







CORROSIVE GAS REACTIVITY MONITORING SERVICE

EVALUATE... THE CORROSION POTENTIAL OF YOUR PROCESS EQUIPMENT ENVIRONMENT



ELECTRICAL & ELECTRONIC EQUIPMENT PROTECTION

REACTIVITY MONITORING SERVICE

PROTECTION

Industries spend millions of dollars each year on valuable industrial electrical/electronic process equipment that requires protection from the overall corrosion potential of their environment.

Circul-Aire's *Reactivity Monitoring Service* (REMO) diagnoses the corrosion of these environments according to the Instrument Society of America's (ISA) Standard S71.04 outlining severity of corrosion from G1 (mild) to GX (severe) environments.

The severity level of the environment is gauged by means of Circul-Aire's Reactivity Monitoring Coupons installed in strategic areas for periods of 30 to 90 days.



*(Classes are based on Instrument Society of America Standard S71.04)





- [1] *G3 Environment; indicating pore corrosion and corrosion creep.
- [2] *GX Environment; severe pore corrosion, corrosion creep and physical degradation.
- [3] *Severe GX Environment; severe pore corrosion, corrosion creep and physical degradation, corrosion migration causing short circuiting.

APPLICATIONS

- Control Command Centers (pulp & paper, petrochemical, steel manufacturing, etc.)
- High technology industry (computer chip manufacturing, process rooms, etching areas)
- Outdoor air analysis (industrial facilities, archive storage facilities, libraries, hospitals, museums, etc.)
- Telecommunications, central banking data servers, data centers.



WWW.CIRCUL-AIRE.COM

REACTIVITY MONITORING SERVICE

FEATURES

FEATURES

- Provides a qualitative and quantitative measure of the overall corrosion potential of an environment.
- Test methodology backed by years of site analyses in thousands of equipment applications worldwide.
- Meets field monitoring requirements for extreme sensitivity (< 1 ppb gaseous, <100 Angstroms film thickness).
- Fully compatible with ISA design criteria for determining electrical/electronic equipment reliability.
- Laboratory-assembled, velcro-backed package facilitates easy installation.
- Minimal space requirements.
- Performance without operator assistance.
- Location versatility optional mounting in control rooms, instrument cabinets, on installed control systems, or outdoors.
- Detailed analysis provided to assist in the following decisions: should supplemental environmental protection be provided, what method of protection is most suitable, how should the equipment be qualified for service in the intended application, and what is the priority of action for multiple locations?



MODE OF OPERATION

Reactivity Monitoring Analysis involves the placement of a series of specially prepared and individually tested metallic coupons, one silver and one copper, on a 3" x 4" (7.6 cm x 10.2 cm) mounting plate in the operating environment. Typical exposure periods range from 1 to 3 months. After exposure, the coupons are returned to Circul-Aire laboratories for analysis.

Analysis comprises measurements of both film thickness(es) and film chemistry. This is done using an electrochemical technique, which has been extensively developed for use in this type of work. Environmental severity is reported as film thickness in Angstroms per year and normalized Angstroms per month to incorporate ISA provisions. This data extends beyond the classification of environments and can be used:

- to provide a comparative means of prioritizing the work required;
- as a means of classifying the source of air to be used for pressurization purposes;
- to classify the quality of instrument air being used to purge cabinets.

WWW.CIRCUL-AIRE.COM

CLASSIFICATIONS

REACTIVITY MONITORING SERVICE

MEASUREMENT PARAMETERS

Each test site is classified according to ISA Standard S71.04. Basic class designations are as follows:

G1	G2	G3	GX
MILD	MODERATE	HARSH	SEVERE
Copper	Copper	Copper	Copper
Reactivity	Reactivity	Reactivity	Reactivity
(Angstroms)	(Angstroms)	(Angstroms)	(Angstroms)
<300	<1000	<2000	<u>≥</u> 2000

- **G1** An environment sufficiently well-controlled such that corrosion is not a factor in determining equipment reliability.
- **G2** An environment where the effects of corrosion are measurable and will have a detrimental effect on equipment reliability over time.
- **G3** An environment where a high probability of corrosion attack will occur. This level is not acceptable for contemporary control equipment.
- **GX** An environment where only specially designed and packaged equipment should be expected to survive.

PERFORMANCE

- **Scope** Test offers a direct measure of an environment's overall corrosion potential as expressed by the factors of gaseous pollutants, humidity, temperature, gas flow conditions, and general operating practices.
- **Reliability** Reactivity Monitoring data base includes thousands of equipment sites worldwide from a wide range of industries.
- Approvals Instrument Society of America Standard S71.04 recognizes this method of classifying environments.

INSTALLATION PROCEDURES

- **Step 1** Remove mounting plate from wrapping with care so as not to touch the metal areas.
- **Step 2** Detach the outer seal from the 2 velcro strips on the back of the mounting plate.
- **Step 3** Press mounting plate in selected location, using sufficient pressure for the velcro to adhere to mounting surface without touching the metal areas.
- **Step 4** Record the coupon number on the worksheet. Answer the remaining questions on the worksheet.
- **Step 5** At the end of the exposure period, carefully remove the coupon without touching the metal areas and place in the shipping container provided. Forward to **Circul-Aire** laboratories with completed worksheet for analysis.

SERVICES & EQUIPMENT

- Quarterly inspection of each protected area.
- Quarterly monitoring of corrosion coupons.
- TECH-CHEK[™] Service: In-house ISO-Certified laboratory support to monitor media performance.
- Real-Time Surveyor coupon analyzers.
- Environmental upgrade design assistance available.
- Compatibility with existing air conditioning and control panel systems.

IMPORTANT: This brochure does not in any way constitute a representation, warranty, promise or guarantee by Circul-Aire of the installed performance of MULTI-MIX® media or systems. It is intended for use by persons having appropriate scientific and technical knowledge and experience. Performance characteristics can be obtained by contacting Circul-Aire Head Office.

inted in Canada LIT00210-CA0611-0K



USA 10898 Crabapple Road #103 Roswell, Georgia USA 30075 **CANADA** 3999 Cote Vertu Montreal, Quebec Canada H4R 1R2



© Copyright 2011 by Circul-Aire Inc.

www.circul-aire.com



SO 9001:2008 Certified

designer indoor air®