

AUTOMATION SERVICES

Partners in Business

Empowering people.
Delivering on promises.
Exceptional services.



ESCO GROUP AUTOMATION
ELECTRIC
POWER

Turning SOLUTIONS into Reality™

ABOUT ESCO GROUP’S AUTOMATION UNIT

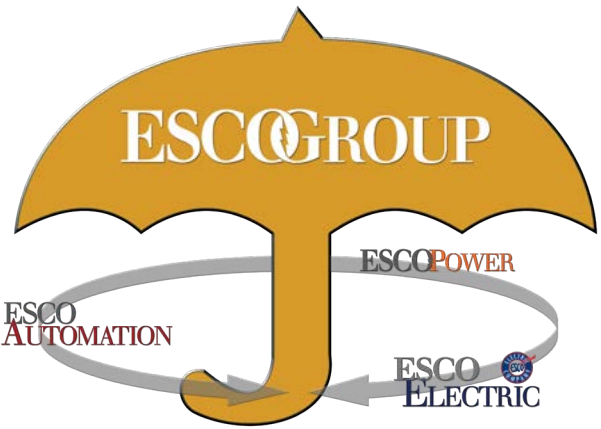
ESCO’s automation unit (“ESCO Automation”) is a part of ESCO Group, a group of companies that provide electrical engineering, automation, electrical construction, arc flash hazard analysis, and electrical safety training services for a wide variety of clients. We are headquartered in Marion, Iowa and we employ over 250 employees Group-wide. Our people work out of our offices, as well as, on the jobsite, subsequently working throughout the country, and sometimes, the world. We promise our clients that we will be responsive and reliable, and we diligently provide expert services with great integrity in an effort to help our clients meet their goals.

TOTAL VERSATILITY

ESCO Group is a versatile company. With the three business units under our Group umbrella, we are able to offer more resources to our clients, giving them a competitive advantage.

ESCO Group is made up of three units:

- ESCO Automation
- ESCO Electric
- ESCO Power



CLIENT DIVERSIFICATION

We feel confident in our client diversification. We have a wide variety of clients in different markets – several of which are Corporate Partners.

Our client diversification allows us to deliver comprehensive administrative and customer support through staff and technology.

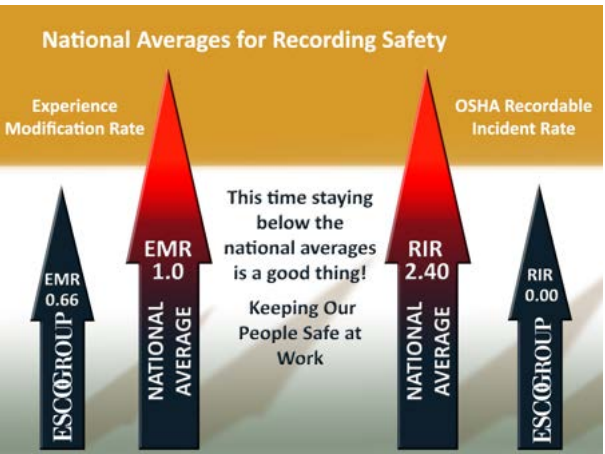
Our Partners
In Business

- *Cargill
- *Bayer
- *General Mills
- *ConAgra
- *Quaker Oats/
Pepsico
- Golden Grain
- Bunge
- Pioneer/DuPont
- Syngenta
- Remington seeds
- Ag Reliant
- John Deere
- Viskase
- City of Cedar Rapids
- City of Iowa City
- City of Coralville
- University of Iowa

***Corporate Partner**

OUR SAFETY RECORD

At ESCO we recognize the importance of training our own employees in the practice of safety at the workplace. With our OSHA Recordable Incident Rate (“RIR”) at 0.0, and our Experience Modification Rate (“EMR”) coming in at 0.66, we continue to be well below the national average for work-related injuries, which is where we intend to stay.



We hold regular meetings to discuss safety practices, and our safety directors make several onsite visits to help our employees recognize dangers. We strive to continue educating our people in safety to keep them protected from the risk that is inherently present. Keeping our employees safe protects our most valued asset, our people, and allows us to perform efficiently for our clients.

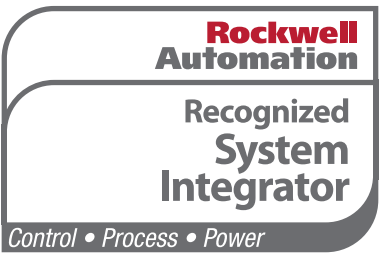


Group Professional Affiliations

We feel that staying involved with our industry helps us to be top performers in our fields and therefore, a better partner to our clients.

We are proud of our professional affiliations with:

- NECA: National Electrical Contractors Association
- NFPA 70E: National Fire Protection Association
- CSIA: Control and Information System Integrators Association
- UL 508A Panel Certified



ROCKWELL AUTOMATION, SIEMENS, WONDERWARE, THINMANAGER, AND MORE...

At ESCO Automation our people make the difference. It is our skilled and knowledgeable professionals who keep us ahead of the technology curve. In order to continue offering our clients the very best possible automation solutions, we make sure that our engineers are educated and focused on the technologies that power business.

Our professionals have in-depth knowledge of a variety of technology, which helps us give our clients excellent service. ESCO Automation is an Allen-Bradley solution provider, is recognized as a Rockwell Automation Process System Integrator, and offers expertise in Intellution/GE Proficy, Siemens, and Microsoft software. Several members of our engineering staff have successfully completed the Wonderware training program, making ESCO Automation a Certified System Integrator. ACP (“Automation Control Products”) has also made ESCO a part of their integrator partner program due to our expertise in their ThinManager software.

AUTOMATIONUnit



CONSULTING

We surround our clients with our teams. By having our clients consistently work with the same ESCO engineering professionals, we get to know and understand them, their plant, and its unique qualities.

PROJECT MANAGEMENT

Project Management is the application of specific processes and disciplines to help ensure a project meets its stated objectives in terms of scope, performance, time, and cost. Our project managers use a consistent project methodology to execute every job, ensuring top quality and GMP compliance.

We consider Project Management a valuable discipline that allows us to meet our clients' goals. From electrical construction management to subcontractor management, our project managers offer execution excellence with the ability to provide management at any stage.

PANEL CONSTRUCTION

Our panel shop houses experienced staff that design and build control panels. Our panel designs are done with the latest computer design software, complete with quality layouts and electrical schematics.

PANEL CONSTRUCTION SERVICES

- PLC Panels
- 24, 120, 480 Volt Control Panels
- Motor Control Panels
- Power Monitoring Panels
- UL 508A Labeling
- PLC I/O Testing
- Onsite Installation
- MCCs & Power Distribution Gear
- HMI & Computer Panels
- Lighting Panels
- Requirements Gathering & Consultation
- In-House Testing
- CAD Capability
- Material Supply and Coordination

ACHIEVING SUCCESS

We consider our clients to be partners in business and we play an integral role with our consultation services. We help our clients achieve success through automation.



OUR CONSULTATION SERVICES

- Requirements Gathering
- Functional Specifications
- Preliminary Engineering
- Technology Recommendations
- Implementation Strategies
- Electrical Bid Packages
- Automation Bid Packages

ELECTRICAL ENGINEERING

Our electrical engineers and designers take the time to understand our clients well enough to become part of their solution. By looking at the big picture we are able to determine a final outcome that satisfies their goals and vision. Our equipment, systems and processes continue to rate highly, enabling us to provide our clients with the design and CAD services they need.

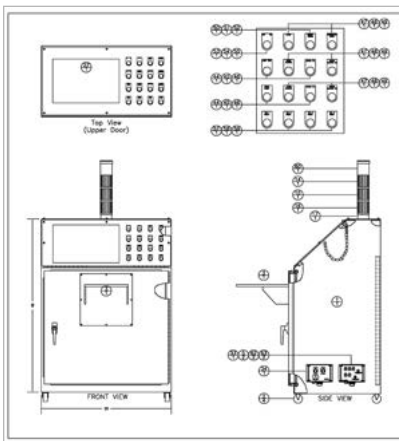
FACILITY ELECTRICAL ENGINEERING

We take our clients' needs very seriously, meticulously working to ensure each facility is provided with the appropriate power requirements. By conducting careful studies and audits we are able to determine the best solutions for each facility. From there, our experienced designers use cutting-edge software packages to create high quality facility electrical designs.

OUR SOLUTIONS

Our facility electrical engineering solutions include:

- Lighting and Receptacle Design
- MCC Design
- Power Distribution
- Conduit Schedules
- One-Line Diagrams
- Raceway Drawings
- Grounding and Lightning Protection



CONTROLS ELECTRICAL DESIGN

Our electrical designers are experienced in various versions of AutoCAD and AutoCAD Electrical software packages. ESCO designers produce designs that are accurate, clear, and efficient. With our designs your company will find the most practical solution for any system.

WHAT WE OFFER

For controls electrical design we offer:

- Control Panel Design
- Control System Architecture
- P&ID Development
- 24, 120, 480 Volt Electrical Schematics
- I/O Electrical Schematics
- Networking/Communications Schematics
- Loop Drawings
- Safety Circuit Design and Documentation

"I feel that they truly want the best for their clients and consider themselves as part of the team when solving problems. They ensure that everything is right for the end user."

Project & Controls Engineer,
Food Manufacturing Industry

AUTOMATION DIVISIONS

Industrial OEM



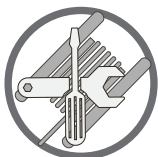
Retail Food Processing

Oilseed Processing



Engineering Services

Seed & Seed Research



Advanced Manufacturing

Electrical & Power Design



Enterprise Solutions

Project Snapshots

Aseptic Pudding

- Developed Functional Description of Systems (Batching, CIP, Packaging, etc.), CIP Pinning Charts, Software Installation Documents, and Training Manuals
- Batch Process Control System Development
- Sterilization Interface Development
- CIP System programming for entire production line (ingredient delivery, batch, sterilizer, filler, etc.) consisting of 3 tanks, 16 circuits
- Secondary Packaging Control System Development (Filler interface, Cup Conveyor, Case Packer interface, Case Conveyor, Palletizer, Stretch Wrapper)
- Category 3 safety design with local MSR safety relays and GuardLogix based distributed global e-stop safety system
- Greenfield HMI and PLC code development using standard objects across all PLCs and throughout HMI application
- Redundant FTVIEW SE Data and HMI Servers, Redundant Batch Servers
- FTVIEW SE Historian and MSSQL Server Data Warehouse
- ASP.Net Reporting interface using MSSQL Server Reporting Services
- Reporting allows forward and backward traceability
 - Correlating batch numbers to ingredient lot codes and process equipment
 - Correlating ingredient lot codes to batch numbers and process equipment
 - Batch Reports (Batch Listing, Batch Summary, Batch Detail, Material Usage, Forward Track, Backward Trace, Batch Execution, Duration Comparison, Batch Exception)
 - CIP Reports (CIP Listing, CIP Detail)
 - Log Books (cross shift communication and Kaizen Event tracking)
 - Downtime and OEE Tracking
- System Commissioning, Server Setup and Software Installation, Training and Production Support
- Technologies Deployed: FactoryTalk View SE, FactoryTalk Batch, FactoryTalk Historian, MSSQL Server, MSSQL Server Reporting Services, ASP.Net, AOIs, ControlLogix, GuardLogix, Distributed Ethernet I/O, Ethernet PowerFlex Drives, Intellution: iFix, iBatch

Cereal Packaging

- Provide Project Management to lead project development, subcontractor coordination, and serve as the single point contact for the client during the course of the project
- Provide Mechanical resources for detail engineering and design for the production line layout and mechanical contractor bid package. Lead Mechanical Installation.
- Provide Electrical resources for detail engineering and design for production line integration and electrical contractor bid package. Lead Electrical Installation
- HMI and PLC code development
- Control Panels: Furnish UL Labeled, Assembled and Tested Panels
- System Commissioning
- Technologies Deployed: Archestra, AutoCad, Controllogix, Distributed Ethernet I/O

CIP

- CIP Process and Controls Optimization
- P&ID Development with Corporate R&D input
- PIN chart layout
- Spreadsheet interface with loading of pinning and setpoints
- Electrical and Mechanical Contractor Bid Packages
- Construction Management – Weekend Cutover 3 shifts 24/7
- (6) Tank, (16) Circuit Design, (3) Tank, (39) Circuit Design
- Control Panels: Furnish UL Labeled, Assembled and Tested Panels
- System Commissioning
- Technologies Deployed: AutoCad, PLC 5/80E Remote I/O integration, Controllogix, PanelView, RS-View 32, WonderWare 10.0 with redundant failover tag servers, ControlNet, Ethernet, DeviceNet

Dry Batch

- Drybatch Process and Controls Optimization – from raw materials handling and storage through Drymix delivery to production lines
- P&ID Development with Corporate input
- Electrical and Integration Contractor Bid Packages
- Provide Project Management to lead project development, subcontractor coordination, and serve as the single point contact for the client during the course of the project.
- Electrical Construction Management
- HMI and PLC code development
- Control Panels: Furnish UL Labeled, Assembled and Tested Panels
- System Commissioning
- Technologies Deployed: Archestra , AutoCad, Various PLC 5 platforms communicating over Ethernet and DH+, SLC 5/04, Various remote I/O integration, PanelView, PanelView Plus

Food Ingredients

- Spice Blending Integration
- Culinary Steam
- Fresh Spice Processing
- Dry Spice Blending
- Spice Packaging
- Dry Ingredient Handling
- Control Panels: Furnish UL Labeled, Assembled and Tested Panels
- System Commissioning
- Technologies Deployed: Controllogix, Factory Talk View ME, SE, Distributed Ethernet I/O, PanelView, PanelView Plus, SKU tracking

Cooking/Toasting Line

- Remodeled Production Facility Design/Build
- Control Panels: Furnish, Assembled and Tested Panels
- Unique facility-first of its kind in the United States
- Recipe management so several types of ingredients could be processed by the equipment
- Bulk Packaging
- Product tracking and security management
- Provide Electrical resources for detailed engineering and design for production line integration
- System Commissioning
- Technologies Deployed: Siemens Step 7, Siemens WinCC Flexible, Profibus Communication protocol, Siemens 8in Touch panels, AutoCad

Frozen

- Utility Systems: Ammonia, Chillers (ammonia, glycol, and water), Condensers, Compressed Air
- Production Line Layout
- Turnkey System Integration, including batching, processing, packaging, and pallet tracking, print and apply
- Bread Dough, Pizza Dough, Biscuits, Roll Dough, Scones
- Provide Project Management to lead project development, subcontractor coordination, and serve as the single point contact for the client during the course of the project.
- Construction Management
- HMI and PLC code development
- Control Panels: Furnish UL Labeled, Assembled and Tested Panels
- System Commissioning
- Technologies Deployed: Archestra , AutoCad, Various PLC 5 platforms communicating over Ethernet and DH+, SLC 5/04, Controllogix, Various remote I/O integration, Ethernet, DeviceNet, ControlNet, PanelView, PanelView Plus, Factory Talk View ME,SE, DLC batch, SQL, InSQL, EDT (exclusive downtime tracking), DT (downtime tracking)

Project Snapshots

MES

- Plant Floor Data Collection
- Historian Server
- Data Concentrators
- SQL Reporting
- Trending
- OEE
- SKU Lot Tracking
- Technologies Deployed: Proficy, CIMPLICITY, Controllogix

Milling

- Cleaning House Controls Upgrade
- Electrical and Mechanical Contractor Bid Packages
- Construction Management
- HMI and PLC code development
- Control Panels: Furnish UL Labeled, Assembled and Tested Panels
- System Commissioning
- Technologies Deployed: AutoCad, Factory Talk View SE , Controllogix, Distributed Ethernet I/O, WonderWare 10.0 with redundant failover tag servers, ControlNet, Ethernet, RIO, and DeviceNet

Pharmaceutical

- Ultrapure Water Treatment
- (3) Trains of Skids: Carbon Filtration, Reverse Osmosis, Mixed Bed Deionization, Storage
- Process water for use in Pharmaceutical manufacturing and Boiler Steam
- P&ID Development with Corporate R&D
- Skid design/build
- HMI and PLC code development
- Control Panels: Furnish UL Labeled, Assembled and Tested Panels
- System Commissioning
- Technologies Deployed: AutoCad, Factory Talk View SE , Controllogix, Distributed Ethernet I/O, WonderWare 10.0 with redundant failover tag servers, ControlNet, Ethernet, RIO, and DeviceNet

Power/Energy

- Cannery Power Distribution
- Elimination of 12 low voltage (480V) Service Entrances
- Medium Voltage Redistribution/Switchgear
- Concrete Encased Buried Cable
- Elimination of Aerial Distribution
- Primary Metering • Elimination of 12 secondary meters
- Ring Topology • (2) Service Entrances
- (48) MCC's • Arc Flash model and placarding
- Power Factor Correction • Automatic Load Shedding
- Technologies Deployed: AutoCad, SKM

Snacks

- Provide Project Management to lead project development, subcontractor coordination, and serve as the single point contact for the client during the course of the project.
- Provide Mechanical resources for detail engineering and design for the production line layout and mechanical contractor bid package
- Provide Electrical resources for detail engineering and design for production line integration and electrical contractor bid package
- HMI and PLC code development
- Control Panels: Furnish UL Labeled, Assembled and Tested Panels
- System Commissioning
- Technologies Deployed: Archestra, AutoCad, Controllogix, ControlNet, DeviceNet, Distributed Ethernet I/O, Profibus

Seed & Grain

- Complete Turn Key project from conception to completion on a new green field site. Facility consisted of a bulk receiving and load-out area, seed conditioning facility, automated bulk storage, office/lab facilities, and warehouse storage

- Provided detailed electrical and power distribution design
- Designed new 13.2kv system which included new primary distribution from the substation, 3000 ft of concrete encapsulated underground cabling, sectionalizer two area transformers 1500kva as well as set in place pre-cast transformer vaults.
- Provided floor by floor lighting design to customer required lighting levels. Complete exterior lighting including parking area and decorative lighting, emergency egress and exit lighting design, and complete facility UFER ground design.
- Designed Automation system to allow for a sizable five line setup. Three lines were installed consisting of 12 process specific MCPs, one processor controls the entire facility with network area isolation. Client/Server based HMI with 5 clients.
- Fabrication and testing of all MCP, control and PLC panels from our UL panel shop.
- Integrated intelligent safety network was designed and installed, allowing advanced diagnostics and alarming.
- Provided all PLC and HMI code development, setup and commissioning, I/O checkout, final startup services, as well as ongoing production support
- Provide Project Management to lead the design, electrical construction, electrical utility, construction supervisor, and safety superintendent.
- Provided complete facility Arc Flash modeling and placarding.
- Provided 100% construction management, and safety supervision.
- Provided at peak 50 electricians and 5 Automation engineers.
- Technologies Deployed: AutoCad Electrical, Lumen Calculations, SKM, Control-Logix, Rs-View32, Guard-Logix, Distributed Device Net, Distributed Control Net I/O, coded rail absolute positioning system.

Ultrapure Water

- Skid Design/Build • Direct Replacement
- (2) Carbon Filter Skids, (2) Demineralizer Skids (Cation/Anion)
- P&ID • Equipment Layout
- Electrical and Mechanical Contractor Bid Packages
- Construction Management
- HMI and PLC code development
- Control Panels: Furnish UL Labeled, Assembled and Tested Panels
- System Commissioning
- Technologies Deployed: AutoCad, Factory Talk View ME, Controllogix, Distributed Ethernet I/O

Vegetable Oil Refining

- Continuous Process Control System for Vegetable Oil Refinery
 - Over 50,000,000 lbs/month
 - Several Oil Feed stocks including Soy, Corn, Canola, Sunflower
 - Developed Physical/Chemical Refining, Standard/Carousel Bleaching, Deodorizing, Day Tank, Stock Change Sequence Logic
 - Fully Automated Process CS with over 80 PID Control Loops
- Greenfield HMI and PLC code development using standard objects across all PLCs and throughout HMI application
- Designed and Built Main Controls Enclosure (Local Rack and Remote Rack) and Five (5) other Remote ControlLogix Rack Enclosures
- Designed and specified AB Intellicenter MCC gear according to customer standards (Prewired Buckets, E3+ motor starters on DeviceNet, PowerFlex 70 and 700 VFDs on DeviceNet
- Designed Four (4) Segment DeviceNet Network for Drives and Intelligent Motor Starters
- Interface to Loadout and Tank Farm Modicon Quantum Controllers using In-Chassis ControlLogix MNET Modbus-TCP interface card
- Redundant iFix SCADA Servers, many distributed iFix SCADA Clients
- OSI-Soft PI Data Historian with Redundant Interfaces



Employee Owned. Employee Strong.

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