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Curriculum Vitae: Donald W. Zipse, P.E.

EDUCATION and GENERAL BACKGROUND

Bachelor of Science in Electrical Engineering
University of Delaware, Newark, DE 1956 - 1961

State Recognized Certificate for Power Plant Operations
Williamson Free School of Mechanical Trades, Media, PA 1950 - 1953

Practicing Electrical Engineer in Industry
See Career Summary on page 10 1961 - 1993

Contributing Chapter Chair, Committee Member and Standards Board
Member of the Institute of Electrical and Electronics Engineers (IEEE)
1968 - Present

Registered Professional Engineer
State of Delaware: #3806 1969 - Present

Code-making Committee Member for the National Electrical Code 1977 - Present

Instructor of National Electrical Code (NEC) revision courses 1978 - 1987

Member of the International Association of Electrical Inspectors 1982 - Present

National Electrical Safety Code (NESC) Committee Member 1982 - Present

Forensic Engineer and Engineering Consultant to industry
and the legal community 1993 - Present

ELECTRICAL SHOCK HAZARDS: Experienced in assessing the causation of personal injury resulting from interaction with electrical power where the following factors are at issue.

- Current Flow through the Human Body
- Clearances, Guarding and Signage
- Effectiveness of Grounding Equipment
- Stray Voltage/Current
- Commercial and Industrial Products
- Power lines and Electrical Distribution
- Aerial Lift Trucks, Ladders and Elevated Work

ACCOMPLISHMENTS, EXPERIENCE and CREDENTIALS:

- Extensive practical experience in industry with electrical distribution and protection since 1950.
- Performed design, installation, and troubleshooting of grounding systems since 1964

- Educated in NEC compliance, safe wiring practices and practical installations since 1951.
- Installed wiring and devices in residential homes and commercial properties as an Electrician since 1957.
- Instructor of Electrical Safety Courses for industry personnel and electrical tradesmen since 1968
- Member IEEE of Power Systems Grounding Subcommittee since 1968. Chapter Chair for Standard No. 142 Working Group: "Recommended Practice for the Grounding of Industrial & Commercial Power Systems."
- Committee Member of NFPA Section 780: Lightning Protection since 1996.
- Contributing Author to the Electrical Engineering Profession in the field of Grounding since 1972.

POWER DISTRIBUTION: Experienced in the design, installation and analysis of electrical power distribution systems from 138,000 volts down to communication lines involving the following design, installation and maintenance concerns and including the following system components:

Interfacing with Public Utilities	NESC and State PUC requirements of Public Utilities
Tree Trimming and Pole Inspection	Voltage Transformation and Substations
Switchgear and Circuit Isolation	Circuit Protective Equipment: Settings and Operation
Panelboards and Load Control Centers	Conductors: Construction, Insulation and Support
Motor or Load Protection	Service Connections: Overhead or Underground
Lightning Protection and Prevention	Grounding Methods: Designed, Installed, Verification

ACCOMPLISHMENTS, EXPERIENCE and CREDENTIALS:

- Extensive practical experience in industry with electrical distribution and protection since 1961.
- Responsible for the ground-up design of electrical services for a 450-acre multiple-process chemical manufacturing facility located in Bayport, Texas for ICI Americas, Inc.
- Designed and performed project management functions for the start up of a 13.2 kV to 4.16kV distribution system around the campus property of the Williamson Free School of Mechanical Trades located in Media, Pennsylvania.
- Member of code making committee for the National Electrical Safety Code (NESC) since 1988.
- Member of IEEE Power Systems Design Subcommittee since 1968. Past Chapter Chair for IEEE Standard No. 141 Working Group: "Recommended Practice for Electrical Power Distribution for Electrical Plants."

FIRE PREVENTION: Experienced in the prevention of fire damage caused by electrical overcurrent conditions through knowledgeable compliance with codes and standards in the following areas:

Conductor Sizing	Wiring Methods and Protection
Installation Practices	Wireways and Support of Conductors
Motor Overload Protection	Distribution Equipment Protection
Aluminum Conductors	NEMA Enclosure Classification

ACCOMPLISHMENTS, EXPERIENCE and CREDENTIALS:

- Extensive practical experience in industry with electrical distribution and protection since 1961.
- Educated in NEC compliance, safe wiring practices and practical installations since 1951.
- Installed wiring and devices in residential homes and commercial properties as an electrician from 1957.
- Member of International Association of Electrical Inspectors since 1982.

PROFESSIONAL SOCIETIES:

INSTITUTE of ELECTRICAL & ELECTRONIC ENGINEERS (IEEE) 1957 - Present

Member of: **Industrial Applications Society** from the founding in 1966 - Present
Power Engineering Society 2000 - Present

GENERAL RECOGNITIONS: (Partial List)

- Awarded IEEE's – IAS' – PCIC's Emeritus of the Year (2002)
- Honored as IAS Distinguished Lecturer in 1997.
- Acquired Life Fellow status in 1997.
- Elected Fellow in 1994.
- Awarded Standards Medallion for promoting standards in 1991.
- Member of Committee on Man and Radiation (COMAR) since 1991.
- Delaware Bay Executive Committee Member-at-Large in 1978-79, Treasurer in 1980, PES/IAS Joint Chapter: Vice Chairman & Chairman in 1968-70.
- IEEE Member since 1957 (formerly the American Institute of Electrical Engineers).

STANDARDS BOARD:

- Appointed to the Standards Board 1998-01, 1992-93, 1990-88, 1986, 1980-82.
- Standards Correlating Committee #18: National Electrical Code, Member since 1977.
- Standards Correlating Committee #28: Non-Ionizing Radiation, Member since 1980.
- Review Committee Member 1981-1999.
- New Standards Committee Member 2000-2002

INDUSTRY APPLICATIONS SOCIETY: (IAS)

- Member since founding of IAS in 1966 (formerly Industry and General Applications Group prior to 1972).
- Industrial and Commercial Power Systems Department Member since founding in 1977.
- Codes and Standards Committee Member since 1968 and past Chair.
- Power Systems Engineering Committee Member since 1968.
- Emergency and Standby Power Systems Subcommittee Member since founding in 1968.
- Working Group for Standard No. 446: "Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications", Member since founding in 1968.
- Maintenance, Operation and Safety Subcommittee Member since founding 1982-89 and past Chair.
- Power Systems Design Subcommittee Member since 1968.
- Working Group for Standard No. 141: "Recommended Practice for Electrical Power Distribution for Industrial Plants", Member since 1968: Past Chair - Chapter 2: "Systems Planning". Past Chair - Chapter 7: "Grounding".
- Working Group for Standard No. 1100: "Recommended Practice for the Powering and Grounding of Sensitive Electronic Equipment", member since founding in 1987: Chair - Chapter 11: "Case Studies".
- Power Systems Grounding Subcommittee Member since 1968.
- Working Group for Standard No. 142: "Recommended Practice for Grounding of Industrial and Commercial Power Systems", Member since 1968: Co-Chair - Chapter 1: "System Grounding". Co-Chair and past Chair - Chapter 3: "Static and Lightning Protection Grounding". Past Chair - Chapter 5: "Sensitive Electronic Equipment Grounding".
- Process Industries Department Member since 1980.
- Petroleum and Chemical Industry Committee Member since 1980. Vice-Chair Emeritus Subcommittee since 1996. Emeritus Subcommittee Chair 2001 – 2004

NATIONAL ELECTRICAL SAFETY CODE: (NESC)

- Grounding Methods Subcommittee #2 Member since 1988 Representing IEEE - IAS.
- Section 9: Grounding Methods for Electrical Supply and Communications Facilities.

NATIONAL FIRE PREVENTION ASSOCIATION (NFPA) 1977 - Present

NATIONAL ELECTRICAL CODE COMMITTEE (Standard 70 "NEC")

- Panel No. 14: Hazardous Locations, Member and Representative of IEEE since 1988.
- Hazardous Locations: Articles 500-03, 505.
- Intrinsically Safe Systems: Article 504.
- Specific Hazardous Locations: Articles 510-11, 513-16.
- Panel No. 15: Emergency and Standby Systems, Member and Representative of IEEE 1977-88.
- Emergency Systems: Article 700.
- Legally Required Standby Systems: Article 701.
- Optional Standby Systems: Article 702.
- Generators and Storage Batteries: Articles 445, 480.
- Places of Assembly: Article 518.
- Specific Places of Assembly and Equipment: Articles 520, 525, 530, 540.
- Fire Pumps: Article 695.

LIGHTNING PROTECTION (Standard 780)

- Committee Member and Representative of IEEE since 1997 - 2007 on the NFPA 780 Standard, "Standard for the Installation of Lightning Protection Systems."

INTERNATIONAL ASSOCIATION of ELECTRICAL INSPECTORS 1982 - Present

- Member since 1982.

AMERICAN CHEMISTRY COUNCIL (ACC) previously

CHEMICAL MANUFACTURERS ASSOCIATION (CMA) 1980 - Present

- National Electrical Codes and Standards Task Group Member since 1980.
- Corporate Membership through FMC Corporation.

TECHNICAL WRITING: A list of technical papers and chapters in technical texts authored by D. W. Zipse in the field of electrical engineering.

Abbreviations:

IEEE	Institute of Electrical and Electronics Engineers
I&CPS	Industrial & Commercial Power Systems
IAS	Industry Applications Society
IA Trans.	Industry Applications Transactions
NFPA	National Fire Protection Association
PCIC	Petroleum & Chemical Industry Committee

1. Donald W. Zipse, (Volume 8) GROUNDING, 24 Volume, Wiley Encyclopedia of Electrical and Electronics Engineering, (1998), 1st edition, 1999, pp. 476-500.

2. *Electrical Hazard of the Future,* IAS-Electrical Safety Workshop Technical Committee, St. Louis, MO, February 3-6, 2009

3. Donald W. Zipse, *Death by Grounding,* PCIC' Technical Conference, Sept. 22, 2008, IAS/PCIC 08-03.

4. Donald W. Zipse. *Equipotential Planes, A Figment Of The Imagination*, IEEE's IAS' I&CPS' Technical Conference, May 2, 2006, Detroit, MI.

5. Donald W. Zipse, *Earthing – Grounding Methods – A Primer,* IEEE's Industry Applications Magazine, Nov.–Dec. 2003, pp 57-69.

6. Donald W. Zipse, *The Hazardous Multigrounded Neutral Distribution System And Dangerous Stray Currents*, PCIC' Technical Conference, Sept. 16, 2003, IAS/PCIC 03-03, pp. 23-45.

7. Donald W. Zipse, *Earthing – Grounding Methods – A Primer,* IEEE's IAS' I&CPS' Technical Conference, May 6, 2002, IAS/ICPS 02-20, pp. 158-177

8. Donald W. Zipse, Prevent Lightning Strikes with Charge Transfer Systems, Power Quality Magazine, Nov. 2001, pp24-27.

9. Donald W. Zipse, *Earthing – Grounding Methods – A Primer,* IEEE's IAS' PCIC's Technical Conference, Sept 24, 2001, IAS/PCIC 01-02, pp. xx xx.

10. Donald W. Zipse, Lightning Protection Systems An Update and a Discredited System Vindicated, IEEE' IAS' IA Trans., Vol. 37 No. 2 Mar-Apr 2001 pp. 407-415

11. Donald W. Zipse, Topic 19b: Safety by Design – How to Keep Your Grounding from Hurting You, IEEE Petroleum and Chemical Industry Committee Eighth Annual Electrical Safety Workshop: Toronto January 24-26, 2001.

12. Donald W. Zipse, Lightning Protection Systems: An Update and a Discredited System Vindicated, IEEE's IAS' PCIC's Technical Conference, Sept 13, 1999, IAS/PCIC 99-03, at pp. xx xx.

13. Donald W. Zipse, Are the National Electrical Code and the National Electrical Safety Code Hazardous to Your Health: "The Shocking Swimming Pool", 1999 IEEE Industrial & Commercial Power Systems Technical Conference, Conference Record, Session 8, pp. 1-9.

14. Donald W. Zipse, Electrical Shock Hazard Due to Stray Current: "The Shocking Shower", 1999 IEEE Industrial & Commercial Power Systems Technical Conference, Conference Record, Session 2, pp. 1-6.

15. Donald W. Zipse, Travis Lindsey, Grounding / Earthing Electrode Studies, NFPA's Annual Meeting, May 1995

16. Donald W. Zipse, Discussion of Lightning and Surge Protection of Substations, IEEE Transactions on Industry Applications, Vol. 31, No. 1, Jan/Feb 1995, pp. 171-173.

17. Donald W. Zipse, *Lightning Protection Systems: Advantages and Disadvantages,* IEEE' IAS' IA Trans., Vol. 30 No. 5 Sep-Oct 1994 pp.1351 – 1361

18. Donald W. Zipse, Travis Lindsey & Tomas J. Krob, Grounding / Earthing Electrode Studies, 1 of 2, IEEE' IAS' I&CPS' Technical Conference, May 1994.

19. Donald W. Zipse, *Lightning Protection Systems: Advantages and Disadvantages,* IEEE's IAS' PCIC's Technical Conference, Sept 13, 1993, IAS/PCIC 93-06, at pp. 51-64.

20. Donald W. Zipse, *Health Effects: Extremely Low Frequency (50 and 60 Hertz) Electric and Magnetic Fields,* IEEE's IAS' IA Trans. Mar/Apr 1993.

21. Donald W. Zipse, Chapter 7: Case Histories, in IEEE Recommended Practice for Powering and Grounding Sensitive Electronic Equipment: Standard 1100, 1992 edition, pp. 145-158 and 1999 Edition.

22. Donald W. Zipse, *Health Effects: Extremely Low Frequency (50 and 60 Hertz) Electric and Magnetic Fields,* NFPA's Annual Meeting, May 1992,Atlanta, GA

23. Donald W. Zipse, *Health Effects: Extremely Low Frequency (50 and 60 Hertz) Electric and Magnetic Fields,* IEEE's, IAS' Pulp & Paper Conference Record, June 1992.

24. Donald W. Zipse, *Health Effects: Extremely Low Frequency (50 and 60 Hertz) Electric and Magnetic Fields,* IEEE's IAS' PCIC's Technical Conference, Toronto, Canada, Sept 1991, IAS/PCIC-91-9, at pp. 279-291,

25. Donald W. Zipse, *Electric and Magnetic Fields: Equipment and Methodology Used for Obtaining Measurements,* IEEE's IAS' IA Trans. Mar/Apr 1994 at.

26. Donald W. Zipse, *Electric and Magnetic Fields: Equipment and Methodology Used for Obtaining Measurements,* IEEE's IAS' PCIC's Technical Conference San Antonio, Sept 1992, IAS/PCIC-92-08, at pp. 285-292.

27. Donald W. Zipse, *NEC's Hazardous Area Classification Division 1 vs. Division 1.0 and Division 1.1 - a Panel Discussion,* IEEE's IAS' PCIC Technical Conference, Sept. 1993, St. Louis, MO.

28. Donald L. Hornak and Donald W. Zipse, *Automated Bus Transfer Controller and Synchronous In-Phase Relay for Critical Industrial Process,* IEEE's IAS' IA Trans.

29. Donald L. Hornak and Donald W. Zipse, *Automated Bus Transfer Controller and Synchronous In-Phase Relay for Critical Industrial Process,* (updated) IEEE's IAS' I&CPS Technical Conference May, 1990, Conference Record.

30. Donald L. Hornak and Donald W. Zipse, *Automated Bus Transfer Controller and Synchronous In-Phase Relay for Critical Industrial Process,* IEEE's IAS' PCIC's Technical Conference, San Diego, CA, Sept 1989, IAS/PCIC Conference Record, PCIC-89-9, at pp. 239-252.

31. Donald W. Zipse, *Unity Plus Motor Winding Method, Advantages and Disadvantages,* IEEE's IAS' I&CPS Technical Conference Detroit, MI Conference Record, May 1990.

32. Donald W. Zipse, *1987 Ampacity Tables - De-mystifying the Myths and Tutorial,* IEEE's IAS' IA Trans. Sep/Oct 1989 at.)

33. Donald W. Zipse, *1987 Ampacity Tables - De-mystifying the Myths and Tutorial,* IEEE's IAS' PCIC Technical Conference, Dallas, TX. , Sept 1988, IAS/PCIC-88-8, at pp. 257-268

34. Donald W. Zipse, *Grounding for Process Control Computers and Distributed Control Systems: The National Electrical Code and Present Grounding Practice,* IEEE's IAS' IA Trans., May/June 1987 Vol. IA-23, No. 3, at pp. 417-419.

35. Donald W. Zipse, *The National Electrical Code and Present Grounding Practices,* IEEE's IAS' PCIC Technical Conference, Sept. 11, 1985, Conference Record pp. 307-312

36. Donald W. Zipse, *The National Electrical Code - How to Propose Changes and the Procedures Followed,* IEEE's IAS' I&CPS Technical Conference, May 1984, Conference Record, pp 210-216.

37. IEEE Transmission & Distribution Conference New Orleans Panel discussion Cables

38. Donald W. Zipse, *Personal Computers - What To Look For and What To Look Out for,* IEEE's IAS Technical Conference, Oct 1984, Conference Record, pp 373-379.

39. Donald W. Zipse, *Multiple Neutral to Ground Connections,* IEEE's IAS' I&CPS Technical Conference, Denver, CO, May 1972.

Technical Papers Under Development

None at the present time

CAREER SUMMARY

Electrical Forensics, LLC, Rehoboth Beach DE 2007- Present

Electrical Forensic Specialist. Providing forensic electrical expert services to the legal community, including both plaintiff and defense attorneys. Types of legal claims include personal injury, construction litigation and property damage. Finding causes of electrocution and/or electrical shock to humans, dairy cows and pigs a primary concern.

Experts Plus Forensics, LLC, Wilmington, DE 2004 – 2008

Electrical Forensic Specialist. Providing forensic electrical engineering expert services to the legal community, including both plaintiff and defense attorneys. Types of legal claims include personal injury, construction litigation and property damage.

Zipse Electrical Engineering, Inc. – Independent Consultant,

West Chester, PA 1993 - 2006

Electrical Engineering Consultant and Forensic Expert. Provided engineering consulting and educational services to customers in the commercial, industrial, and legal communities, including forensic electrical engineering expert services to the legal community, including both plaintiff and defense attorneys. Types of legal claims include wrongful death, construction litigation and property damage.

Discovery Systems, Inc., West Chester, PA 1998 - 2004

Electrical Engineering Specialist. Providing forensic electrical engineering expert services to the legal community, including both plaintiff and defense attorneys. Types of legal claims include personal injury, construction litigation and property damage.

FMC Corporation, **Corporate Engineering Department,** Princeton, NJ

1979 - 1993

Electrical Engineering Consultant. Performed comprehensive electrical engineering project responsibilities throughout the corporation, which operates over fifty facilities worldwide. Specific activities included designing electrical facilities, specifying equipment, start-up commissioning and maintenance. Inspected existing facilities to assure compliance with electrical requirements of OSHA, NEC and NESC codes, together with IEEE standards and recommended practices.

ICI Americas, Inc., **Corporate Engineering Department,** Wilmington, DE

1964 - 1979

Senior Electrical Engineer. Designed electrical systems, estimated and specified electrical equipment, oversaw construction, participated in start-up activities, developed and monitored maintenance. Performed electrical inspections throughout the corporation. Activities included developing the electrical concept and design for a 450-acre chemical facility in Bayport, Texas, and developing an energy saving motor-generator system for compressors.

Cutler-Hammer, Inc., Media, PA 1961 - 1964

Electrical Sales Engineer. Provided application engineering and sales services for power distribution and motor control equipment for the chemical companies located in Wilmington, DE. Developed innovative mounting configurations for bus bar ducts used in power distribution systems for Du Pont's fiber spinning plants.

E.I. DuPont Co., Inc., Engineering Test Center, Newark, DE 1960 - 1960

Student Electrical Engineer. Assured electrical installations at the facility compiled with NEC requirements and verified power metering.

Baltimore & Ohio Railroad, Baltimore MD 1959 - 1959

Student Electrical Engineer, Signal Department. Assisted in the installation of automated Centralized Traffic Control from west of Baltimore to north of Philadelphia.

Peter D. Furness Electrical Co., Wilmington, DE 1957 - 1957

Electrician. Installed electrical wiring and devices in residential homes and commercial facilities in accordance with NEC requirements.

Williamson Free School of Mechanical Trades, Media, PA 1950 - 1953

Resident Student. Williamson Trade School is a three-year intensive course in power plant operation on a self-contained campus with its own water wells; power generating system, and waste disposal system, all operated by residence students. Personally attended to coal and diesel power generation systems and electrical installations, and performed design, procurement and maintenance activities.