

Electrical Engineering Services

Licensed electrical engineer in Washington and Alaska. Electrical engineering, studies and specifications for a wide range of applications. Design techniques for radioactive environments and hazardous locations including purging, isolation, and explosion-proof enclosures.

System Parameters

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

Motion Control

Galil, Kollmorgen, Pacific Scientific, Fenner, Compumotor, Emerson, Allen Bradley.

Languages

Allen Bradley RSView32, GML, Factory Link, BASIC, FORTRAN.

PLC Programming

Allen Bradley 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, C&W schedules, conduit arrangement, etc.

Drives and Motors

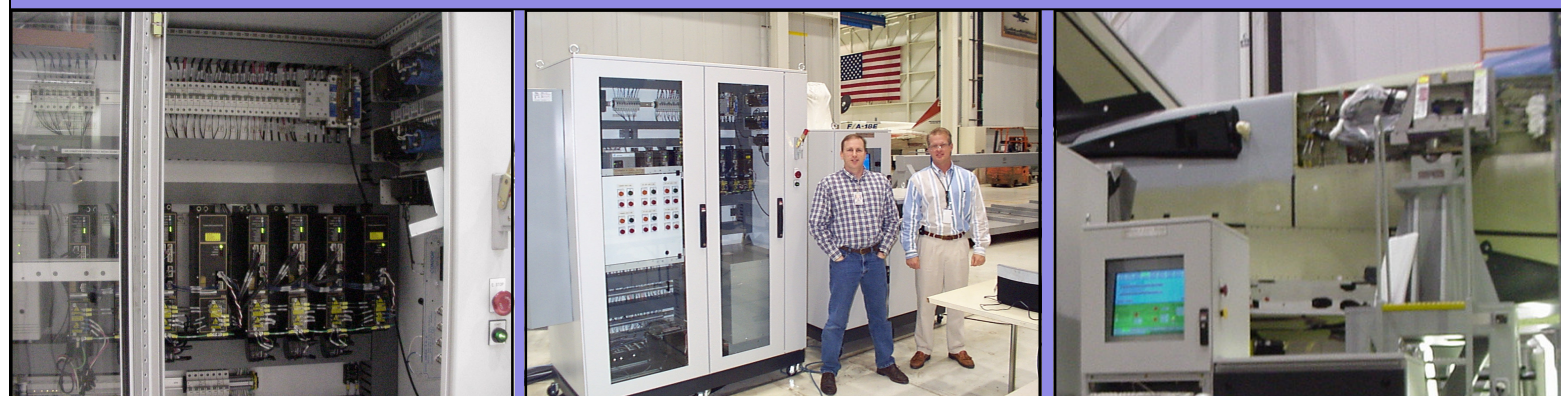
Selection, integration and specification of Yaskawa, Baldor, Mitsubishi, Allen Bradley and Kollmorgen drives and AC squirrel cage, AC vector duty, wound-rotor, DC, brushless DC and stepper type motors, pneumatics and hydraulics. Also, "old-school" controls such as Synchro-ties, Amplidynes, M-G sets and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

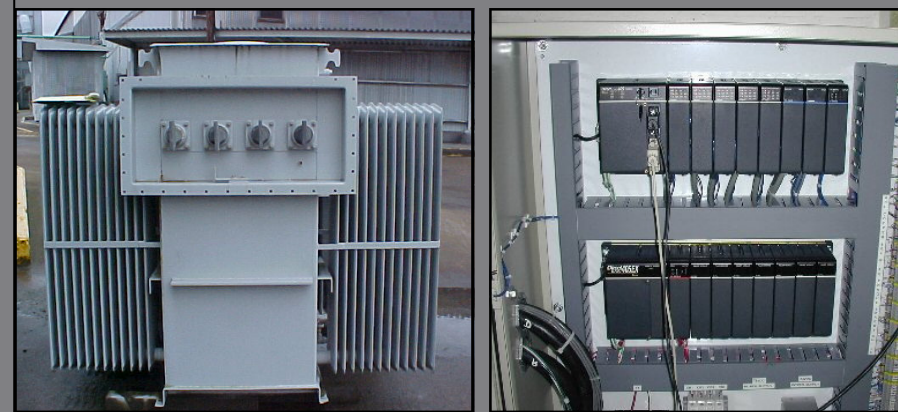


Provides a wide range of engineering services:

- Engineering studies
- Specifications
- Power Distribution
- Machine and Process Controls
- Electrical Noise Abatement
- Energy Savings Analysis
- Crane Control System Design
- FMEA Analysis
- MV Motor Protection

And control systems including:

- Knife Roll Cutters
- Palletizing
- Positioning and Motion Systems
- Crane Controls
- Hazardous Location Techniques
- Ultra-High-Pressure Waterjet Controls
- Cut-On-The-Fly Systems
- Tension Control Systems



"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

"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

NOTES:
 25HP GRAVING DOCK PUMPS 1-5
 THE CRANE HOIST MOTOR DRAW 1771 A, 1,085A LOCKED ROTOR

REV.	DATE	DESCRIPTION	BY	REV.	DATE	DESCRIPTION	BY
A	6/04	MOTOR HPs	WG				
-	7/03	ONE-LINE	WG				

Automation & Control Services
 ELECTRICAL ENGINEERING, TURNKEY CONTROLS & PROGRAMMING
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WSDOT PORT ANGELES GRAVING DOCK
 ONE-LINE POWER DISTRIBUTION DIAGRAM
 DATE DRAWN SCALE SHT. 011 JOB NO. 7/22/03 OF GC-01

Automation & Control Services was founded in December 1993 by Bill Westgard, P.E. and became Automation & Control Engineering, LLC. in 2009. The company provides high quality electrical engineering services, turnkey automation systems and programming for a variety of applications which include:

- Engineering study and commercial grade specifications for USCG portal cranes rehabilitation project
- Graving Dock electrical specifications, power distribution and controls design for General Construction Company and WSDOT
- Specifications, electrical power distribution and controls design for Battelle Labs for an environmental remediation system
- Consulting on a 1.5MVA substation for Fluor Global Services / Alcoa
- Multi-axis motion control systems for Medtronic Corporation that incorporate data logging for medical device testing
- Two turnkey positioning control systems for The Boeing Company 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
- Fluor Global Services / Alcoa
- Washington State Ferries
- The Boeing Company
- P&H - Morris Material Handling
- MACTEC Engineering and Consulting
- The Robbins Company
- Hartford Engineering
- TRW
- Brown & Root
- Washington Crane & Hoist
- Spinal Dynamics Corporation
- Medtronic Incorporated
- Flow International



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Automation & Control Engineering, LLC.

- Electrical Engineering
- Control Systems
- Programming
- Turnkey Controls

