CURRICULUM VITAE

Personal: Anthony S. Boom, Electrical Engineer, and Expert Witness – Cetek Inc. 2235 W 76th Street, Davenport Iowa, 52806. Phone: 309-736-9844. Email: tony.boom@cetekinc.com

Experience: Electrical Engineer Consultant and Expert Witness

2022 - Present Cetek Inc. 2235 W 76th Street, Davenport Iowa, 52806

- Teach classes on PLC Escalator Controls.
- Lead DFMEA investigation of new Next Gen PLC Escalator Control System.
- Provide onsite, WMATA transit in DC, check out of new HD Escalator Controller and braking system.
- Provide Expert Witness inspection and analysis of the operation of a KONE TM110 escalator controller operation in Philadelphia.
- Design new Dynamic Braking Controller for KONE INC escalator in Coal Valley IL.
  - Investigate Escalator Code requirements.
  - Develop Sequence of operation.
  - Create Software Flow Chart and Wiring Diagrams
  - Test Control system to verify operation and code compliance.
- Onsite support at SeaTac Airport in Seattle WA to correct issues with some KONE TM120 escalator sleep mode controllers and their synchronizer feature.
- Write six different test procedures for code required EMC testing of the new KONE Next Gen PLC Escalator Controller. Tests include Immunity to Electrostatic Discharge, Radio Frequency Electromagnetic Fields, Electrical Fast Transients - Common Mode, Surges Line to Line and Line to Line, Radio Frequency Common Mode interference, and Voltage Dips & Voltage Interruptions.
- Provide Expert Witness Affidavit for KONE Transit Escalator in NYCT system.
  - Review all depositions and investigation reports.
  - Investigate escalator control circuitry logic.
  - Investigate escalator PLC control software program logic.
  - Investigate LiftNet remote monitor sequence of operation and report.
  - Provide Affidavit and respond to Plaintiffs opposition to summary judgement.

Senior Chief Design Electrical Engineer

2009 - 2022 KONE Escalator Division, 2266 U.S. Highway 6, Coal Valley, IL

- In addition to Senior Electrical Engineer work listed below:
- Train other electrical engineers.
- Manage production electrical engineering projects.
- Oversee work of electrical engineering staff.
- Continue to enhance and improve existing electrical controls for escalators.
- Create electrical abstract from customer specifications and code requirements.

Senior Electrical Engineer

2002 - 2009 KONE Escalator Division, 2266 U.S. Highway 6, Coal Valley, IL

- Engineering work include Designing custom power supply pc boards, cpu boards, brake controller boards, motor control circuits, relay logic, PLC controls, designing software specifications, sizing transformers, power factor correction capacitors, motor contactors, relays, over current protection, wire, etc.
- Controls include embedded microcontrollers, PLC's, AC Drives, Regen units, Soft starters, various displays - custom and standard panel views.
- Develop and write custom software for PLC controllers, HMI displays, and DeviceNet networks for escalators.
- Develop Diagnostic guides for Escalator controllers and braking systems.
- Develop Technical Bulletins for set up, repair, replacement, and retrofit of any and all aspects of the escalator electrical control system.
- Oversee CSA certification of escalator control systems.
- Oversee CSA certification of KONE escalator Brake systems.
- Provide electrical technical support for Escalator field and factory technicians.
- Teach Maintenance and Troubleshooting classes to customer maintenance personnel.

Engineering Manager

1999 - 2002 KONE Escalator Division, 2266 U.S. Highway 6, Coal Valley, IL

- Supervised Mechanical and Electrical Engineers, a Project manager, and draftsmen in the Heavy Duty (HD) Escalator Engineering group.
- Performed duties as the Senior Electrical Engineer for KONE Escalator Engineering.
- Led weekly engineering meetings to clarify goals and objectives as well as obtaining status of schedule and progress of assignments.
- Led monthly meetings with engineers and shop personnel regarding problems experienced on the shop floor. Assignments were made to rectify the identified problems.
- The entire HD Escalator electrical system was redesigned. As a result of the redesign, significant costs were cut from the overall cost of the Heavy-Duty Transit electrical package. Savings included materials and factory labor. In addition to the factory savings, field wiring time dropped by 75% on the 1st unit installed.
- Oversee work done by other electrical engineers within the plant.

Electrical Engineer

1991 - 1999 KONE Escalator Division, 2266 U.S. Highway 6, Coal Valley, IL

- Similar work as Senior Electrical Engineer but to a lesser degree of experience.

Electrical Engineering Technician

1988 - 1991 KONE Escalator Division, 2266 U.S. Highway 6, Coal Valley, IL

Case Work: Includes onsite Inspections, investigation work, Affidavit's - written or verbal, and testimony in court.

- Early 1990's: High rise escalator at baseball park (Maryland): Alleged escalator run away.
- 2003: High rise escalator at baseball park (Colorado): Alleged escalator run away.
- 2013: High rise escalator at large convention center (California): Alleged escalator run away.
- 2013: High rise escalator at large convention center (Texas): Alleged escalator brake failure.
- 2014: High rise escalator at large convention center (Missouri): Alleged escalator over speed.
- 2021: Escalator at casino (Nevada): Fall due to alleged unexpected stop on escalator.
- 2022: Escalator at department store (Pennsylvania): Alleged injury on escalator.
- 2023: High rise transit escalator (New York): Ongoing.
- 2023: Public transportation escalator (New York): Ongoing.

Areas of Expertise:

- Montgomery Escalator control systems from the 1980's.
  - HV Safety Circuit.
  - Safety devices
  - Open loop PM Brake controller, setup, and adjustment.
  - PM Brakes – Dual and Single

- Montgomery Escalator 24V and 24V-B Controller from the 1990's.
  - LV Class 2 Safety Circuit
  - Safety Devices including the handrail speed sensor and Missing Step detector.
  - Tachometer based Closed Loop PM Brake Controller, setup, and adjustment.
  - PM Brakes Dual and single

- Montgomery Escalator "S" Controller from the 1990's.
  - LV Class 2 Safety Circuit
  - Safety Devices including the handrail speed sensor and Missing Step detector.
  - Encoder based Closed Loop PM Brake Controller, setup, and adjustment.
  - PM Brakes Dual and single.

- KONE 501 Escalator controller from 2000 to current.
  - LV Safety Circuit
  - Safety Devices including the handrail speed sensor and Missing Step detector.
  - Encoder based Closed Loop PM Brake Controller, setup, and adjustment.
  - PM Brakes Dual and single.

- KONE PLC Escalator controllers for various Transit Authorities including, but not limited to:
  - NY, PATH, NYCT, WMATA, SEPTA, CTA, DART, BART, SeaTac

- PLCs utilized in the KONE PLC Transit controller include:
  - AB SLC5/03, AB MicroLogix 1500, AB Compact Logix.
- Escalator Sleep Mode Controllers with Inverter Bypass.
  - Operation of new Synchronizer

- Tandem interlock controllers utilizing an AB MicroLogix PLC
- Torque controller for high rise escalator auxiliary handrail drives.

- Extensive knowledge of the setup and control of the following escalator brake systems:
  - Warner PM Brakes 8" and 12" Pin Style
  - Warner PM Brakes 8" and 12" Spline Style
  - O&K RTV brakes
  - Stromag Brakes as utilized on external drive Transit Escalators.
  - NORK and KRON Brakes as utilized on external drive and chain drive Escalators.
  - Mayr Brakes as utilized on external drive Transit Escalators.
  - Pawl Brakes as utilized as a main drive shaft brake on Transit and TM Escalators.
  - Matrix Brakes as utilized as main drive shaft brake on Transit Escalators.
- Escalator Safety Code A17.1, A17.3, A17.5
- National Electrical Code as pertaining to escalators.
- EMC Testing for Escalator Control systems.

Patents:

- Three of the patents that I received at KONE include but not limited to:
  - Safety Switch and Method of Checked Redundancy.
    - US 7,407,048 B2
    - Utilized in all of the current transit escalator safety circuits.
  - Apparatus and Method For Variable Torque Braking of Escalator and Moving Walkways.
    - US 7,950,514 B1
  - Method and Conveyor System
    - US 8,853,992 B2
    - This method is utilized in the KONE Sleep Mode Controller with inverter bypass.

Trade Secret:

- Means of reducing or eliminating escalator pulsing on high rise escalators.

Education:

BSEE in Electronics Engineering Technology January 1992 GPA:3.75
Grantham College of Engineering/ Slidell, Louisiana
In addition to credits transferred from Black Hawk College and Western Illinois University the following courses were taken at Grantham College Engineering in order to receive the BSEE degree:

Course	No.	Credit Hours
Control Systems	490	5
Systems & Signal Theory	485	6
Designs, Patents, & Liability	461	3
Solid State Circuit Analysis	451	4
Circuit Analysis	430	2
Math: Laplace & Fourier Transf	420	2
Advanced Microprocessors	315	3
Physics	351	3
Analog Integrated Circuits	321	3
Technical Report and Writing	360	2
Concepts In Mechanics	330	3
Calculus w/Dif. E. Q.	310	5
Advanced electronic com sys	281	3

Microprocessor Sys Eng	261	3
Programming In Basic	351	3
Economics	245	3
Technical Math	241	3
Intro to Computer Technology	220	3
Technical Math	211	3
Technical Math	141	2
Antennas & Transmission Lines	135	2
Electronic Communication Sys	125	3
Electronic devices	120	5
Electricity W/Math	110	8

AAS in Electronics Technology Process Control May 31, 1988, GPA:4.0
Black Hawk Community College/ Moline, Illinois
In addition to credits transferred from Western Illinois University the following courses were taken at Black Hawk Community College to receive the AAS degree:

Course	No.	Credit Hours
Advanced electronic app's	ET230	2
Industrial Power Distribution	ET204	3
Process control systems	ET203	4
Microprocessors	ET205	5
Instrumentation fundamentals	ET210	4
Linear Integrated Circuits	ET200	5
Logic Circuits	ET220	4
DC & Circuits	ET103	5
Electronic Symbolic Drawing	ET101	1
Hydraulics and pneumatics	MT210	3
Chemistry	110	4
Sociology	100	3

Studied Math & Physics Aug 1974 through December 1975 GPA:3.3
Western Illinois University/ Macomb Illinois

Course	No.	Credit Hours
Analytic Geometry & Calculus	133	4
University physics I	197	4
Psychology	100	4
English	101	3
English	102	3
Analytic Geometry & Calculus	134	4
Computer Programming (Fortran)	281	4
University physics II	198	4
Analytic Geometry & Calculus	231	4
University physics III	199	4
Linear Algebra	311	4

Continuing Education:

- AB PLC Training Course CCP299: " RSLogix 5000 Level 1: ControlLogix Fundamentals and Troubleshooting"/ December 2010
- Van Meter Training Course DVN102 "Implementing a DeviceNet System"/ April 2006
- Computer Networking Course NETW 120/ Fall 2004/ Black Hawk Community College/ Moline, Illinois
- Rockwell Training Course CCA161: "Configuring and Starting Up a PowerFlex 700 AC Drive."/ September 2003
- Rockwell Training Course CCA162: "Configuring a PowerFlex 700 AC Drive to Communicate on a DeviceNet Network."/ September 2003
- Rockwell Training Course CCA163: "Maintaining and Troubleshooting a PowerFlex 700 AC Drive."/ October 2003
- AB PLC Training Course CCPS45: " Advanced Maintenance and Trouble Shooting a SLC 500 System Using RSLogix series Software of the SLC5/03"/ May 2003
- AB PLC Training Course CCPS42: "SLC500 Advanced Programming Using RSLogix series Software"/ April 2003
- Van Meter Training Course INE101 "Industrial Networking using Ethernet"/ December 2002
- AB PLC Training Course CCPS41: "SLC500 Programming Using RSLogix series Software"/ September 2002
- AB PLC Training Course CCP163: Designing and configuring a DeviceNet Network/ August 2002
- AB PLC Training Course CCP422: "Maintaining & Trouble Shooting A DeviceNet Network Using RSNETWorx Software"/ May 2002
- AB PLC Training Course CCP196: Developing PanelView Applications/ April 2002
- AB PLC Training Course CCPS43: "Troubleshooting and Maintenance of the SLC5/03"/ January 2002
- PLC training "GE Fanuc Cimplicity HMI Introduction"/ July 2001
- PLC Programming "GE Fanuc VersaMax with VersaPro"/ April 2001
- "C++" Programming/ Fall 1998/ Kennedy-Western University/ Cheyenne Wyoming
- "C" Programming Course CIP 247/ Fall 1994/ Black Hawk Community College/ Moline, Illinois

Software Proficiency:

AutoCAD, OrCad, WORD, EXCEL, MS Project, & ACCESS, RSLogix500, RSNetWorx For DeviceNet, PanelBuilder32, Studio5000

Outside Interests: Teaching Flute and Playing flute in the Symphony Orchestra, church, and family.

References: Available upon request.