

Electrical Engineering Services
Electrical engineering, commercial-grade specifications and engineering studies for a wide range of applications. Design techniques for radioactive environments and hazardous locations including purging, isolation, and explosion-proof enclosures.

Energy Generation, Transfer and Storage
Generator systems, shore power design, festoon design, slip ring specifications, cable reels, lithium-ion batteries, inductive power transfer systems.

System Parameters
Mechanical and electrical calculations necessary to define and verify machine design and motor sizing.

Motion Control
Siemens SIMOTION, Galil, Kollmorgen, Pacific Scientific, Fenner, Compumotor, Emerson, Allen Bradley

Languages / Programming Environments
Allen Bradley RSView32, GML, Factory Link, BASIC, FORTRAN, Ladder Logic

PLC Programming
Siemens S7, Allen Bradley Control Logix, PLC5, SLC500, SLC150 Processors, Texas Instruments 565, 530T Processors, Mitsubishi FX, AnS series+ Processors, GE Fanuc 90 series, series1+ Processors, Modicon 184 -984 Processors, Square D, PLC Direct and others.

AutoCAD
Production of all drawings required for a given project including electrical schematics, panel layouts, interconnection diagrams, site plans, conduit & wire schedules, conduit arrangement, etc.

Drives and Motors
Selection, integration and specification of Siemens, Yaskawa, Baldor, Mitsubishi, Allen Bradley and Kollmorgen drives, AC squirrel cage, AC vector duty, wound-rotor, DC, brushless DC and stepper type motors, pneumatics and hydraulics. Also, “old-school” controls such as Synchro-ties, Amplidynes, M-G sets and constant-potential DC controls commonly found on older cranes, bridges and other machinery.

Sensors
Magnetic proximity, photoelectric sensors, radar level detection, LVDTs, RTDs, thermocouples, limit switches.

Instrumentation
Pressure, flow and temperature transmitters, differential quadrature encoders, tachometers.

Education - B.S., Electronics Technology from Indiana State University, 1986
Continuing Education – Arctic Regions Engineering Short Course, January, 2005
Licensing - Professional Engineer, Electrical - WA (license # 33298), AK (license # 11167), OR (license # 88870PE), MT (license # 30657PE), ID (license # 15869), NCEES Records facilitate expedient licensing in additional states
Professional Affiliations – Senior Member IEEE, Industrial Applications Society



Automation & Control Engineering

Delivers High-Quality:

- Commercial-Grade Specifications
- Power Distribution Design
- Engineering Studies
- Load Studies
- Arc Flash Studies
- Machine and Process Controls
- Electrical Noise Abatement
- Energy Savings Analysis
- Control System Design
- FMEA Analysis
- MV Motor Protection Design
- Programming and SCADA



PAID MOUNT
UTILITY TRANSFORMER
RECOMMENDED SPECIFICATIONS
SHOWN AND INSTALLED BY UTILITY

MAIN SERVICE DISTRIBUTION PANEL
1000V, 480V, 3 PHASE, 3W, 3W/4W

75HP GRAVING DOCK PUMPS 1-5
DRAW SHAFT EACH IN LOCKED
ROTOR CONDITION

THE GRAVING DOCK MOTOR CANNOT
BE STARTED UNTIL THE PUMP
IS STOPPED

ANGEL'S GRAVING DOCK
ONE-LINE
POWER DISTRIBUTION DIAGRAM
DATE DRAWN SCALE SHT. DLT. JOB NO.
7/22/03 10' CC-01

"Bill Westgard has provided engineering support services for our Tacoma plant for approximately 15 years. He recently prepared a comprehensive engineering study outlining upgrade/retrofit options for our converted heavy-lift Clyde revolver crane and partnered with a mechanical engineering firm to provide initial concept design study and cost analysis of a custom barge unloader. Bill/A&CE helped us design additions to our shredder out-feed sorting system, add required PLC I/O and performed necessary ladder logic programing. Bill also has exceptional trouble shooting skills. When we've had issues with our PLC controlled ship loading crane at 3am and other systems around the plant he has always been able to get us back in production."

- Richard McInville, Maintenance Manager, Schnitzer Steel Tacoma

"Pacific Northwest National Laboratory (PNNL) engaged Automation & Control Services (Bill Westgard) to provide electrical engineering for a remediation system upgrade at a northwest Army facility. The project required quick response for the engineering and was a significant project for the Army facility and Army headquarters. The electrical engineering was completed in a professional and timely manner and assisted PNNL in providing a quality product to the client. Client response to the electrical engineering portion of the job was favorable. PNNL would not hesitate to seek engineering support from Automation & Control Services in the future."

- Michael J. Truex, Sr. Program Manager, Pacific Northwest National Laboratory

"Bill is one of the brightest engineers I've come across in my 21 year career. He truly welcomes complex engineering challenges."

- Mike P. Matlack, Tool Design Engineering, Boeing, IDS Phantom Works

"A&CS provided a timely and well thought out power distribution and control system design package which included all necessary drawings, schematics and programming for a graving dock project. The project was frequently interrupted by owner or site mandated changes, and the A&CS effort was maintained in a cooperative manner assisted by good communications with all parties, including owners, vendors, municipalities and the installing contractor."

- Craig Wollam, Superintendent, General Construction Company

Automation & Control Engineering, LLC provides high-quality electrical engineering services, turnkey automation systems and programming for a wide variety of applications. Projects include:

- Consulting services for a 1.5MVA substation upgrade and new transformer specifications for Fluor Global Services / Alcoa
- Graving Dock electrical specifications, power distribution and controls design for Kiewit-General Construction Company and WSDOT
- Whirley crane rehabilitation study investigating technical approaches and associated economic outcomes for controls retrofit options. Researched grant money opportunities for conversion from diesel genset to shore power
- Engineering study and commercial grade specifications for USCG portal cranes rehabilitation project
- Specifications, electrical power distribution, controls design, turnkey controls and programming services for Battelle Labs for an environmental ground water remediation system
- Electrical power distribution, controls design and specifications for a second pump & treat environmental remediation system and design of system expansion
- Multi-axis motion control systems for Medtronic Corporation that incorporate data logging for medical device testing
- Two turnkey positioning control systems for Boeing that splice the F/A 18-E/F forward and aft fuselage together

Other control systems design experience in a variety of industries such as municipalities, boiler control, automotive, pharmaceutical and forest product industries as well as an extensive crane and machine control background has helped developed a wide range of application techniques and skills.

A&CE can also provide trouble shooting assistance and make recommendations for modifications for various existing systems.

A&CE Clients Include:

- Hardesty & Hanover
Marine Industries NW
NC Power Systems
Concrete Technology
Schnitzer Steel
Kiewit-General Construction Company
Battelle - PNNL
Versar
Fluor Global Services / Alcoa
Washington State Ferries
The Boeing Company
Whiting Services
AeroGo
The Robbins Company
Landau Associates
TRW
Brown & Root
Washington Crane & Hoist
Spinal Dynamics Corporation
Medtronic Incorporated
Flow International
Fort James Corporation
Paragon Trade Brands
Baldor Electric Company
Casper Phillips & Associates



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Electrical Engineering, Turnkey Control Systems & Programming

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