

Closing the Gap on Electrical Risks in Data Centers

THE CHALLENGE

The Hidden Dangers of Temporary Power and Backfeed

Rosendin, a leader in the electrical industry working on large-scale complex projects, maintains a rigorous safety culture. Yet, the dynamic, high-pressure data center environment brings challenges that standard protocols sometimes overlook.

Backfeed Scenarios

One of the most significant electrical safety challenges on construction and commissioning sites is the potential for unintended backfeed conditions. Temporary power installations, equipment modifications, troubleshooting activities, and third-party work can all introduce unexpected voltage sources into systems that workers believe to be de-energized. Even when established lockout/tagout procedures are followed, changes made elsewhere in the electrical system can create hazardous conditions if they are not properly communicated and controlled.

An Electrician tasked with terminations of cables on a bus bar entered a stand alone electrical room that should have been isolated but had an undocumented power supply connected. Rosendin was not involved with the installation of the power source and the worker had no reason to suspect the equipment was live. While no one was hurt, **it was a significant “near miss.” If the terminator had touched the bus bar, the consequences could have been catastrophic.**

The “Overnight” Variable

A particularly difficult aspect of managing backfeed risk is that electrical system conditions can change after equipment has been locked out and verified as de-energized. Construction sites are dynamic environments where multiple contractors, vendors, and commissioning teams may be performing work simultaneously. Temporary power connections, testing activities, and unauthorized modifications can introduce new energy sources without the knowledge of crews working on related systems.

As a result, workers may return to equipment that was previously verified safe, only to find that an unforeseen change has re-energized the circuit. These scenarios highlight the importance of continuous situational awareness, robust communication between trades, and technologies that can provide real-time indication of hazardous voltage conditions before personnel are exposed to energized equipment.

The Human Element

Compounding these technical risks is a shifting workforce demographics. Leadership noted that the experience level of electricians is “not what it was five years ago,” with many newer workers lacking the “common sense” or intuitive danger awareness that comes from years of hands-on mechanical exposure.

Rosendin needed a solution that could alert these workers to invisible dangers that bypassed their Lockout/Tagout (LOTO) and Test-Before-Touch protocols.



THE SOLUTION

Presenting Proxxi by Grace: Validating the “Last Line of Defense”

Rosendin initiated a pilot of the Proxxi by Grace personal voltage detector wristband with their Virginia data center team, specifically targeting a 50+ MW energization project.

The goal was to determine if the wearable device could accurately detect unexpected voltage without causing “alarm fatigue” through nuisance alerts.



Use Case 1: Precision in 480V Switchboards

The pilot team tested the wristbands against 480V switchboards with dead fronts installed. The feedback on sensitivity was immediate and positive.

- **The Result:** The wristband detected energized circuits through the dead front panel when the worker was within a few inches, yet remained silent when the worker was 3+ feet away.
- **The Verdict:** The team described this as the “perfect amount of sensitivity,” allowing workers to move around the site without constant beeping, while still alerting them when they broke the plane of the electrical gear.

Use Case 2: Detecting the “Overhead” Hazard

The most critical validation occurred during work on a bus duct. Workers were installing heavy bus plugs and disconnects, a physical task requiring significant exertion. Above the working area was temporary Romex wiring carrying 277V AC.

- **The Result:** While the workers were focused on the de-energized equipment in front of them, the Proxxi wristband detected the energized temporary power lines overhead.

- **The Verdict:** This was an “unexpected safety benefit.” Because the workers were leveraging heavy equipment, a slip could have caused them to contact the overhead lines. The wristband successfully identified the exact hazard type (temporary power) that Rosendin leadership feared most.

CONCLUSION

Following the pilot, the consensus among Rosendin’s field leadership was that the Proxxi device effectively addressed the “backfeed” fear that initiated the trial.

“Had he had that wristband on during the electrical room incident, it would have immediately detected it probably before he even took the dead front off.”

— Matt McKulsky, *Rosendin*

Deployment Strategy

Rather than a blanket rollout, Rosendin identified a strategic deployment plan for the technology, focusing on the highest-risk groups:

1. **QC Crews and Terminators:** Workers entering cabinets and gear where status may have changed.
2. **Critical Environments Group (Service):** Technicians entering unfinished buildings or aging data centers where as-built drawings may not match reality.
3. **Crews handling Temporary Power:** The specific source of the majority of near-misses.

By implementing Proxxi by Grace, Rosendin added a crucial layer of protection—a digital tap on the shoulder—ensuring that when human communication or LOTO procedures fail, their workers are still warned of the danger before it’s too late.

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