

Capability Statement: E&S Grounding Solutions, Inc.

Introduction

Founded in 2002, E&S Grounding Solutions, Inc. is a premier electrical engineering consultancy with over 20 years of business operations dedicated to enhancing electrical safety and system reliability for a global clientele. We provide expert solutions in high-voltage electrical safety, lightning protection, corrosion control, and the design and analysis of electrical grounding and earthing systems. Our mission is to **ENGINEER, EDUCATE, and EMPOWER** the world’s leading electrical technology professionals and companies, enabling them to operate more safely, successfully, and profitably. As an accredited entity with the IEEE, our training courses offer Continuing Education Units (CEUs) and Professional Development Hours (PDHs), underscoring our commitment to the highest standards of professional education.

Our headquarters are located in Laguna Niguel, California, with an East Coast sales office in New Jersey, allowing us to serve clients across the United States and internationally. We pride ourselves on a foundation of deep technical expertise, a commitment to rigorous scientific principles, and a passion for delivering exceptional service.

Core Competencies

E&S Grounding Solutions offers a comprehensive suite of services built upon a deep understanding of complex electrical engineering challenges. Our core competencies are designed to provide a holistic approach to electrical safety and system integrity, ensuring that our clients receive solutions that are not only compliant with industry standards but also optimized for their specific operational needs.

Core Competency	Description
Electrical Grounding & Earthing Systems	We specialize in the design, analysis, and evaluation of grounding systems for a wide range of applications, including substations, power plants, renewable energy facilities, data centers, and industrial plants. Our designs ensure the safety of personnel and the protection of critical equipment from electrical hazards.
Lightning Protection Systems (LPS)	Our team designs and assesses lightning protection systems that comply with NFPA 780

	and other international standards. We analyze all aspects of lightning protection, including air terminals, down conductors, and grounding electrode systems, to safeguard structures and sensitive electronics from the destructive effects of lightning strikes.
Corrosion Analysis & Cathodic Protection	We provide expert analysis and mitigation strategies for corrosion on buried or submerged metallic structures. Our services include the design of cathodic protection systems, analysis of galvanic and stray current corrosion, and ongoing monitoring to extend the life of critical infrastructure.
High-Voltage Electrical Safety	The safety of personnel in high-voltage environments is a primary focus of our work. We conduct detailed Ground Potential Rise (GPR) studies and step and touch voltage analyses to ensure compliance with IEEE Std. 80 and other regulatory requirements, thereby mitigating the risk of electrical shock hazards.
Electromagnetic Interference (EMI) Mitigation	We offer comprehensive EMI analysis and mitigation services to address interference issues in complex electrical systems. Using advanced modeling software, we can predict and resolve EMI problems, ensuring the reliable operation of sensitive electronic equipment.
Static Control & Electrostatic Discharge (ESD)	Our electrostatic surveys, compliant with NFPA 77 and IEC 61340-5-1, are designed to identify and mitigate the risks associated with static electricity in industrial environments. We help our clients protect sensitive electronics and prevent ignition hazards in flammable atmospheres.

E&S Engineering Expertise & Technical Capabilities

Professional Engineering Team

E&S Grounding Solutions employs professional licensed electrical engineers who are capable of conducting the full range of electrical engineering functions, from conventional power system design to specialized high-voltage safety analysis. While our team is fully

qualified to handle standard electrical engineering tasks, our specialty lies in grounding system design and high-voltage electrical safety—disciplines widely recognized as some of the most difficult engineering tasks conducted by non-scientists. The complexity of these analyses, which involve solving Maxwell's equations for three-dimensional electromagnetic field problems in heterogeneous media, requires a rare combination of theoretical knowledge, practical experience, and advanced computational skills.

Jeffrey D. Drummond, P.E., CTO and Lead Electrical Engineer: Our principal engineer holds a Master of Engineering (M.Eng.) from Harvey Mudd College and is a licensed Professional Engineer in California, Oregon, Washington, and Idaho. Mr. Drummond is the author of numerous publications on grounding, bonding, and earthing, and serves on IEEE boards. He is a distinguished member of Tau Beta Pi (National Engineering Honor Society), IEEE Industrial Applications Society (IAS), IEEE Power & Energy Society (PES), and the International Society of Automation (ISA).

Published Books & Industry Leadership

E&S Grounding Solutions has authored and co-authored industry-certified textbooks and handbooks over the past 14 years, including contributions to McGraw-Hill's *NEC 2014 Grounding & Earthing Handbook*, *UK Wiring Standards for Earthing & Bonding*, the *Standard Handbook for Electrical Engineers* (16th Edition), and the *Handbook of Electric Power Calculations* (4th Edition). These publications are widely used by electrical engineers and technicians worldwide. In 2026, E&S will release a new book, further expanding our contributions to the electrical engineering literature and professional education.

CDEGS: The Gold Standard Software

All Ground Potential Rise (GPR) studies and electromagnetic analyses conducted by E&S are powered by the **CDEGS (Current Distribution, Electromagnetic Fields, Grounding and Soil Structure Analysis)** software suite from SES Technologies. Since 2002, E&S has maintained a full license for CDEGS, the industry's gold standard for grounding and electromagnetic analysis. CDEGS is the most powerful and accurate commercially available software for analyzing grounding, earthing, and electromagnetic problems in electric networks. Continuously developed and scientifically validated since 1972, CDEGS employs advanced solvers including direct solutions of Maxwell's equations, finite element methods, circuit-based analyses, and transient analysis capabilities. The software can model virtually any electrical system configuration without simplifying assumptions, handling complex multi-layered soil structures, arbitrary conductor networks, and all electromagnetic coupling modes.

CDEGS Analysis Capabilities

Analysis Type	Description
Grounding System Design	Design safe grounding systems complying with IEEE 80, IEC 61936, IEC 62305, and other standards.
Ground Potential Rise (GPR)	Calculate GPR, step voltages, touch voltages, coating stresses, and leakage current densities.
Electromagnetic Fields & Interference	Calculate electric and magnetic fields above or below ground; study EMI and mitigation strategies.
Lightning Protection	Predict lightning protection system performance and analyze shielding effectiveness.
Transient & Frequency Analysis	Analyze AC/DC, steady state, fault, and transient conditions in frequency or time domains.
Cathodic Protection & Corrosion	Analyze cathodic protection systems and anode bed design with comprehensive corrosion modeling.

E&S's CDEGS Expertise

E&S Grounding Solutions has been using CDEGS since 2002, providing our team with over 20 years of experience with this sophisticated platform. Our full license includes access to all eight core computation modules and all specialized software packages (AutoGroundDesign, AutoGrid Pro, Right-of-Way Pro, SESShield-3D, SESShield-2D, SESEnviroPlus, SESTLC, and CorrCAD). This comprehensive access, combined with our deep expertise and professional engineering credentials, enables E&S to deliver the most accurate, cost-effective, and scientifically sound grounding and electromagnetic analysis solutions available in the industry today.

Field Testing & Measurement Services

Our highly skilled technicians are equipped with state-of-the-art instrumentation to perform a wide range of field tests, including:

- Wenner 4-Point Soil Resistivity Measurements
- Fall-of-Potential (FOP) and Clamp-On Ground Resistance Testing

- Ground Impedance Measurements
- Continuity Testing of Grounding Systems
- EMI and Power Quality Measurements

List of Services

E&S Grounding Solutions offers a wide range of services to meet the diverse needs of our clients. Our services are categorized into three main areas: Consulting & Engineering, Field Testing & Measurement, and Training & Education.

Service Category	Services Offered
Consulting & Engineering Services	Ground Potential Rise (GPR) Studies, Lightning Protection System Design & Analysis, Corrosion & Cathodic Protection Analysis, EMI/EMC Analysis & Mitigation, Electrical Grounding & Earthing System Design, Risk Assessments, Cell Site & Telecom Grounding Design, ESRAP (E&S Remote Assistance Program), Electrical Engineering Design & Peer Review.
Field Testing & Measurement Services	Wenner 4-Point Soil Resistivity Testing, Grounding System Evaluations & Commissioning, Non-Invasive Ground System Testing, EMI Measurements & Diagnostics, Cathodic Protection System Testing, Static Electricity Surveys.
Training & Educational Services	IEEE-Accredited Live Online Training Courses (with CEUs/PDHs), Customized Corporate Training Programs, Educational Webinars & Seminars, Published White Papers & Technical Articles, "Ask the Experts" Consultation Sessions.

Contact Us

We invite you to contact us to discuss your specific needs and learn how E&S Grounding Solutions can help you achieve your electrical safety and reliability goals. For a complimentary 15-minute discovery call with our Founder and CEO, David Stockin, or to schedule a technical consultation with one of our engineers, please visit our website or contact us directly.

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