

Grounding-Plus® Services

Evaluation (Audit)–Recommendations–Troubleshooting–Remediation–Reports Planning–Engineering Specifications–
Seminars/Training–Lightning Protection–Electrical Protection–Data Protection–Power quality–RFI/EMI Protection & Elimination

Key Features

- ⚡ Evaluations conducted by industry-recognized experts with extensive knowledge, experience and active involvement in international, national and corporate grounding and protection standards.
- ⚡ Training and seminars customized for your market and delivered by recognized industry experts.
- ⚡ Comprehensive written report of all findings, including one-line diagrams with mapping of current flow through grounding conductors.
- ⚡ Identification of damaged or dangerous areas for immediate attention.
- ⚡ Investigation of grounding-related entities such as surge protective devices and telecommunications – data protective devices.
- ⚡ Recommendations for alteration of existing facilities or other corrective action to improve equipment performance and save replacement cost.
- ⚡ Firm cost and time-schedule estimates for remediation performed by qualified SPGS America technicians.
- ⚡ Engineering services for new facilities: ground fields, grounding and bonding infrastructure for telecommunications, and equipment Common Bonding Networks (CBN) and Isolated Bonding Networks (IBN).
- ⚡ RFI/EMI solutions to ensure electromagnetic compatibility with specialization in the medical, petro-chemical, high speed rail, communication, robotics fields and any other industry that requires less than 1 peak volt in frequency ranges up to 6Ghz.

Markets

SPGS America Grounding-Plus® Services are ideal for locations requiring high availability of (susceptible) electronic equipment.

These locations include **utility** telephone central offices, cellular sites, cable TV head-ends, remote sites and; **multi-tenant commercial** buildings (and campuses), information technology rooms, Internet and server hotels, and co-located equipment rooms; **special purpose commercial** buildings such as information technology (data) centers (ITC), medical centers, educational institutions, and government facilities such as PSAP (E9-1-1); and **industrial** factories, plants and complexes.

Grounding problems and solutions

Grounding and bonding problems are often recognized as the primary or underlying cause of poor performance and catastrophic failure or damage of electrical and electronic equipment. Radio/cell sites, telecom systems, computers and networks, peripherals and printers, I/O ports and circuit cards, and electronic sensors and controls are particularly vulnerable to lightning induced events and power system anomalies.

Grounding and other electrical protection measures (such as surge protective devices [SPDs]) form the foundation for adequate power quality and electromagnetic compatibility (EMC). Meeting the electrical safety requirements (including grounding) of the *National Electrical Code (NEC)* does not intentionally account for desired equipment performance - only for a measure of safety.

Therefore, it is essential to correctly interpret and apply industry-recognized standards, practices and methods on grounding and bonding, electrical protection, power quality and electromagnetic compatibility – in addition to *NEC* requirements. Unless other customer-defined documents apply, SPGS America utilizes appropriate industry documents. For example, at commercial and industrial locations IEEE Std. 1100 *Recommended practices for powering and grounding electronic equipment* (in commercial and industrial locations) will apply unless otherwise noted by the customer.

Cost-effective solutions

SPGS America's total "systems" approach to grounding is designed to help protect your equipment and personnel and to enable your installation to meet availability and performance goals. Our grounding specialists will check inspect and verify grounding details of your electrical power system and all specified electronic equipment. Our specialists are also qualified to provide detailed grounding system engineering specifications and plans for new installations.

SPGS America offers the most extensive grounding and power evaluation and remediation services in the industry. Example categories and items are as follows:

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 Safety Protection
Grid Solutions

Grounding Plus Services

Building Grounding

- ⚡ Grounding electrode system
- ⚡ Electrode resistance
- ⚡ Ground field (grid) resistance
- ⚡ Earth resistivity Testing
- ⚡ Lightning protection system
- ⚡ Intersystem bonding conductor(s)

AC Power

- ⚡ Utility AC service entrance/transformer(s)
- ⚡ Separately derived systems
- ⚡ Grounding electrode conductor
- ⚡ Neutral and equipment grounding bus bars
- ⚡ Main bonding jumper
- ⚡ Metallic raceways
- ⚡ Conduits/junction boxes
- ⚡ Equipment grounding conductor(s)
- ⚡ AC distribution panels/cabinets
- ⚡ Feeders and distribution
- ⚡ AC receptacles
- ⚡ Insulated (isolated) ground receptacle circuits
- ⚡ Surge protective devices
- ⚡ Lighting panels/fixtures
- ⚡ UPS

Standby Power

- ⚡ Generator-associated equipment
- ⚡ Fuel tanks (buried, above-ground, indoors)
- ⚡ Piping, conduits, auxiliary framing
- ⚡ Louvers and metallic enclosures
- ⚡ Engine start and control equipment
- ⚡ Automatic transfer switch
- ⚡ Grounding electrode conductor(s)
- ⚡ Equipment grounding conductor

Grounding infrastructure

- ⚡ Building principal ground
- ⚡ Master ground bar
- ⚡ Floor ground bar
- ⚡ Vertical ground riser
- ⚡ \ Main ground bar
- ⚡ Single-point connection bar
- ⚡ Collector ground bar
- ⚡ Horizontal equalizer
- ⚡ Bonding conductor for telecommunications
- ⚡ Grounding equalizer
- ⚡ Telecommunications bonding backbone
- ⚡ Telecommunications grounding bus bar
- ⚡ Telecommunications main grounding bus bar
- ⚡ Main earthing terminal
- ⚡ Protective earth conductor
- ⚡ Raised floor and ceiling grids

Distributing Frames & Protectors

- ⚡ Frame ground bars
- ⚡ Grounding conductors
- ⚡ Protector identification
- ⚡ Protector assembly grounding
- ⚡ Ladder track and AC receptacles

Entrance facility

- ⚡ Cable shield isolation gap
- ⚡ Isolation gap capacitor
- ⚡ Cable entrance ground bar

Wireless

- ⚡ Towers/antennas
- ⚡ Tower system ground field
- ⚡ Radio equipment
- ⚡ Other electronic equipment
- ⚡ Metallic ice bridges
- ⚡ Ground bars
- ⚡ Halo ground(?)
- ⚡ Grounding conductors
- ⚡ Surge protective devices

DC Power

- ⚡ Battery racks/stands
- ⚡ Rectifiers/chargers Main power board
- ⚡ Feeders and distribution
- ⚡ Fuse and breaker panels
- ⚡ Inverter/converter plants
- ⚡ Ringing plants
- ⚡ Battery return reference
- ⚡ Equipment grounding conductors
- ⚡ Rack specific power supply
- ⚡ Bulk power supply

Electronic Equipment

- ⚡ Information technology equipment
- ⚡ PBX, Key, other telecom systems
- ⚡ Other telecommunications equipment
- ⚡ Isolated bonding network
- ⚡ Isolated ground plane
- ⚡ Common bonding network
- ⚡ Integrated ground plane
- ⚡ Single-point connection window
- ⚡ Ground window
- ⚡ Frame ground conductor
- ⚡ Logic ground conductor
- ⚡ Cable rack ground conductor
- ⚡ AC equipment grounding conductor
- ⚡ Telecommunication protective devices
- ⚡ Multi-service/multiport surge protective devices

RFI/EMI Solutions

- ⚡ Consultant
- ⚡ Evaluations
- ⚡ Engineering Studies
- ⚡ RFI/EMI Design Engineering
- ⚡ Detailed Method of Procedures for Repair
- ⚡ Commissioning
- ⚡ Components

Ancillary Services

- ⚡ 522 Rural Utilities Service Audit
- ⚡ Annual service program
- ⚡ Detailed engineering
- ⚡ Environmental monitoring
- ⚡ Power quality monitoring
- ⚡ Load testing
- ⚡ Battery testing
- ⚡ Thermographic imaging
- ⚡ Customized evaluations
- ⚡ Seminars/training