

10 Electrical Risks That Cause Most Industrial Failures

What Facility Leaders Should Watch For

Electrical system failures rarely happen without warning. In most facilities, early indicators appear weeks or months before a major outage or equipment damage occurs.

Identifying these risks early helps prevent downtime, safety incidents, and costly repairs.

1. Overheating Electrical Connections

Loose lugs, worn contacts, and overloaded circuits generate heat that can damage equipment and lead to electrical fires.

How to detect: Infrared thermographic inspections.

2. Harmonic Distortion from VFDs and Automation

Variable frequency drives and electronic loads introduce harmonics that stress transformers, cables, and neutral conductors.

How to detect: Power quality monitoring and harmonic analysis.

3. Outdated Arc Flash Studies

Arc flash calculations become inaccurate when electrical systems change or equipment is upgraded.

Risk: Incorrect PPE guidance and serious safety exposure.

4. Hidden Transformer Stress

Transformers often operate under harmonic loads or cooling issues that shorten equipment life.

Warning signs:

- Excess heat
- unusual noise
- insulation degradation

5. Poor Grounding Systems

Improper grounding can lead to equipment malfunction, shock hazards, and unreliable protection systems.

Common causes:

- corroded grounding conductors
- inadequate grounding grids
- improper bonding

6. Voltage Sags and Electrical Disturbances

Voltage dips and transients disrupt sensitive equipment and cause process interruptions. Typical sources:

- large motor starts
- utility disturbances
- switching events

7. Undetected Electrical Hotspots

Electrical panels and switchgear often develop thermal anomalies long before failure occurs. These conditions are invisible without infrared inspection.

8. Improper Protective Device Coordination

When breakers and relays are not properly coordinated, small faults can cause widespread outages. Result: unnecessary downtime and system instability.

9. Power Factor Penalties

Poor power factor increases utility costs and places unnecessary load on electrical infrastructure.

Symptoms:

- increased demand charges
- overheated equipment

10. Lack of Preventive Electrical Maintenance

Facilities without structured electrical maintenance programs face significantly higher failure rates. Modern standards such as NFPA 70B emphasize routine inspections and documentation.

How Leading Facilities Reduce Electrical Risk

High-performing facilities implement structured electrical assessment programs that include:

- Infrared thermographic inspections
- Arc flash risk assessments
- Power quality audits
- Grounding system evaluations

These programs help identify hidden issues before they become operational failures.

Next Step

If your facility has experienced any of these warning signs, a structured electrical risk assessment can help identify potential issues early. To learn more visit our website at progusa.net or schedule an appointment by scanning the QR Code below or contact:

Mark Shirah marks@progusa.net
863-722-9077

