ELECTRICAL Cx
NEED FOR A PROPER Cx PLAN
AND Cx SPECIFICATIONS
FOR A SUCCESSFUL PROJECT
HISTORICAL CX VS. TODAY’S ELECTRICAL NEEDS

HISTORICALLY
• CX HAS BEEN LED BY MECHANICAL GROUPS (ASHRAE, AABC)
• MOSTLY FOCUSED ON HVAC SYSTEMS IN BUILDINGS
• MOST ELECTRICAL CX WAS LIGHTING CONTROLS

TODAY
• ELECTRICAL SYSTEMS ARE MORE COMPLEX AND AUTOMATED
• MORE MISSION CRITICAL FACILITIES REQUIRING RELIABLE/REDUNDANT POWER SOURCES
• FOCUS ON EFFICIENT AND RENEWABLE OF POWER SYSTEMS
Electrical Systems Cx is Not Just...

- Just a Good Design
- Specifying the “Right” Equipment
- Turning on a Circuit and Calling it Good
- Meters Reading Correctly
- Protective Devices Set Properly
- Performing NETA Acceptance Testing
- Safe Operation and Arc Flash Mitigation
ELECTRICAL SYSTEMS Cx IS...

Adherence to Owner’s Project Requirements (OPR)

Third-Party verification of installation per design, local codes and standards, and manufacturer’s recommendations

Systematic functional testing of all normal operating modes, sequence of operations, failure scenarios, alarms and indications, EMMS, SCADA

Verification of system performance with calibrated instruments (PQM, IR scans, vibration analysis, ultra-sonic testing)
HOW DO WE ACCOMPLISH THIS?

**CX Plan**
- Identifies the steps in the Cx Process
- Members of the Cx Team (Roles and Responsibilities, Communications Protocols)
- Testing Schemes and Methods
- Measures of Successful Tests

**Specs**
- Give specific instructions to the contractors for Cx Requirements
INTEGRATED SYSTEMS INTERACTION CAN CAUSE UNEXPECTED OUTCOMES AND REVEAL DESIGN AND INSTALLATION FLAWS

FERRORESONANCE IN CHEYENNE, WY

-KVAR AT ORLANDO AIRPORT

RC CIRCUIT NOISE IN AMSTERDAM, NL