Rita C. Garrido Menacho

PhD, CFEI, CVFI

Senior Consultant

Dr. Rita Garrido Menacho is a Senior Consultant at Engineering Systems Inc. (ESi) specializing in the safety, performance, and reliability of electrical and electronic systems across a wide range of industries. Her technical experience includes conducting hazard analyses and failure assessments of consumer electronics, automotive electronic systems, and lithium-ion battery technologies. She has contributed to root cause and fire investigations involving these systems, working collaboratively with multidisciplinary teams to identify failure mechanisms and assess design, manufacturing, and compliance-related nonconformances.

Her work also encompasses the investigation and analysis of a broad range of alleged vehicle issues including safety recalls, airbag non-deployment, unintended acceleration, vehicle electrical fires, manufacturing defects, and the performance of Advanced Driver Assistance Systems (ADAS). She communicates fluently in both English and Spanish, allowing her to clearly convey technical findings to diverse clients.

Education

PhD, Physics. University of Illinois Urbana-Champaign. 2020

BS, Physics (Highest Honors). Georgia Institute of Technology. 2013

Licenses & Certifications

- NAFI Certified Fire and Explosion Investigator (CFEI)
- NAFI Certified Vehicle Fire Investigator (CVFI)

Languages

- Spanish
- English

Positions Held

Engineering Systems Inc., Scottsdale, Arizona

- Senior Consultant, 2026 – Present

Contact Information

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(602) 836-3266

ESi Scottsdale

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Areas of Specialization

- Lithium-ion Batteries
- Battery Management Systems
- Electric Vehicles and Chargers
- Consumer Electronics
- Fire and Explosion Investigations
- Product Design and Construction Reviews
- Automotive Electronics
- Advanced Driver Assistance Systems (ADAS)

Exponent Inc., Phoenix, Arizona

- Managing Scientist, 2023–2026
- Senior Scientist, 2022–2023
- Scientist, 2021–2022

Inprentus, Inc., Champaign, Illinois

- Research and Development Intern, 2019

University of Illinois Urbana-Champaign

- Graduate Research Assistant, 2014–2020
- Graduate Teaching Assistant, 2015–2020

Georgia Institute of Technology

- Undergraduate Research Assistant, 2010–2013

Continuing Education

- **Vehicle Fire Investigation Training Program** — National Association of Fire Investigators (NAFI), 2025
- **Fire Investigation Training Program** — National Association of Fire Investigators (NAFI), 2024
- **Arc Flash Electrical Safety NFPA 70E Training Program** — TPC Training, 2022

Professional Affiliations/Honors

Institute of Electrical and Electronics Engineers (IEEE)

- Member since 2021

Society of Automotive Engineers International (SAE International)

- Member since 2025

National Association of Fire Investigators (NAFI)

- Member since 2024

Project Experience

Battery Quality

- Assessed electrical designs across a wide range of consumer electronics, including review and analysis of electrical schematics, PCB layouts, bills of materials, cell and battery pack specifications, and performance through customized electrical testing.

- Performed Li-ion cell construction evaluations using non-destructive electrical testing, CT/X-ray imaging, and destructive teardowns analyses to assess manufacturing quality and consistency.
- Conducted cell- and pack-level performance testing, electrical characterization, and abuse evaluations to assess design robustness.
- Collaborated on battery pack manufacturer audits and FMEA reviews to identify risks, assess standards compliance, and support process optimization.

Product Safety and Recall Investigations

- Performed testing and evaluation of consumer products in response to defect allegations and potential recall investigations, including analyses supporting reporting obligations to the U.S. Consumer Product Safety Commission (CPSC).
- Supported automotive recall investigations for a variety of vehicle systems and components through technical document review, component inspection, and customized testing.

Failure Analysis

- Performed root-cause investigations on Li-ion cell failures across EV battery packs, consumer electronics, and energy storage systems, identifying electrical failure modes to improve safety and reliability.
- Conducted and supported residential fire investigations resulting from electrical failures of household appliances, battery systems, and vehicle-related fire incidents.

Publications

"Application of ISO 26262 to Automotive Semiconductors," M. Mendias, **R. Garrido Menacho**, S. Han. IEEE International Symposium on Product Compliance Engineering (ISPCE), 2026.

"EV Batteries, Chargers, and Subsystems (Book)," A. Arora, **R. Garrido Menacho**. Artech House, 2025.

"Chapter 7: Energy storage system safety and compliance (Book Chapter)" in The Sustainable Power Grid, S. Lele, **R. Garrido Menacho.** Elsevier, 2024.

"Chapter 8: Battery Management Systems: From Consumer Electronics to Electric Vehicles (Book Chapter)" in Computer Engineering Applications in Electronic, Biomedical, and Automotive Systems, M. L. Kuykendal, M. L. Mendias, **R. Garrido Menacho**. Nova Science Publishers, 2024.

Presentations

"Manufacturing Lithium-Ion Cells and Batteries," M. Mendias, **R. Garrido Menacho**, A. Arora, IEEE International Symposium on Product Compliance Engineering (ISPCE) 2025, San Francisco, May 2025.

"Fire Investigations and Analysis," **R. Garrido Menacho**, CLE Webinar presented to Arizona Association of Defense Counsel, May 2025.

“Functional Safety and Electric Vehicle Batteries,” **R. Garrido Menacho**, Poster presented at the Advanced Automotive Battery Conference, Las Vegas, Nevada, December 2024.

“Electric Vehicle Batteries and Charging Systems: A Primer,” A. Arora, **R. Garrido Menacho**, IEEE Energy Conversion Conference and Expo (ECCE), Detroit, Michigan, October 2022.