



Spring Automation

OVERVIEW

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Who We Are

Spring Automation is a design-build controls firm headquartered in Nashville, TN. We provide material handling controls, software, and installation services to end-users, integrators, and OEMs. Since 2015, our approach to serving begins with listening and learning about you and your business, making us a trusted partner to leading organizations in the material handling industry. Our team of highly experienced engineers, designers, programmers, and leaders will collaborate and assist you in the integration process to meet your needs while providing professional talent. We have a passion for what we do and we desire to help your business succeed.

At Spring Automation, our mission is to provide a team of talented and knowledgeable engineers and leaders to deliver superior service within material handling industry while diversifying our products and maintaining steady growth. As a team and family, we come together to design and implement high-quality controls solutions while maintaining a culture of teamwork and innovation. We work together while fulfilling our purpose: *To Have Fun Building Legacies Together*. We strive for growth through diversification and take pride in everything we do when serving customers, community, or family, forming a win as a team.



Markets

Spring Automation delivers high-quality turnkey controls and software solutions to integrators, OEMs, and end-user across North America.

Spring personnel are skilled in working in the following industries:

Parcel

- High-Speed Sortation
- PLC to WMS Integration
- ID Tracking & Error Reporting
- SCADA & HMI Development
- Data Analytics & Reporting
- PLC Updates & Conversions
- Legacy Part Upgrades
- Expansions & Retrofits



Logistics

- Pick Module System Control
- KPI Collecting & Reporting
- WCS Development
- Print & Apply Integration
- Camera & Barcode Installations
- In-Line Weigh Scale Integration
- Pallet Conveyor Control
- Vertical Lift Control
- AS/RS Infeed & Outfeed Conveyor Control



Food and Beverage Distribution

- Freezer Application
- Wash-Down Environments
- Food-grade Design Specifications
- ID Tracking & Labeling



Controls Integration

Successful integration is more than just a merging of systems so that facility runs. It is a total cohesion of your process that facilitates operations at their most productive and efficient levels. You expect low downtime, a safe work environment, and a system that operates to every detail of your standards and expectations.

How does Spring Automation deliver this? Our talented and experienced team of engineers and programmers understand the demands upon your business and work hard to produce hardware and software solutions to improve the bottom-line.

Conceptual Development

Whether it's a material handling facility, food processing plant, or another facility, we work with your mechanical and process engineers to develop basic design documentation required to implement a project that meets your requirements. We are skilled in developing functional design documents, facility layouts, piping and instrumentation diagrams and other documents that set the basis for an effective project.

PLC Programming

Whether a system is new or existing, quality PLC programming is necessary for consistent and smooth operations. This requires creative thinking and attention to detail. Your control system should be easy to maintain, easy to troubleshoot, and programmed for expansion in the future.

Our Strengths:

- Seamless hardware & software integration
- Tailored code to meet your needs
- Shorter commissioning schedules
- Flexible interfacing with 3rd party devices

Our Experience:

- Allen Bradley
 - ControlLogix
 - CompactLogix
 - GuardLogix
 - SLC5 Retrofits and Conversions
- Siemens
- Schneider
- Distributed IO Systems

Our Implementations:

- High-speed package sortation
- Product volume flow control
- Scanner interfacing and control
- Print & Apply interfacing and control
- Weigh scale integration
- PLC to WCS interfacing
- Legacy control system conversions



HMI Development

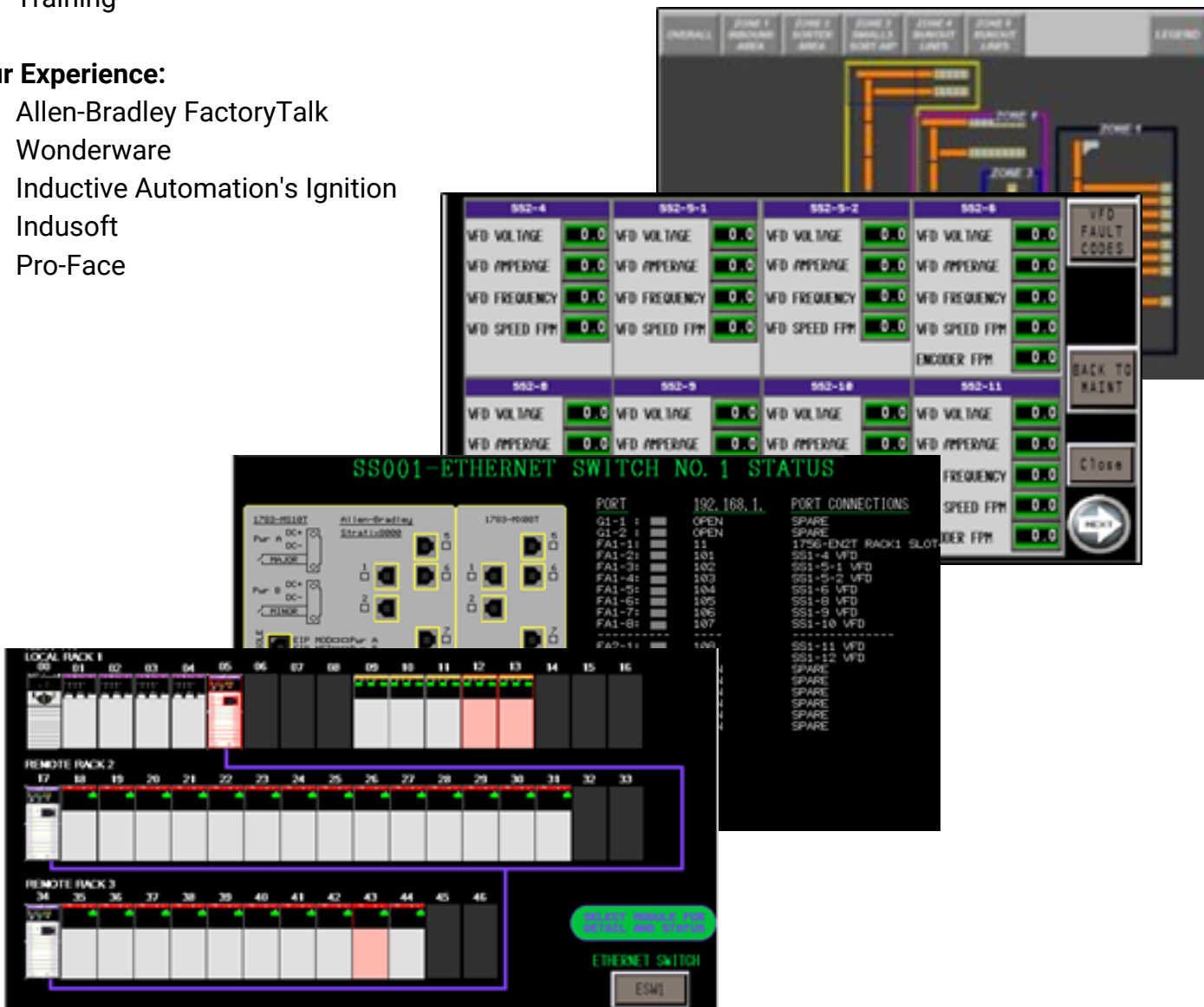
Whether monitoring normal operations or identifying a problem as soon as it arises, an intuitive HMI application is needed to maintain your process. Our team focuses on functional and aesthetically pleasing screens that add value to your system and make your job easier.

Our Strengths:

- Operator and Maintenance Friendly Interfaces
- Multi-Platform Experience (Allen-Bradley, Wonderware, Proface, etc.)
- Alarming & Safety
- Data Tracking and Logging
- Training

Our Experience:

- Allen-Bradley FactoryTalk
- Wonderware
- Inductive Automation's Ignition
- Indusoft
- Pro-Face



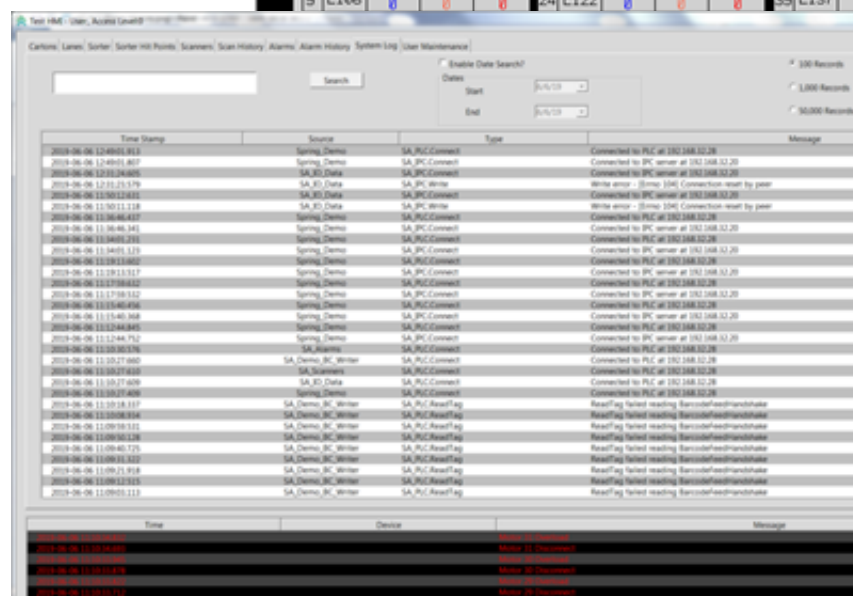
Software, Statistics, and Data Analytics

Spring provides various data analysis and reporting options that can be passed from low-level controls to upper-level software. From tracking packages through a warehouse to detecting bottlenecks at operator stations, our team has provided a wide range of KPI and data collection solutions. We understand the importance of giving insights into your system and its performance.

Data Collection and Reports:

- Production reporting
- OEE (Overall Equipment Effectiveness)
- Operator efficiency reports
- Sortation accuracy
- Equipment tracking for preemptive maintenance
- System volume metrics/rates
- Scanner statistics
- Weigh scale reporting
- Pallet/carton counts
- Error counts
- RFID location tracking metrics

Divert	Full	Jan	Fault	Divert	Full	Jan	Fault	Divert	Full	Jan	Fault	Reset Count
1 SH1	0	0	0	16 L114	0	0	0	31 L129	0	0	0	0
2 VLF1	0	0	0	17 L115	0	0	0	32 L130	0	0	0	0
3 SH1	0	0	0	18 L116	0	0	0	33 L131	0	0	0	0
4 L101	0	0	0	19 L117	0	0	0	34 L132	0	0	0	0
5 L102	0	0	0	20 L118	0	0	0	35 L133	0	0	0	0
6 L103	0	0	0	21 L119	0	0	0	36 L134	0	0	0	0
7 L104	0	0	0	22 L120	0	0	0	37 L135	0	0	0	0
8 L105	0	0	0	23 L121	0	0	0	38 L136	0	0	0	0
9 L106	0	0	0	24 L122	0	0	0	39 L137	0	0	0	0



The screenshot displays a software interface with a search filter at the top and a log table below. The search filter includes a search box, a date range selector (Start: 3/4/19, End: 3/4/19), and record count options (100, 1,000, 50,000). The log table has columns for Time Stamp, Source, SA, Type, and Message. The messages include connection events to a PLC and RFID tag reading events.

Time Stamp	Source	SA	Type	Message
2019-06-06 12:40:01.893	Spring_Demo	SA_PLC	Connect	Connected to PLC at 192.168.32.28
2019-06-06 12:40:01.897	Spring_Demo	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.895	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.907	SA_ID	SA_PLC	Write	Write error - Spring ID# Connection reset by peer
2019-06-06 12:40:24.911	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.915	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.919	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.923	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.927	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.931	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.935	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.939	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.943	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.947	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.951	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.955	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.959	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.963	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.967	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.971	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.975	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.979	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.983	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.987	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.991	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29
2019-06-06 12:40:24.995	SA_ID	SA_PLC	Connect	Connected to PLC sensor at 192.168.32.29

Panel Fabrication

We are proud to hold ourselves to the highest standards regarding quality panel design and fabrication. Our standard designs are based on NEC requirements, and our panels are both UL508A compliant and NEMA & IP rated. We are also proud to design panels per the unique customer specifications that may be required.

Spring Automation focuses on maintaining solid relationships with our vendors to ensure that our high standards are met. Our design teams make regular visits to the vendor shops for inspections while the panels are being constructed. Wiring is checked to ensure neat organization using cable ties, "sticky back", and wire ways. Our standard is to clearly label wires with heat shrink markers at both ends of all terminations for convenience and longevity. Various vendor component options (as required by our customers) can be used for means of control and integration of your uniquely designed system.

Finally, all panels go through a quality check, Factory Acceptance Test, and functional test before the UL certification is given and the Panel is shipped to site.



Electrical Installation

At Spring Automation, we strive to be innovative in our electrical installation process. Our focus is to create a streamlined installation approach to ensure the success of our customer's goals. By working alongside a nation-wide network of skilled and certified electrical subcontractors, we can meet these goals across the country. Through adhering to both industry and customer standards, we make it our mission to bring you high-quality electrical installations that match our control systems' effectiveness.

Spring Automation offers a variety of industrial electrical services:

- Grass Roots Projects, Retrofits, and Remodels
- AC and DC Control/Drive Systems
- Industrial Control Panel Installation
- Transformers and Power Distribution Installation
- Motor and VFD Installation
- PLC, HMI Screen, and Relay Logic Additions
- Service Calls

Myriad of control field devices:

- Instrumentation - pressure, temperature, level, flow, weight, control valves, and analyzers
- Emergency Stops
- Electrical Disconnects
- Control Stations



Contact Information



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Follow our social media accounts to stay up to date on industry trends and company news.



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