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Engineering & Scientific Consulting

Ashish Arora, P.E.

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Professional Profile

Mr. Arora's expertise is in electrical, electronic and computer systems. His professional activities focus on solving complex technical problems involving electronics and software controls in the consumer products, automotive, aviation and medical device industries. His work focuses on design reviews, targeted electrical testing of new systems, field failure analysis, recall-related investigations and product liability issues.

Mr. Arora works extensively on projects involving automotive electronic systems. He has worked on projects involving embedded control systems for automotive applications and has performed both hardware and software design reviews and failure analysis of automotive embedded systems such as electronic throttle control systems, adaptive cruise control systems, airbag control systems, electronic parking brake systems etc. He has also performed extensive testing on electric vehicle control systems.

Mr. Arora also has extensive experience with energy storage systems in the consumer products, aviation, automobile and utility industries. In addition to performing root cause analysis of battery system failures, he assists clients by performing design reviews and risk analyses of battery systems to evaluate the potential for field failure and safety issues. He has also assisted his clients in evaluating and choosing battery vendors that can produce battery systems with the required quality and safety on an ongoing basis.

As a research engineer with CATQER at the University of Canberra, Mr. Arora designed and implemented an experimental 4.2 km University of Canberra-Telstra Tower Free-Space Quantum Cryptographic Key Distribution Test-Bed (optical and RF communications link).

Academic Credentials & Professional Honors

M.B.A., Business Management, Indiana University, 2015

M.S., Electrical and Computer Engineering, Purdue University, 2003

B.S., Engineering, University of Canberra, Australia, 2001

University Medal for outstanding academic excellence in the bachelor's degree from the University of Canberra, Australia, 2001

The 2001 W E Samsun Medal Prize for the most outstanding graduate in the fourth year of the undergraduate degree course in Electronics and Communication Engineering from the Division of Management and Technology, University of Canberra, 2001

The Institute of Electrical Engineers Prize in the area of signal processing and Telecommunications

awarded by the Institute of Electrical Engineers, UK, 2000

The Australian Institute of Physics Prize in the area of radio and optical communications awarded by the Institute of Physics, Australia, 2000

Professional Affiliations

Institute of Electrical and Electronic Engineers (member)

Society of Automotive Engineers (member)

Languages

Hindi

Patents

Patent US 2010/0065637: Testing Protocols for Extended Functionality Cards, March 18, 2010 (with M. Top, E. Kurtek, S. Phillips and J. Swart)

Publications

Books and Book Chapters

Arora A, Lele S, Medora N, Souri S, "Lithium-Ion Battery Failures in Consumer Electronics," Artech House Publishing, Norwood, MA, 238 pp., May 2019.

Medora NK, Kusko A, Arora A. Uninterruptible Power Supply (UPS) Systems. In: On-Site Power Generation: A Comprehensive Guide to On-Site Power. Fifth Edition, Chapter 20, pp. 205-219, Electrical Generating Systems Association (EGSA), 2015.

Arora A, Medora NK, et al. Safety of lithium-ion batteries for hybrid electric vehicles. In: Electric and Hybrid Vehicles, Power Sources, Models, Sustainability, Infrastructure and the Market, Elsevier B.V., UK, 2010, pp. 463-491.

Publications

Medora NK, Arora A, 69-kV Sub-Transmission Line, a Careless Painter and a Scissor Lift - A Potential Electrical Hazard, Presentation, 2019 International Symposium on Product Compliance Engineering (ISPCE), IEEE Product Safety Engineering Society (PSES), San Jose, CA, May 6-8, 2019.

Arora A, Lele S, Functional Safety & Li-ion Batteries. Battcon Orlando, FL, 2019

Lele S, Arora A, A Methodology for Evaluating the Root Cause of a Li-ion Battery's Failure. Battcon Orlando, FL, 2019.

Lele S, Arora A, Benson K. Predicting the life of Li-ion batteries using the Arrhenius Model. Battcon Nashville, TN, 2018.

Arora A, Pinnangudi B, Harris J. Lithium ion batteries for stationary applications: A safety perspective. Battcon 2011, Orlando, FL, 2011.

Medora NK, Yamaguchi G, Arora A. Conducting high frequency electrical measurements—Case study using a TASER M18 device. 2010 IEEE Symposium on Product Compliance Engineering, Boston, MA, 2010.

Pinnangudi B, Arora A, et al. Thermal shutdown characteristics of separator materials used in lithium-ion batteries. 2010 IEEE Symposium on Product Compliance Engineering, Boston, MA, 2010.

Medora NK, Arora A, Livernois T. Series arcing faults in electrical transportation systems. SAE World Congress, Detroit, MI, 2010.

Medora NK, Yamaguchi G, Arora A. Conducting high frequency electrical measurements - case study using a TASER M18 device., 2010 IEEE Symposium on Product Compliance Engineering, IEEE Product Safety Engineering Society (PSES), Boston MA, October 18-20, 2010.

Arora A, Medora NK, et al. Evaluation of resistive faults in high current starter cables. IEEE Symposium on Product Compliance Engineering, Toronto, Canada, 2009.

Arora A, Medora N, Swart J. Failures of electrical/electronic components: Selected case studies. IEEE Symposium on Product Compliance Engineering, Longmont, CO, 2007.

Swart J, Edmonds J, et al. Case studies of electrical motor and generator failures. Failures 2007, South Africa, 2007.

Swart J, Arora A, et al. Methods for measuring the mechanical safety vent pressure of lithium ion cells. IEEE Symposium on Product Safety and Compliance Engineering, Irvine, CA, 2006.

Swart J, Arora A, et al. Case studies of electrical component failures. Failures 2006, South Africa, 2006.

Swart J, Arora A, Nilsson S. Characterizing the performance of battery chemistries used to power a single-person vehicle. 6th International Advanced Automotive Battery (and Ultracapacitor) Conference, Baltimore, MD, 2006.

Swart J, Arora A, et al. Going beyond industry standards in critically evaluating lithium-ion batteries. Advancements in Battery Charging, Monitoring and Testing, Vancouver, Canada, 2005.

Arora A, Swart J, et al. Characterizing the vent operation of lithium-ion cells and battery packs. 5th International Advanced Automotive Battery (and Ultracapacitor) Conference, Honolulu, Hawaii, 2005.

Arora A, Swart J, et al. Lithium-ion batteries for hybrid electric vehicles: A safety perspective. 5th International Advanced Automotive Battery (and Ultracapacitor) Conference, Honolulu, Hawaii, 2005.

Arora A, Edwards P. Software-based photon counting telemetry receiver for an infrared communications satellite. International Symposium on Optical Science and Technology, San Diego, CA, August 2003.

Selected Presentations

Martens, J., Kuykendal, M., Bracher, D., Arora, A. Functional Safety That Your Boss Will Understand. 2019 Association of Equipment Manufacturers Product Safety & Compliance Seminar, Des Moines, IA, May 1, 2019.

Arora A, Lele S. Emerging issues in automotive product liability cases: electronic/software defects. Presented at SEMI FOA (Fab Owners Alliance), Scottsdale, AZ, February 2018.

Arora A, Martens J. Energy storage for BEV's: An engineering perspective. IEEE Transportation Electrification Conference and Expo (ITEC' 13), Dearborn, MI, June 16-19, 2013. (Half-day tutorial).

Martens JD, Arora A. Understanding the role of software in product failures. IEEE Symposium on Product Compliance Engineering, Portland, OR, November 5-7, 2012.

Arora A, Martens J, Babic D. AC & DC adapters safety considerations. IEEE Symposium on Product Compliance Engineering, San Diego, CA, 2011.

Arora A, Harris J. Designing with lithium-ion batteries: An engineering perspective. IEEE Energy Conversion Congress & Exposition, Phoenix, AZ, 2011 (4 hour tutorial).

Arora A, Medora NK, Pinnangudi B. Accessible hot surfaces and burn hazards. IEEE Symposium on Product Compliance Engineering, Boston, MA, 2010.

Arora A, Medora NK, et al. Arc faults in hybrid and high voltage automotive electrical systems. 9th International Advanced Automotive Battery & EC Capacitor Conference (AABC) and Symposia, Long Beach, CA, 2009.

Arora A, Medora N, Livernois T. Circuit protection devices and arc fault detection schemes for electrical automotive systems. IEEE Symposium on Product Compliance Engineering, Austin, TX, 2008.

Arora A. Electrical/system component failures. ASM International Meetings, Phoenix, AZ, 2008.

BenKinney M., Arora A, Swart J. The influence of regulatory changes on unique product designs. IEEE Symposium on Product Compliance Engineering, Longmont, CO, 2007.

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