Power Grounding & Quality

This Power Grounding and Quality course will provide the student with the knowledge and skills that will help in troubleshooting power quality problems, determine the current state of an electrical grounding system, and predict when failures are about to happen. An in-depth review of power system grounding fundamentals as well as a review of common power quality problems will be discussed in detail. Waveforms from power quality meters will be analyzed for distortions. Additionally potential corrective actions for power quality issues will be discussed

Duration: 16 Hour Program

Power Grounding
Review of Power Basics
Power System Measurements
Low Voltage Power Systems
Power System Grounding
Earthing vs. Grounding
Connection to Earth
Equipment Grounding
Code Requirements
Building Power Distribution
Feeders and Branch Circuits
Separately Derived Systems

Power Quality
Definition and Illustration

Distortions:
Transient and Steady-State
Voltage Sags and Swells
Transient Overvoltage: Low and High Frequency Transients
Total Harmonics Distortion
Flicker/ High Frequency Noise
Mains Signaling/Unbalance

Sources of Distortion
Variable Frequency Drives
Battery Chargers
Fluorescent or Gaseous Discharge Lighting

Effects of Distortion
I^2R Loss
Instrumentation and Capacitor Failures
Reactive Resonance
Triplen Current

Mitigating Distortion
Harmonic/Noise Filters
Effective Grounding Techniques
Voltage Regulators
Saturable Reactors/Isolation Transformers
AC inverters/MG Sets/UPS