

Air Quality Analysis

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Air Quality

The consistent improvement in performance of computers is accomplished by decreasing the size of the transistors & by the distance traversed by electrical signals to accomplish the tasks assigned to them.

The net effect is the miniaturization of all electronic components & the consistent increase in packaging density has led to a detrimental effect on hardware reliability.

The reduction of circuit board size & miniaturization of components that are necessary to improve hardware performance, also make the hardware more prone to attack by corrosive particles & gases in a data center environment.

Therefore, it's important to control flow of airborne contaminants in a data center environment & to recommend a acceptable limit which is critical to the continued reliable operation of IT equipment.

Source: ASHRAE Gaseous & Particulate Contamination Guidelines for Data Centers

Air Quality Measurement

1. Reactivity Monitoring Coupons (RMC)
2. Environmental Condition Monitor (ECM)
3. Air Sample Test

Reactivity Monitoring Coupons

1. Investigative tool to gauge gas-phase filter performance
2. Ideal for site assessment reports related to air reactivity
3. Qualifies the presence or absence of gas types (including sulphur compounds, chlorine compounds)
4. Quantifies reactivity of environment as per ISA-71.04-1985 standards and related coupon standards



New Copper RMC

Magnified Copper RMC exposed for 30 days

RMCs consist of copper & silver coupons mounted on plastic panel. It functions by reacting with the environment (gases, relative humidity & temperature) and records the amount of corrosion on coupon gives information about environment.

*Choice Solutions Ltd.
provides services like Power
Audit, Air Audit, Data Center
Audit, Energy Audit,
Harmonics Study &
Thermography Test.*

Environmental Condition Monitor

1. Corrosion Rate, Relative Humidity, Monitors Temperature & Differential Pressure
2. High sensitivity corrosion rate measurement
3. Corrosion rate of Copper & Silver Sensors corresponds to ISA classification of Environments
4. Digital & Analog outputs
5. Optional Data-logging

The ECM is a multi-parameter monitoring system that is used for constant surveillance of the surrounding environment & is meant for instant detection of any deterioration in environment that could result in damage to expensive IT equipment & other valuable assets.

The system measures humidity, temperature & the corrosive attack on two replaceable thin-film sensors. The corrosion rate is shown by indicator light that corresponds to the ISA classification of environments (G1 through Gx) for copper & silver.

Air Sampling

Air sampling for 8 hours at each location & analysis in laboratory to measure concentration of gases described by ISA 71.04 – 1985

1. H₂S
2. SO_x
3. NO_x
4. CL₂
5. Ozone

The gas concentration levels shown below are provided for reference purposes. They are believed to approximate the Copper Reactivity Levels stated above, providing the relative humidity is less than 50%. For a given gas concentration, the Severity Level (and Copper Reactivity Level) can be expected to be increased by one level for each 10% increase in relative humidity above 50% or for a relative humidity rate of change greater than 6% per hour.

| | | Gas Concentration † | | | | |
|----------------------|-------------|-----------------------------------|---------------|----------|----------|----------|
| Reactive Species †,‡ | Contaminant | Gas | Concentration | | | |
| | | | | | | |
| | Group A | H ₂ S | < 3 | < 10 | < 50 | ≥ 50 |
| | | SO ₂ , SO ₃ | < 10 | < 100 | < 300 | ≥ 300 |
| | | Cl ₂ | < 1 | < 2 | < 10 | ≥ 10 |
| | | NO _x | < 50 | < 125 | < 1250 | ≥ 1250 |
| | Group B§ | HF | < 1 | < 2 | < 10 | ≥ 10 |
| | | NH ₃ | < 500 | < 10 000 | < 25 000 | ≥ 25 000 |
| | | O ₃ | < 2 | < 25 | < 100 | ≥ 100 |

*Measured in angstroms after one month's exposure. See Appendix C, Item Numbers 2, 3.

†mm³/m³ (cubic millimeters per cubic meter) parts per billion average for test period for the gases in Groups A and B.

‡The Group A contaminants often occur together and the reactivity levels include the synergistic effects of these contaminants.

§The synergistic effects of Group B contaminants are not known at this time.

Standards For Evaluation

1. ISA 71.04 – 1985
2. ASHRAE Gaseous & Particulate Contamination Guidelines for Data Centers (TC 9.9)

Partial Client List For Audits



About Choice Solutions

Established in 1991 Choice Solutions Ltd. is a leading IT and Facilities solutions provider. Choice Solutions Ltd. business comprises of Six different practices, namely

IMS

- Desktop, Server, Network, Storage, Support, OS, Assets, Apps, Non IT
- Hardware - A-Add, M-Modify, I-Install, C-Change, R-Repair
- Assets, Security, Software Distribution, Upgrades

Networking

- Packaged Services Monitoring & Management
- Products, Security, Design, Deploy, Maintain
- Auditing & Compliance, SOC

Datacenter

- DC Audit, Monitor & Manage, Training
- Assess, Design, Built, Deploy, Disaster Recovery

Consulting

- Business Consulting, CIO & Technology Services, Physical Security, Power Devices, IT Consulting
- DC Consulting, ERP, CRM & Custom Apps

Cloud Computing

- Cold Site – Backup, Disaster Recovery
- Hot Site – HaaS, Software, Manage
- Public Cloud, Private Cloud, Hybrid Cloud
- CaaS, License Software, IaaS
- Disaster Recovery

Power

- Power Audit, Equipment Management
- Physical Security, Power Devices
- Power Saving Devices
- Design & Audit
- Renewable Energy Products