

# **RUSTROL<sup>®</sup>**

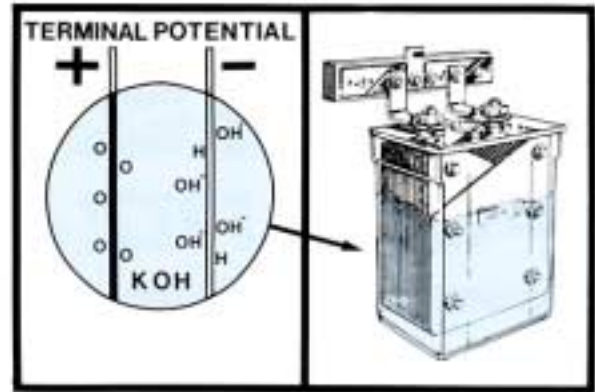
## **POLARIZATION CELL**



**INDISPENSABLE  
FOR  
SAFE GROUNDING  
AND  
EFFICIENT  
CATHODIC  
PROTECTION**

### HOW RUSTROL® CELLS WORK

Rustrol polarization cells contain pairs of pure nickel plates immersed in KOH electrolyte. The surfaces of these plates instantly polarize when separated metallic structures are connected to opposite terminals. The polarizing film blocks dc, to contain cathodic protection current, while freely passing ac. Personnel are safely protected from shock hazards during ac faults. Insulating fittings and equipment are protected during electrical disturbances. Polarization cells are indispensable to secure safe electrical isolation.

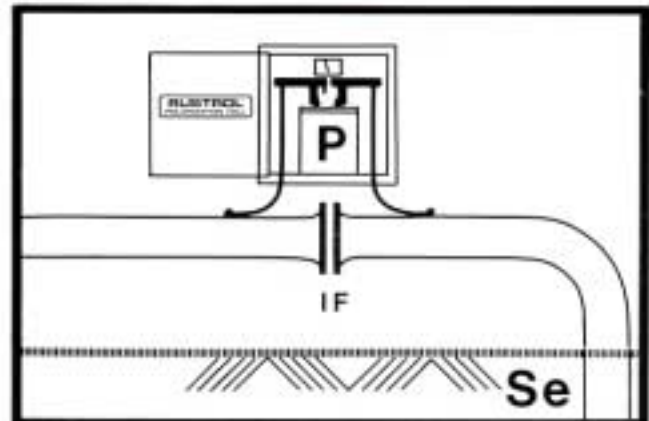


Polarized surface film blocking dc in the polarization cell, shown mounted on isolated bus.

### FOR SAFE, COST EFFECTIVE CATHODIC PROTECTION, USE RUSTROL®

Separated underground or submerged metallic structures are efficiently protected. Isolated structures which must remain effectively grounded to the ac utility's network, are designed to meet this requirement in national electrical safety codes. Installations specifying Rustrol polarization cells for cathodic isolation, are regularly accepted by North American electrical inspectors.

The cathodically isolated structure is uniformly covered by a protective surface film. Corrosion control management is made easy at a greatly reduced cost. Cathodic polarization is secured without stray current interference. Corrosion certainly is prevented.

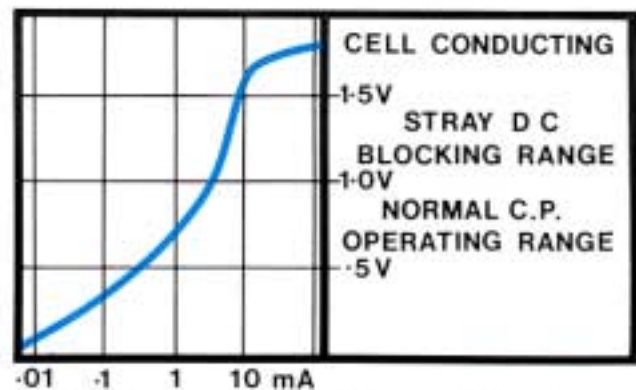


Polarization cell (P) safely protecting isolation fitting (I.F.) of cathodically isolated structure (Se).

### FOR OUTSTANDING PERFORMANCE, SELECT RUSTROL®

Up to 1.7 volts dc are blocked for cathodic isolation. DC traction or foreign sources that cause fluctuations beyond the 1.2 V operating range may require two or more cells connected in series.

Plates of pure nickel, the chosen metal since polarization cells were invented in 1956, are a feature exclusive to Rustrol.



Polarization current vs terminal potential. Polarization curve for 25 kA Rustrol cell.

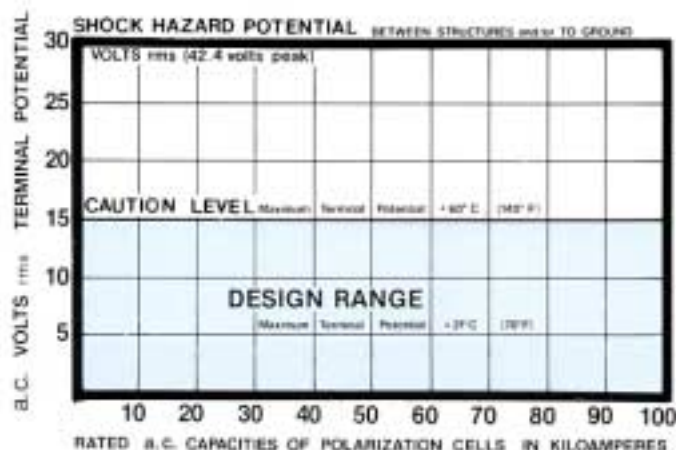
### EXCEL WITH RUSTROL® IN CORROSION PREVENTION

- BLOCK STRAY CURRENT FROM FOREIGN SOURCES
- NULLIFY INTERFERENCE TO FOREIGN STRUCTURES
- MITIGATE INDUCED AC POTENTIALS
- CONFINE PROTECTIVE CURRENT

KNOW CORROSION IS PREVENTED AT THE LEAST COST

## EFFECTIVE GROUNDING IS SECURED TO NATIONAL ELECTRICAL SAFETY CODE STANDARDS

Structures remain electrically continuous to the ac power supply's grounding network by connecting bus through a polarization cell system.

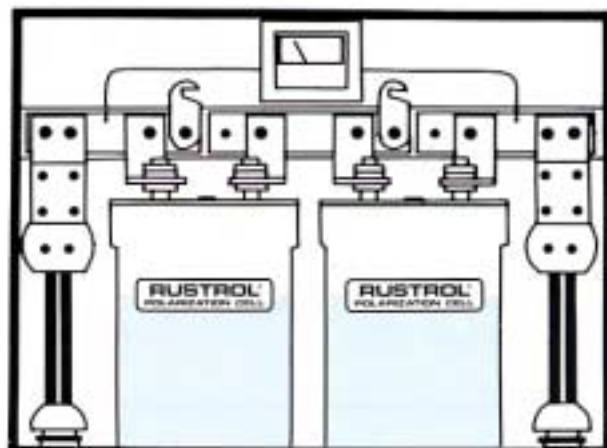


### DESIGN PARAMETERS FOR ELECTROLYTIC GROUNDING to electrical safety code requirements

Premium Rustrol cells, bus, and enclosures are safely rated to pass 1/2 second ac faults with a terminal potential rise across the cell of about 10 V rms. Generally a design level of 15 V rms is adequate, although it is not unusual to design to a lower level. Personnel and equipment are safely protected.

### QUALITY WITH A PROVEN RECORD

- Rustrol polarization cells and hardware are manufactured using only pure metals as electrical conductors. Components machined and assembled match Rustrol's high quality assurance standards.
- Researched and developed models are fully acceptance-tested to the approval of independent high current test laboratories prior to marketing.
- Worldwide users of Rustrol cells report required maintenance is minimal at their operating temperature and exposure conditions.
- Service life of more than 25 years with minimal variance in the level of the electrolyte is reported.



### PREMIUM RUSTROL® CELLS CONNECTED IN SERIES

Usually one cell is required to safely decouple tanks, stations, or piping from metallic contact to the electrical grounding grid. Two or more remotely located cells are used for larger plants, refineries, wharves, long pipe-type power cable circuits and pipelines. Where stray current interference is extreme, Premium cells are connected in series or in parallel, either to block dc or pass ac.



A typical independent high current laboratory acceptance testing Rustrol protective electrical equipment.

### RUSTROL® SYSTEMS

RUSTROL polarization cells are rated from 5 kA to 100 kA ac fault capacities in 5 kA steps. Cables are connected through RUSTROL isolated bus and enclosure systems.

A STANDARD RUSTROL SYSTEM blocks dc, suppresses ac voltages, and will safely pass its rated capacity ac fault. The Standard system is adequate for decoupling applications, if major power disturbances are not the primary exposure; isolated bus also may be optional.

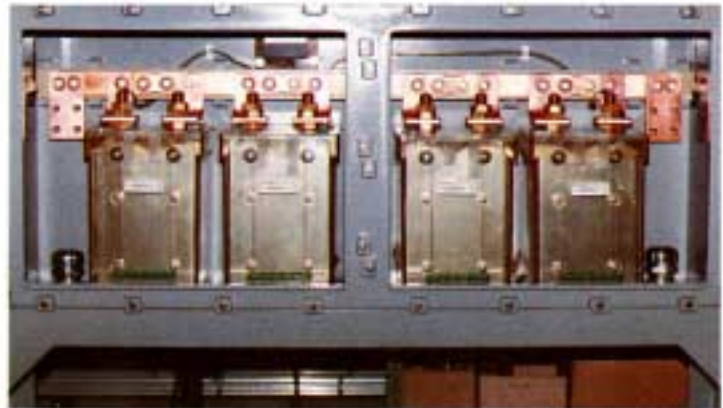
A PREMIUM RUSTROL SYSTEM fully meets the requirements in national electrical safety codes to secure effective grounding. Premium rated cells are fixed to stress relieved bus in steel enclosures. Electrodynamic forces are rigidly contained during ac faults and other electrical disturbances. The potential across the cell is limited to within a safe 15 volts rms. Premium quality cells with larger nickel and copper cross-section give that extra confidence where safety and performance must excel.

## RUSTROL® SYSTEM SELECTION GUIDE

SELECTION CRITERIA	STANDARD	PREMIUM	ISOLATED BUS
AC POWER GROUNDING		✓	✓
AC FAULTS		✓	✓
AC POWER PULSES	✓	✓	Optional
LIGHTNING SURGES	✓	✓	Optional
STRAY DC INTERFERENCE	✓	✓	
INDUCED AC VOLTAGES	✓	✓	
1.7 V DECOUPLING THRESHOLD	✓	✓	
MINIMUM MAINTENANCE	✓	✓	✓
MAXIMUM LIFE EXPECTANCY		✓	✓
MINIMUM COST	✓		

### RUSTROL® SYSTEM OPTIONS

ENCLOSURES TO NEMA OR  
 CUSTOM STANDARDS  
 STANDARD OR PREMIUM BUS  
 BUS IN SERIES OR PARALLEL  
 POTENTIAL METERS  
 DENSIMETERS  
 SS ENCLOSURES  
 LIQUID TIGHT CONNECTORS  
 SUNSHIELDS  
 FILTERED OR ION CONTROL VENTS  
 CP POTENTIAL CONTROL SENSING  
 STATIC GROUNDING ELECTRODES  
 SHUNTS, LINK BOARDS  
 CUSTOM REQUIREMENTS



Premium Rustrol System with various options in a custom NEMA 4 Enclosure.

Technical guidance is promptly provided by qualified personnel.

Engineering services to design and commission a system for your application are available from professional consultants on request.

Inquiries are invited for additional technical data or case histories.

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