



**Allen-Bradley**

## **ElectroGuard™**



### **Safety Isolation System**

**Bulletin 2030**

**Bringing  
Safety Isolation  
Within Reach**

Allen-Bradley



**Rockwell  
Automation**

**Standardize on a New Level for Machine Safety Isolation:**

# ElectroGuard™

The Allen-Bradley ElectroGuard Safety Isolation System, from complete automation supplier Rockwell Automation, provides a new level of machine operator safety and can contribute to enhanced productivity. The flexibility and capabilities make it ideal in virtually any application where operators work within the machine. This system integrates the Rockwell Automation world-class products with the Allen-Bradley leadership in control automation to offer a system you can trust and the highest level of safety available. With the ability to isolate both electrical and pneumatic energy in one swift action, the ElectroGuard System is unmatched in the industry.



## **ElectroGuard – a System Approach to Machine Energy Isolation**

The ElectroGuard system brings a new standard for hazardous energy isolation. Greatly easing the task of the machine operator or maintenance personnel to properly perform the Lockout/Tagout procedures can offer greater assurance of compliance, with the added value of improved productivity. As a standard ElectroGuard includes low-voltage remote lockout stations and a power panel, factory sealed modules and certification to safety Category 4, with options available to provide the complete solution in a flexible, maintainable, cost-effective system.



# Why use a Safety Isolation System?

## ElectroGuard provides many features to benefit your business:

- Helps reduce workplace injuries resulting from complicated Lockout/Tagout procedures
- A cost-effective solution to conform with OSHA requirements for control of hazardous energy
- Simplifies operator Lockout/Tagout procedures to help improve productivity
- Modular, pre-wired for quick installation
- Higher cycle life than mechanical disconnects, for reduced downtime



## With ElectroGuard you benefit from:

- Fewer lost time accidents
- Improved productivity
- A standard procedure throughout your facility
- Greater plant operation accuracy due to down time communication
- Ease of specifying, purchasing, setup and maintenance



## ElectroGuard is ideal for applications where machines have:

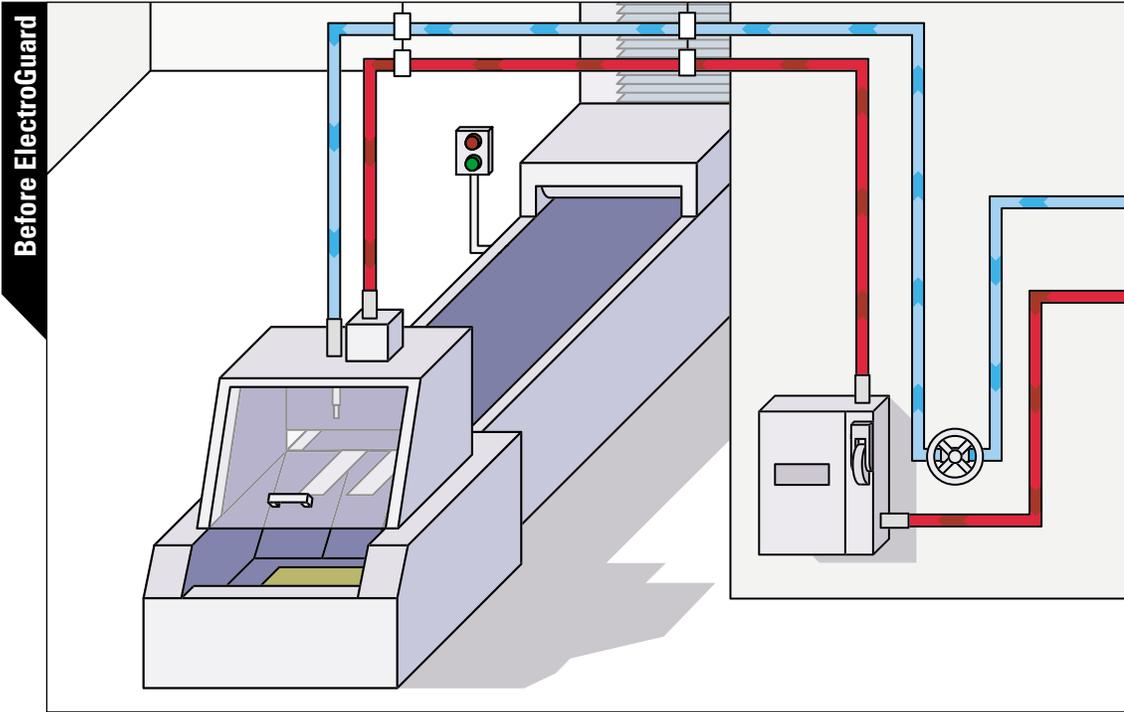
- Multiple access locations requiring operator travel time to the disconnecting device
- Frequent interruptions due to jams, lubrication, etc., losing productivity during the time of proper isolation
- Multiple sources of energy requiring a complex Lockout/Tagout procedure
- Maintenance personnel operating electrical disconnects within the hazardous zone



192 days since lost time accident

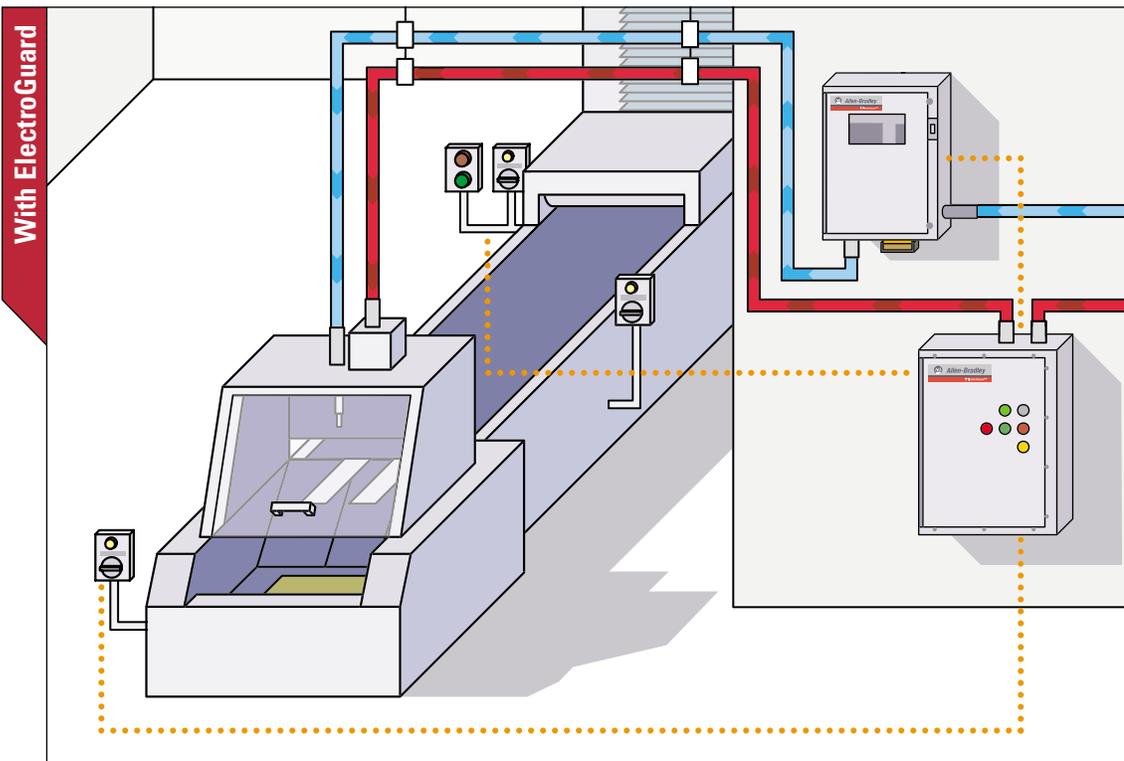
# How does ElectroGuard integrate into your machine?

Here's an example of a typical machine having energy isolation devices located on a wall, close to the machine, and a single start/stop station.



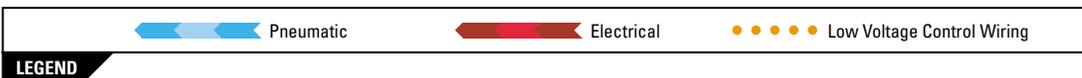
When a process jam occurs, the operator must travel around between the start/stop station and the energy isolation devices (LOTO) and the jam, to get production running again. The clearing of the jam is only a small portion of the production down time; the remaining time is spent on the proper LOTO procedure. Operator travel time and manually locking of two isolation devices is a large portion of the total recovery time.

**Time: 70 seconds**



The ElectroGuard system is installed in place of the manual isolation devices, while multiple Remote Lockout Stations are installed near the machine access locations. With this simplified LOTO procedure and close proximity of the Remote Lockout Stations, the clearing of a jam is now a large percentage of the production down time.

**Time: 35 seconds**



\*see animation on the CD

# FEATURES

# BENEFITS



## Safety

- System approach with single point lockout
- Remote Lockout Stations
- “System Isolated” light on RLS
- TUV certified to EN954-1 category 4
- Redundant, independent, self monitoring, functional design
- Grounding contactor
- Ground loss monitor
- Electrical & mechanical interlock devices on isolation contactors
- Factory-sealed modules
- Cross mirror pneumatic isolation valve
- Conformity to UL standards (reference page 9 for complete industry standards list)

- When the energy sources are controlled by the ElectroGuard system, it enhances safety by eliminating the need for locking multiple locations, helping reduce the chances of one energy source being overlooked
- The operator switches a low power device, without the flash hazard associated with a typical disconnect switch
- The light is a positive indication of the ElectroGuard sources zero energy state, notifying the operator it is safe to enter the machine.
- Highest functional safety performance possible to help improve workplace safety
- ElectroGuard faults are detected in time to prevent loss of the safety function
- Additional safety feature to guard against capacitive coupling, inertial regeneration or other sources that may cause residual voltage
- Additional safety feature to detect the loss of system ground
- Multiple technologies used for fault protection
- Anti-tamper for system integrity
- Control reliable double valve senses it's own degradation
- Pre-engineered conformity to meet industry standards (See page 9)

## Productivity

- Single Point Lockout/Tagout
- Low-voltage Remote Lockout Station
- Multiple Remote Lockout Stations
- Standard System
- Status Communication

- Isolate **electrical and pneumatic** energy in a single action, reducing the time to put the machine into a safe mode
- Easy to operate device
- Allows placement of lockout/tagout device near every access point
- Similar Lockout/Tagout procedure between machines, through the facility
- Use to measure # cycles, cycle time, location of Lockout/Tagout occurrences

## Maintenance

- Electrical isolation using power contactors
- Modular design
- Removable, factory sealed modules
- System approach
- View windows for status LEDs

- Dramatically increased cycle life compared with mechanical disconnects
- Ease of trouble-shooting to the module level
- Quick replacement of failed module
- Common look and feel to each system in the facility
- Ease of troubleshooting

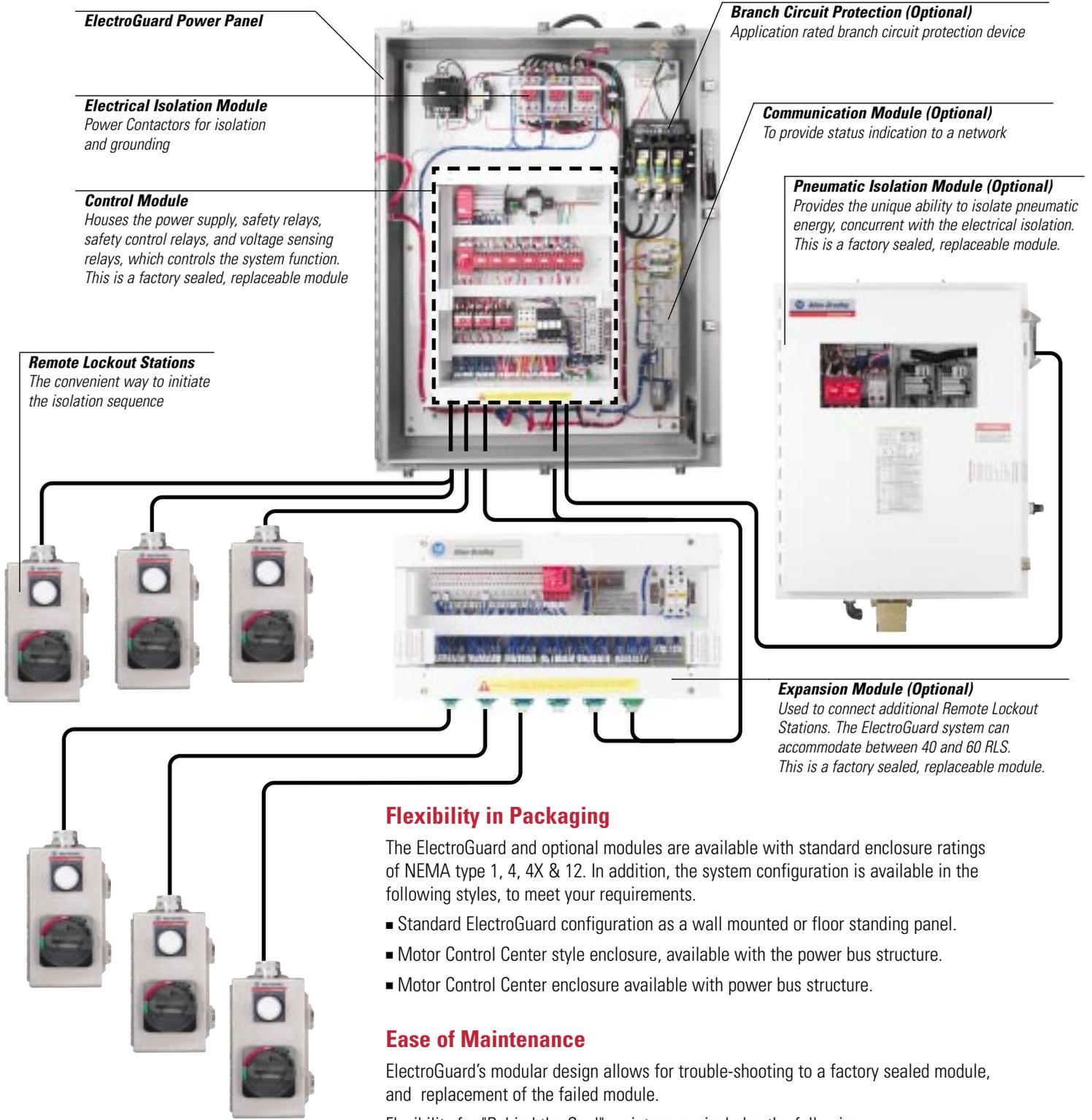
## Installation

- Low voltage Remote Lockout Stations
- Compact size Remote Lockout Station
- Expandable

- Low install cost
- Easy to locate on machine
- Simple to add more options after installation

All-in-Bradley Parts

# Modular By Design



## Flexibility in Packaging

The ElectroGuard and optional modules are available with standard enclosure ratings of NEMA type 1, 4, 4X & 12. In addition, the system configuration is available in the following styles, to meet your requirements.

- Standard ElectroGuard configuration as a wall mounted or floor standing panel.
- Motor Control Center style enclosure, available with the power bus structure.
- Motor Control Center enclosure available with power bus structure.

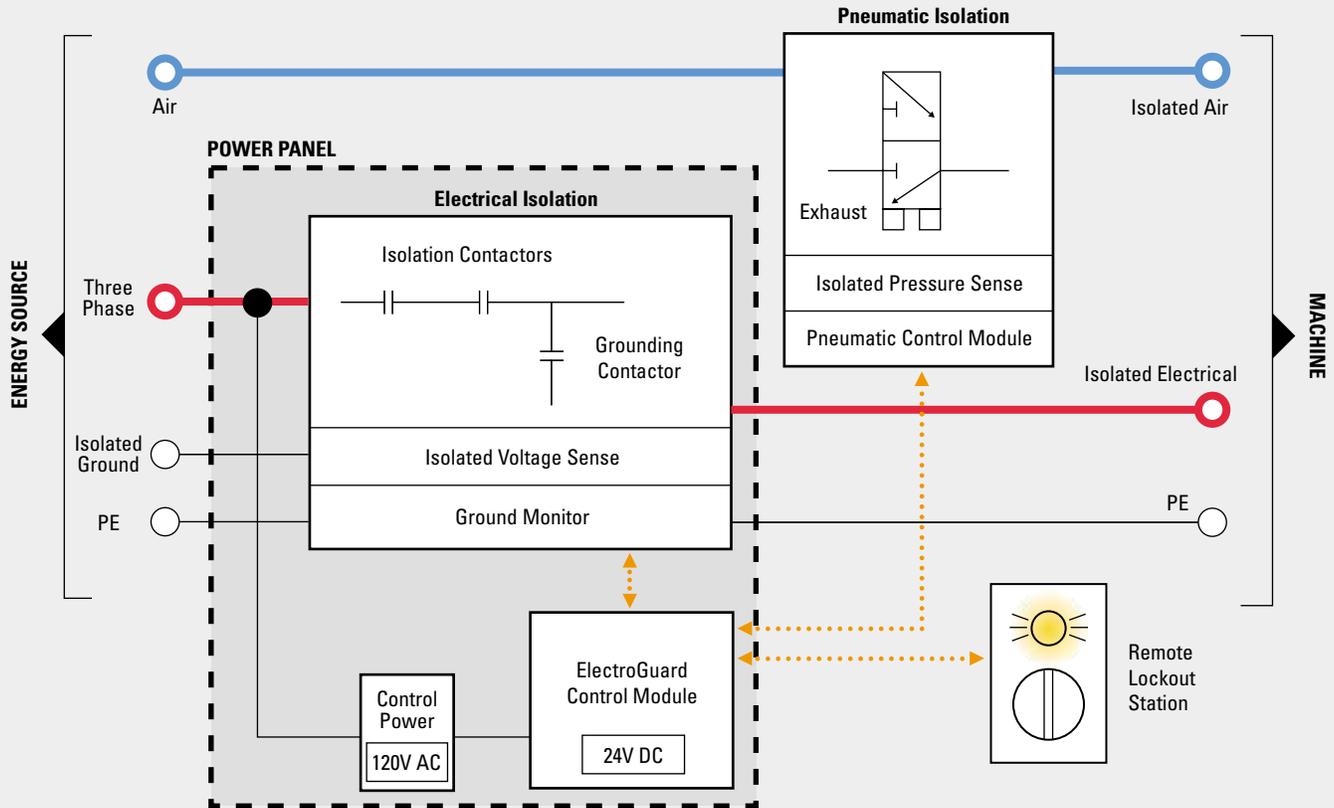
## Ease of Maintenance

ElectroGuard's modular design allows for trouble-shooting to a factory sealed module, and replacement of the failed module.

Flexibility for "Behind the Seal" maintenance includes the following:

- Return to the Rockwell Automation factory.
- Purchase on-site certified services from Rockwell Automation's Global Manufacturing Solutions.
- Certify your in-house personnel through a Rockwell Automation training program.

# Operation



The ElectroGuard system is placed between the energy source and the machine.

The Control Module controls and verifies the ElectroGuard system function. Every function is commanded and monitored for proper completion, being comprised of the ladder logic of electro-mechanical devices & safety relays. The control module sends and receives signals from the Electrical Isolation Module, the Pneumatic Isolation Module and the Remote Lockout Stations.

At any time, if the ElectroGuard Power Panel ground is broken, or a fault occurs within the isolation system, the ElectroGuard system will shutdown. Under a fault or shutdown condition of the ElectroGuard system, the "system Isolated" light will not be illuminated. No light means no entry.

The ElectroGuard system is powered by a 120V control transformer in the power panel and 24V DC power supply within the control module. All external modules are powered from the power panel; the RLS is a 24V DC low voltage signal, and the Pneumatic Isolation Module is 120V AC.

## Sequence of Isolation operation

1. The Remote Lockout Station initiates the isolation sequence, by an operator turning the handle from the ON to OFF position.
2. The control module responds by commanding both isolation modules, electrical and pneumatic, to isolate and verify isolation.
  - The electrical isolation module opens the series contactors, the voltage sense circuit monitors the isolated voltage, when safe the grounding contactor connects the isolated electrical lines to the isolated ground. Electrical Isolation is now completed and verified by the control module.
  - The pneumatic isolation module opens the pneumatic valve with its own control module, and redundant pressure sensors verify isolation has completed. Pneumatic Isolation is now completed and verified by the pneumatic control module.
3. After successful isolation, the control module illuminates that operator's Remote Lockout Station "system isolated" light.
4. An operator then applies a LOTO lock to the Remote Lockout Station handle, and it is safe to work on the machine.

***This entire sequence is less than 10 seconds.***

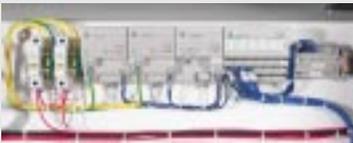
# Factory Options



## Branch Circuit Protection

Application Rated

- None – incoming line lugs only
- Fusible disconnect
- Circuit Breaker



## Communication Module

Provides system status information for network connectivity

- Remote I/O™, the Allen-Bradley Flex I/O™
- DeviceNet™, the Allen-Bradley Modular DSA™
- ControlNet™
- Other available as a custom

## Time Delay

Provision to incorporate a machine cycle stop with the actuation of the Remote Lockout Station

- Adjustable 1 to 30 seconds
- Other settings as a custom

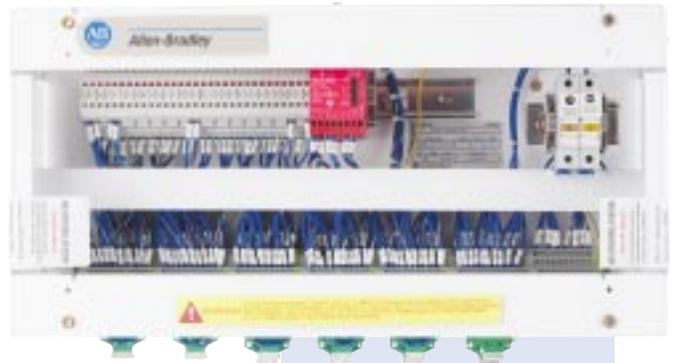
## Cover Mounted Metering

- Single- or three-phase voltmeter
- Single- or three-phase ammeter
- Other available as a custom



## Remote Lockout Station

- Provision for top or bottom conduit entry
- Provision for tamper resistant seal



## Expansion Module

- NEMA type open installed within the Power Panel, or externally mounted in a NEMA type 1, 4, 4X or 12
- 4-Port expansion
- 10-Port expansion

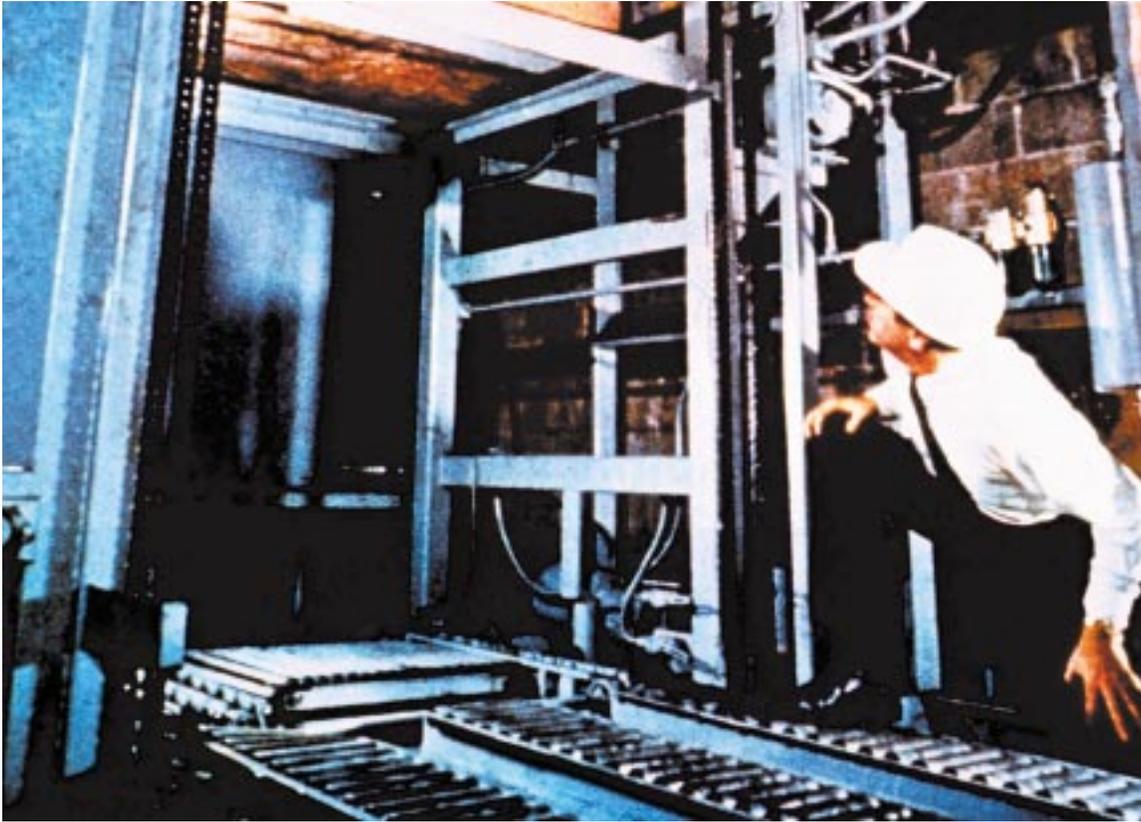


## Pneumatic Isolation Module

- Isolates the pneumatic energy
- 30...120 PSI, 2...7 BAR
- 3/4 or 1 inch valve port



# Unsurpassed Advantages



**One goal was kept foremost when developing the ElectroGuard Safety Isolation System. That goal was to enhance the machine operator's safe workplace practices of our customers.**

- Provide a quick, easy and close lockout/tagout device, reducing the tendency of a machine operator to take an unsafe shortcut
- When the energy sources are controlled by the ElectroGuard system, it provides a single point lockout for multiple sources of energy, helping reduce the chances of one energy source being overlooked
- Third party certified conformity to the highest safety category, when ElectroGuard faults occur the safety function is always performed
- Modular for quick and easy maintenance
- Factory sealed modules for system integrity
- Establish uniform energy isolation process for all stations & all sites



A hand is holding a CD-ROM in the center of the frame. The background is a blurred industrial factory environment with blue lighting. The CD-ROM has a red top half and a white bottom half, with a grey section on the left side. The text on the CD is as follows:

**ElectroGuard**  
**Safety Isolation System**  
**Demonstration**

**Allen-Bradley**

Bulletin 2030

2030-DM001A-EN-C  
August 2003

**Rockwell**  
**Automation**

**Allen-Bradley**

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**Rockwell**  
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**Allen-Bradley Parts**

ControlNet™, Remote I/O™, ElectroGuard™, Modular DSA™, and Flex I/O™ are trademarks of Rockwell Automation.  
DeviceNet™ is a trademark of the Open DeviceNet Vendors Association (ODVA).

**[www.rockwellautomation.com](http://www.rockwellautomation.com)**

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