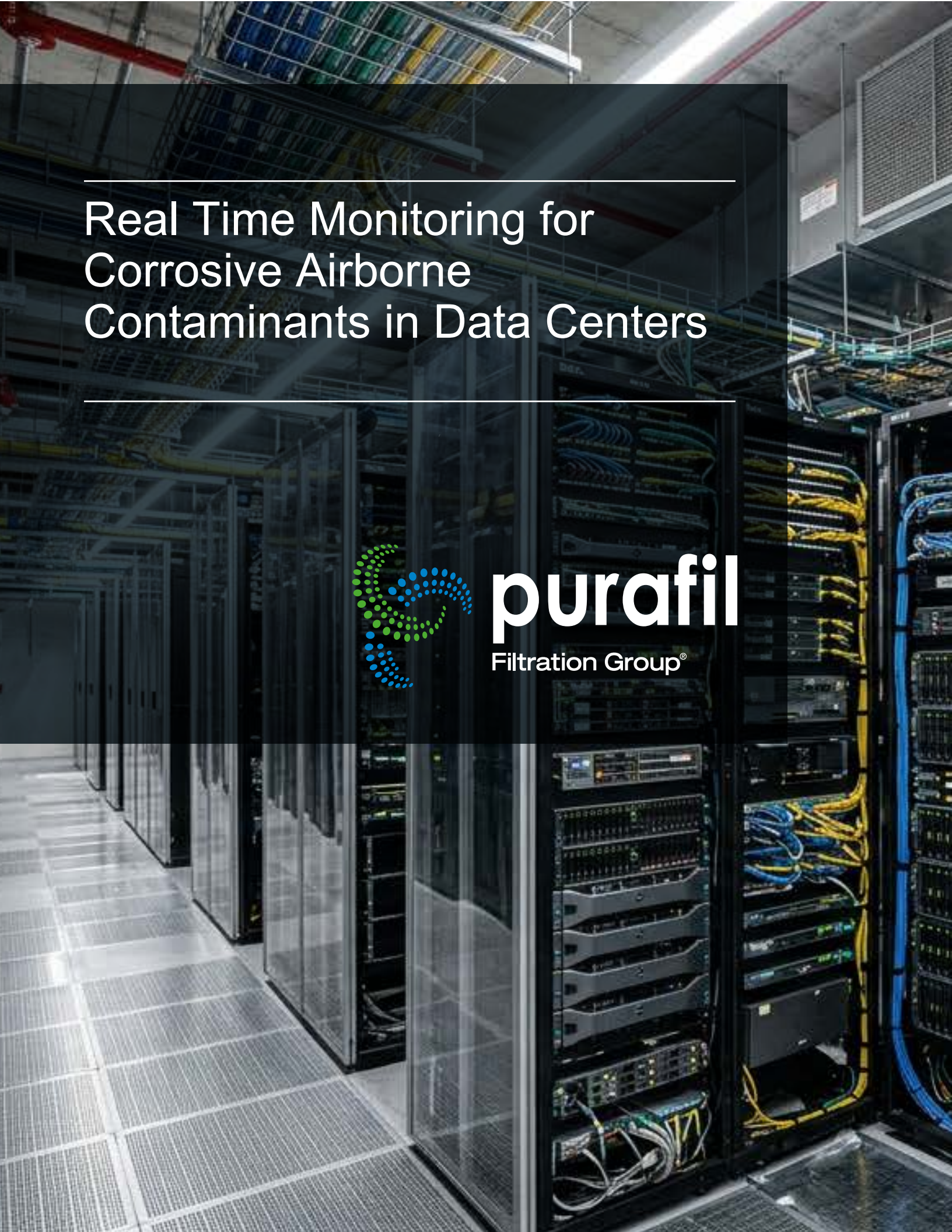
Real Time Monitoring for Corrosive Airborne Contaminants in Data Centers



purafil
Filtration Group®

Monitoring in Data Centers

Purafil delivers a comprehensive contamination control strategy that goes beyond traditional particulate filtration. Purafil emphasizes continuous environmental monitoring rather than relying solely on design assumptions. The OnGuard provides continuous measurement of copper and silver corrosion rates, allowing operators to verify compliance with ASHRAE recommendations, evaluate filtration effectiveness, and determine the optimal time for filter replacement before equipment reliability is compromised.

ONGUARD SMART + MODBUS

The Purafil OnGuard® Smart with Modbus Atmospheric Corrosion Monitor, the 5th generation of OnGuard® technology, adds Modbus connectivity to a platform backed by decades of proven reliability in corrosion and environmental monitoring for data centers and other critical environments. The system monitors overall corrosion severity levels, temperature, humidity, and room pressure, with corrosion classifications based on the industry recognized ISA 71.04 standard. Fast wall installation and flexible connectivity through a web interface, direct LAN connection, analog 4-20 mA, and Modbus make integration simple.

Features

- Modbus - 4-20 mA connection for existing facility management systems or distributed control systems (DCS)
- Tracks peaks and trends to determine the level of corrosion
- Measures temperature, relative humidity, and room pressure
- Low maintenance: Sensors remain reliable until reaching 4000 Angstroms of cumulative corrosion
- Direct interface provided by the backlit LCD and keypad
- Remote power from network cable (PoE)
- Accurate within ± 1% of full span

Benefits

- Easy remote access to data and graphs
- Indicates the level of corrosion before damage occurs, preventing costly repairs/downtime
- RoHS compliant
- Measures corrosion, room air pressure, temperature, and relative humidity on a continuous basis
- Provides incremental and cumulative corrosion data
- Easy to install
- Long service life
- Readings correspond to ISA Standard 71.04-2013

Principle of Operation

The OnGuard comes with two quartz crystal microbalance (QCM) sensors, one that is plated with copper and another with silver. The QCM is used to measure the corrosive film that results from the environment. This highly sensitive method of measurement will indicate contaminant levels at or less than one part per billion (1 ppb). The corrosion film thickness is measured and recorded in Angstroms (Å). This measurement corresponds directly to ISA Standard S71.04-2013.

4 Ways to Connect

- 4 - 20mA Connection → 1 → PCS (Process Control System)
- Local Area Network (Ethernet) → 2 → Local PC or Mac®
- Internet Router (Ethernet) → 3 → Remote PC or Mac®
- Modbus - ASCII (3 wire +/-/GND) → 4 → PLC, Remote PC or Mac®

1.75 in (4.5 cm)

Weight: 9 ounces, 255 grams

3.5 in (9 cm)

5.5 in (14 cm)

Air Quality Assessment and Monitoring

AIR QUALITY ASSESSMENT

Corrosive gases are commonly measured in parts per billion (ppb). Quantifying the effects of corrosion requires reactivity or corrosion monitoring (real-time or passive) as prescribed by ISA, ASHRAE, and iNEMI. We assess your environment to determine the types and levels of corrosive gases in your data centers, server rooms, switches, I/O devices, power distribution and UPS rooms. Strict criteria were developed by the International Society of Automation (ISA) to protect sensitive electronics from damage caused by corrosive gases. ISA Standard 71.04-2013 has become the accepted guide for warranties of electronic equipment.

In addition to controlling temperature and humidity, ASHRAE recommends maintaining positive room pressurization, properly sealing the protected space, utilizing high-efficiency particulate filtration, monitoring corrosion rates, and implementing gas-phase air filtration whenever gaseous contamination exceeds acceptable limits or outside air is introduced into the facility through ventilation or economizer systems.

ISA STANDARD 71.04-2013			
CLASS	COPPER REACTIVITY LEVEL (IN ANGSTROMS)*	SILVER REACTIVITY LEVEL (IN ANGSTROMS)*	AIR QUALITY CLASSIFICATIONS
G1	< 300	< 200	MILD *Corrosion is not a factor*
G2	< 1,000	< 1,000	MODERATE *Corrosion is measurable*
G3	< 2,000	< 2,000	HARSH *High probability that corrosion attacks will occur*
GX	> 2,000	> 2,000	SEVERE *Electronic equipment is not expected to survive*

Resources

Active Monitoring Overview

Data Center Technical Bulletin

Data Center Market Segment Brochure