebody qualified on a particular piece of equipment.

THE LABEL

Most panels now carry an arc flash label. Learn to read yours:

- Incident energy, in calories per square centimetre, at a working distance — this is what your PPE has to be rated above.
- The arc flash boundary — the distance at which an arc would give a second-degree burn to bare skin. Nobody unprotected inside it, including people just watching.
- The limited and restricted approach boundaries — about shock rather than burns, and about who may cross them.
- The voltage and the required PPE.

No label means the analysis has not been done, and that is a stop, not a guess.

WHAT BURNS YOU

- Everyday clothing makes it far worse. Polyester, nylon and fleece melt onto skin. Cotton ignites and keeps burning. Anything worn near energised equipment should be arc-rated, and arc-rated layers go over natural fibres, never over synthetics.
- Arc-rated face shield or hood, arc-rated coveralls or shirt and trousers, insulating gloves with leather protectors, hearing protection, matched to the incident energy on the label.
- Rated, insulated tools, and no metal on you — watch, ring, chain, badge, pen.

EVERYBODY ELSE

- Panel covers on and closed. An open panel with nobody at it is somebody's accident waiting.
- Three feet of clear working space in front of any panel, kept clear — 1910.303(g). This is the most commonly violated electrical rule on any site.
- Do not stand in front of a panel to operate a breaker. Stand to the hinge side, turn your face away, and operate it with your left hand if you can.
- Report a panel that buzzes, smells hot, or is warm to the touch and do not open it.

ASK THE CREW

- Do our panels have arc flash labels, and has anyone read one?
- Is anything on this site being worked on live that could be shut down?
- Is there three feet clear in front of every panel right now?

29 CFR 1910.333 · 29 CFR 1910.335 · 29 CFR 1910.132

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ATTENDANCE RECORD

Arc Flash and the Boundary

About 9 minutes to deliver · 29 CFR 1910.333 · 29 CFR 1910.335 · 29 CFR 1910.132

Date

Job / site

Delivered by

Company

#	Print name	Signature	Date
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I delivered this talk and determined it was suitable for this crew and this work.

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