

PREVENTING CORROSION RELATED ELECTRICAL FAILURES IN CONTROL ROOMS

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Corrosion by definition is the gradual destruction of material, usually metals, by chemical reaction within its environment. During this reaction, metal is dissolved into an electrolyte, and oxygen from the atmosphere is reduced in the solution. Gas-phase contaminants such as H₂S, SO₂, and Cl₂ can often accelerate this reaction. In recent years, the miniaturization of electronic components and the elimination of lead-based solder via the Restriction of Hazardous Substances (RoHS) Directive, have made the corrosion of electronics a matter of increasing concern. Corrosion causes failures in electronics by creating a bridge between the electronic connections, thus destroying the electrical component. Because of these changes to electronics and the adoption of RoHS, there has been a concerted effort to update existing standards and to issue new guidelines. For over 30 years, the International Society of Automation (ISA) has been the definitive source for corrosion guidelines with standard 74.01. Building off of the ISA standard and RoHS legislation, a recommended procedure is discussed to identify problem areas, apply the correct gas-phase solution, and to monitor the solution. In the gas-phase filtration solution of the procedure, multiple filtration solutions are presented, including discussion on which filtration media and delivery device might be most appropriate for your application based on the parameters of desired media life, first cost and given constraints.