



WELCOME TO THE



Zero Tolerance Newsletter

◆ Hello and welcome to the very first edition of our newsletter! Whether you've been with us for a while or just recently subscribed, we're glad to have you here.

Our goal with this newsletter is simple: to keep you informed with insights and updates that matter most in our industry. Each edition will bring you essential knowledge, practical tips, and timely conversations - delivered straight to your inbox with no wasted time.

In this edition, we cover two key topics shaping conversations right now:

- The Unseen Threat- a closer look at what it means and why it matters.
- Key Causes of Stray Voltage – practical takeaways you can put into action today.

We believe in delivering information that's clear, concise, and valuable — a "zero tolerance" approach to time-wasting.

Thank you for joining us on this journey. Let's get started!

The Unseen Threat

Stray Voltage and Your Dairy Farm's Bottom Line

Stray voltage—sometimes called animal contact voltage—represents a hidden but serious electrical hazard for dairy farms. Even at extremely low levels, such as 10mV peak-to-peak, stray voltage disrupts cow comfort and can silently erode milk production and herd health.



Identifying and mitigating this hidden issue is the crucial first step toward achieving an electrically noise-free, "clean environment" that supports long-term profitability.

What Is Stray Voltage?

Stray voltage is unwanted electrical current that can originate from farm equipment or utility power lines. Cows are particularly sensitive, feeling effects long before people can detect them. Although often invisible, the impacts are real and wide-reaching.

Real-World Effects on Herds

- **Milk Production Losses:** Stray voltage is linked to reduced milk production. Some farms report up to 20 more pounds of milk per cow per day after fixing stray voltage issues.
- **Somatic Cell Count (SCC):** Stray voltage causes increased SCCs. Removing stray voltage often sees SCC drop dramatically, improving milk quality.
- **Health & Behavior:** Cows exposed to stray voltage are more likely to have higher mastitis rates, avoid waterers, and experience reproductive issues over time.

Protecting Your Herd and Profits

- **Routine Testing Matters:** Regular, professional testing can detect voltage problems before they escalate.
- **Better Equipment & Grounding:** Upgrading wiring, improving grounding, and isolating electrical systems are key preventive steps.
- **Don't Ignore the Signs:** Watch for increased cow hesitation, sudden production drops, or unexplained herd-wide health issues.

Why This Matters

Even small undetected voltages can undermine herd health and financial performance. Proactive detection and prompt resolution help ensure cows stay healthy and productive—and profits are protected.

Key Causes of Stray Voltage & Electrical Noise

Stray voltage and electrical noise pose a serious threat to modern farm operations, often acting as "electrical gremlins" that sap animal health, productivity, and equipment life. While meeting standard electrical codes is necessary, many hidden electrical issues can still be lurking, causing problems like high somatic cell counts (SCC) in dairy operations and low product output, even when electrical standards are met.

Understanding the primary causes of stray voltage is the first step toward achieving an electrically noise-free farm environment. Stray voltage and electrical noise often spring from three primary areas: **infrastructure degradation, inadequate grounding, and the proliferation of modern electronics.**

1. Degrading Wiring and Connections

- **Farm Aging:** As farms age, stray voltage tends to worsen because insulation thins, connections corrode, and wiring falls apart.
- **Environmental Accelerants:** Wet and dusty farm conditions accelerate these faults. Key problems include worn insulation, corroded neutrals or outlets, and forgotten wiring.

2. Untuned Grounding and Bonding

- **Code Compliance vs. Optimization:** Most electricians prioritize compliance with codes like NEC, NFPA, and fire-safety standards. However, they often skip the tuned grounding topologies that are actually necessary to kill electrical interference.
- **Design for Inspection, Not Performance:** Stray voltage frequently springs from untuned grounding and bonding systems. These systems are designed to pass inspection, rather than to optimize equipotential bonding or eliminate charge buildup.

3. Non-Linear Loads and Harmonics

- **Modern Equipment Noise:** A key cause of stray voltage is the presence of non-linear loads and harmonics.
- **Common Culprits:** This type of noise is created by electronics such as VFDs (Variable Frequency Drives), inverters, LED lighting, switching power supplies, and battery chargers.

Identifying and Fixing the Root Causes

Farmers should be alert for flickering lights or random equipment hiccups—these are red flags indicating that electrical issues are present. Fixing these fundamental root causes is essential for achieving a safe, reliable, and interference-free electrical system.

Zero Tolerance works to mitigate stray voltage by identifying and removing barriers to electrical flow, creating guided pathways to reroute electricity, and significantly reducing interior voltage levels. By addressing the core causes—degrading wiring, untuned grounding, and non-linear loads—farmers can transform their operation into a "clean environment," leading to improved animal health and optimized productivity.

