

## **CURRICULUM VITAE OF TIMOTHY B. DUGAN, P.E.**

April 2024

### **I. General Information**

A. Position: Senior Electrical Engineer  
Semke Forensic  
154 Hughes Lane  
St. Charles, Missouri  
Telephone: 636-896-9995

### **II. Professional Summary**

A. Education: Bachelor of Science  
Electrical Engineering  
University of Missouri  
Columbia, Missouri  
1999

B. Experience:

March 2021 to Present

Position: Senior Electrical Engineer  
Semke Forensic  
154 Hughes Lane  
St. Charles, Missouri

Responsible for electrical engineering projects including failure analysis of components and equipment to determine their role in an event or fire, evaluation of electrical shock and electrocution incidents, assessment of electrical equipment damage due to lighting strikes or water intrusion, and review of electrical designs and installations for construction defects.

September 2019 to February 2021

Position: Chief Electrical Engineer  
Industrial Ally, Inc.  
Chesterfield, Missouri

Primary engineering duties and responsibilities: Electrical project lead engineer for industrial projects, studies, and capital cost estimates. Conceptual, basic/front-end, and detailed engineering design of industrial cement manufacturing plants: preparation of electrical P&ID's, one-lines, schematics, electrical plans, cable tray layouts, raceway/cable schedules, equipment specifications, and capital cost estimates.

Secondary duties and responsibilities: electrical engineering department budgeting, planning, and scheduling; development of preliminary scopes of work; monitoring of project deliverable status; technical leadership, assistance, and mentoring of departmental staff.

August 2017 to September 2019

Position: Electrical Engineer  
Semke Forensic  
154 Hughes Lane  
St. Charles, Missouri

Responsible for electrical engineering projects including failure analysis of components and equipment to determine their role in an event or fire, evaluation of electrical shock and electrocution incidents, assessment of electrical equipment damage due to lighting strikes or water intrusion, and review of electrical designs and installations for construction defects.

May 2008 to July 2017

Position: Chief Electrical Engineer & Electrical Department Manager  
(May 2009 to July 2017)  
Penta Engineering Co. LLC  
St. Louis, Missouri

Position: Assistant Electrical Department Manager  
(May 2008 to April 2009)  
Penta Engineering Co. LLC  
St. Louis, Missouri

Primary engineering duties and responsibilities: Electrical project lead engineer for industrial projects, studies, and capital cost estimates. Conceptual, basic/front-end, and detailed engineering design of industrial cement manufacturing plants: preparation of electrical P&ID's, one-lines, schematics, electrical plans, cable tray layouts, raceway/cable schedules, equipment specifications, and capital cost estimates. Field services for industrial cement plants/terminals: duties included process automation and programming procurement, equipment commissioning, startup assistance, and client/contractor interface.

Secondary duties and responsibilities: electrical engineering department budgeting, planning, and scheduling; development of preliminary scopes of work; monitoring of project deliverable status; technical leadership, assistance, and mentoring of departmental staff.

August 2007 to April 2008

Position: Electrical Engineer  
BIS Frucon Engineering, Inc.  
Ballwin, Missouri

Electrical Engineer responsible for design review and checking for various Cement Industry projects in both Missouri and Florida.

Project Engineer responsible for medium voltage power distribution design for new 4,650stpd cement kiln line. Project included medium voltage (5kV) feeder sizing and underground distribution infrastructure design from main 4000A switchgear to each process department electrical room, via new underground conduit ductbank system complete with pre-cast concrete manholes.

March 2000 to July 2007

Position: Electrical Engineer  
Penta Engineering Corp.  
St. Louis, Missouri

Electrical Project Lead for Cement Industry Projects, 2002 – 2007.

Responsible for major project electrical designs including the following: contractor construction and bid drawing packages, electrical equipment and instrumentation specifications, overall management of electrical design, and checkout/startup assistance as needed.

Electrical Project Engineer for Cement Industry Projects, 2000 – 2002.

Direct responsibility for preparation of construction documents including P&ID's, one-lines, schematics, plans, risers, schedules, and miscellaneous detail drawings. Responsible for automation and field checkout/startup assistance for design-build cement terminal projects, including ladder logic PLC programming and graphics development for HMI touch-screen displays utilizing Allen-Bradley SLC's, PLC's, and PanelView Terminals.

June 1999 to January 2000

Position: Maintenance Advisor – Body Shop  
General Motors Truck Group  
Wentzville, Missouri

Performed first-line shift supervision of maintenance personnel. Responsible for the effective use of personnel, equipment, and material to meet production schedule while maintaining high quality standards for GMT600 van production. Responsible for the timely maintenance of tooling, robots, welders, sealers, and other automated equipment associated with product manufacturing. Performed electrical and mechanical troubleshooting, as well as manpower assignments and overtime scheduling.

### **III. Seminars and Technical Courses Attended**

- 1996 – Electrical Overcurrent Protection – IEEE Fall MoCon, St. Louis, Missouri
- 2000 – Understanding Motor Controls – St. Louis Electrical Board
- 2000 – Programmable Logic Controllers I – St. Louis Electrical Board
- 2001 – New Miner Training – Mine Safety and Health Administration (MSHA)
- 2002 – Beginning & Intermediate Visual Basic – University of Missouri St. Louis
- 2002 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2003 – Understanding the National Electrical Code – St. Louis Community College
- 2003 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2004 – Adv. Electrical Overcurrent Protection – IEEE MoCon, St. Louis, Missouri
- 2004 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2005 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2006 – System Reliability Seminar – Square D, St. Louis, Missouri
- 2006 – IEEE-IAS/PCA Cement Industry Technical Conference – IEEE, Phoenix, Arizona
- 2006 – SKM Systems Analysis Standard & Advanced Training Courses
- 2006 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2007 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2008 – Grounding of Electrical Systems – Electrical Board of MO & IL (EBMI)
- 2008 – Firestopping – Electrical Board of MO & IL (EBMI)
- 2008 – Arc Flash Hazard Overview – Electrical Board of MO & IL (EBMI)
- 2008 – Analysis of Changes 2008 NEC – Electrical Board of MO & IL (EBMI)
- 2008 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2009 – Energy Management Seminar – Square D, St. Louis, Missouri
- 2009 – Arc Flash Hazards and NFPA 70E 2009 – Eaton, St. Louis, Missouri
- 2009 – Power Factor and Harmonics – Eaton, St. Louis, Missouri
- 2009 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2010 – UPS 101 – Eaton, St. Louis, Missouri
- 2010 – Energy Management / Safety / Power Reliability Solutions / Protecting Sensitive Equipment – Eaton, St. Louis, Missouri

- 2010 – Surge Protection – Eaton, St. Louis, Missouri
- 2010 – Photovoltaic Systems Design – Eaton, St. Louis, Missouri
- 2010 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2011 – Power Quality Grounding – Eaton, St. Louis, Missouri
- 2011 – IEEE-IAS/PCA Cement Industry Technical Conference – IEEE, St. Louis, Missouri
- 2011 – Grounding – Eaton, St. Louis, Missouri
- 2011 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2012 – Harmonics & Energy Efficiency – Eaton, St. Louis, Missouri
- 2012 – Protection of Electrical Systems – Electrical Board of MO & IL (EBMI)
- 2012 – Arc Flash Calculations Processes & Pitfalls – Electrical Board of MO & IL (EBMI)
- 2012 – General Power Quality – Eaton, St. Louis, Missouri
- 2012 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2013 – Overcurrent Protection – Eaton / Cooper Bussmann, St. Louis, Missouri
- 2013 – Introduction & Intermediate Applications of MS Project – University of Missouri St. Louis
- 2013 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2014 – Electrical Testing Equipment – Electrical Board of MO & IL (EBMI)
- 2014 – How Different Equipment Types Affect Arcing Faults – Electrical Board of MO & IL (EBMI)
- 2014 – Analysis of Changes 2014 NEC – Electrical Board of MO & IL (EBMI)
- 2014 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2014 – Advanced Electrical Overcurrent Protection – IEEE Spring MoCon, St. Louis, Missouri
- 2015 – Power Quality / Integrated Equipment / Selective Coordination – Square D, St. Louis, Missouri
- 2015 – Transformers Regional Technical Seminar – SPX Waukesha, St. Louis, Missouri
- 2015 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2016 – A Fresh Perspective on Power System Studies – Eaton, St. Louis, Missouri
- 2016 – Grounding vs. Bonding, 2014 NEC Art. 250 – MikeHolt.com
- 2016 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2017 – Arc Flash Awareness – Electrical Board of MO & IL (EBMI)
- 2017 – Life After 12,500 Volts – Electrical Board of MO & IL (EBMI)
- 2017 – Electrical Equipment Preventative Maintenance – Electrical Board of MO & IL (EBMI)
- 2017 – Analysis of Changes 2017 NEC – Electrical Board of MO & IL (EBMI)
- 2017 – Equipment SCCR & Selective Coordination – Eaton / Cooper Bussmann, St. Louis, Missouri
- 2017 – Annual Refresher – Mine Safety and Health Administration (MSHA)
- 2018 – Fire & Arson Conference – IAAI, Missouri Chapter, Springfield, Missouri
- 2018 – Investigation of Gas and Electric Appliance Fires – Fire Findings
- 2019 – Fire & Arson Conference – IAAI, Illinois Chapter, Caseyville, Illinois
- 2020 – Annual Refresher – Mine Safety and Health Administration (MSHA)

- 2020 – The Do’s and Don’ts of Specifying Lightning Protection Systems – Electrical Board of MO & IL (EBMI)
- 2020 – Critical Power Systems – Electrical Board of MO & IL (EBMI)
- 2020 – Grounding of Electrical Systems – Electrical Board of MO & IL (EBMI)
- 2020 – Analysis of Changes 2020 NEC – Electrical Board of MO & IL (EBMI/IAEI)
- 2020 – SKM Systems Analysis Power System Applications – Protection & Coordination
- 2020 – SKM Systems Analysis, Power System Applications – Arc Flash Evaluation
- 2021 – Fire & Arson Conference – IAAI, Missouri Chapter, Springfield, Missouri
- 2021 – Fire & Arson Conference – IAAI, Illinois Chapter, Caseyville, Illinois
- 2022 – Fire & Arson Conference – IAAI, Missouri Chapter, Springfield, Missouri
- 2023 – NFPA-70E 2021 – Electrical Safe Work Practices Seminar
- 2023 – Analysis of Changes 2023 NEC – Electrical Board of MO & IL (EBMI/IAEI)

#### IV. **Professional Affiliations**

- Institute of Electrical and Electronics Engineers (IEEE)
- International Association of Arson Investigators (IAAI)
- International Association of Arson Investigators (IAAI) – Illinois Chapter
- International Association of Arson Investigators (IAAI) – Missouri Chapter
- National Association of Fire Investigators (NAFI)

#### V. **Professional Registration**

Registered Professional Engineer in the States of Arkansas, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Missouri, Oklahoma, Pennsylvania, Tennessee, Utah, and Wisconsin

#### VI. **Presentations**

1. Timothy B. Dugan, P.E. “Reducing The Flash Hazard” presented at the following conferences:
  - IEEE-ISA/PCS Cement Industry Technical Conference – April 2006, Phoenix, Arizona
  - IEEE-IAS/PCA West Coast Subcommittee Technical Conference – September 2007, San Antonio, Texas
2. Timothy B. Dugan, P.E., and Jack L. Nevins. “Electrical Concepts At The Fire Scene” presented to the Olathe Fire Department, Community Risk Reduction Section, 4-Hour Public Investigator Training Seminar, Olathe, Kansas

**VII. Publications**

Timothy B. Dugan, P.E., "Reducing The Flash Hazard," in *IEEE-IAS/PCA 2006 Cement Industry Technical Conference Record*, April 2006.