

Workstation Voltage Detection Systems: New Weapons in the Battle Against ESD

As electronic design structures continue to shrink, so does their capacity to withstand damage sustained from exposure to electrostatic discharge (ESD). The subsequent financial impact has become increasingly evident. Limiting the presence electrostatic charge (ESC) at workstations is essential, resulting in a profound need for enhanced technologies, a better understanding of workplace electrostatics and improved operator efficiency.

Many facilities are beginning to scrutinize the time involved in testing for ESD when products enter production, with challenges including delays, incorrect testing and even skipped test procedures. In light of these roadblocks, spending capital dollars for better testing options seems increasingly feasible, and return on investment is achieved in a relatively short time frame. Current workstation voltage detection systems offer real-time monitoring and justify the expense of critical workstation ESC monitors.

Sacred ESD Truisms Fail in Submicron Space

With the development of more hypersensitive devices, certain ESC/ESD practices are no longer valid. For instance, performing random ionization checks has become an unacceptable solution. Increasingly stringent control requirements have made real-time monitoring protocols for temperature, humidity and particle count a mandatory practice. Even low frequency electrostatic fields from power distribution wiring have been shown to generate several hundred volts per meter, contributing to the threat of failure by electrostatic induction.

A New Approach Arrives

A successful new approach to ESC/ESD control is reaching the agendas of ESD committees and is now being included in the design plans for many manufacturing facilities. The approach involves a station by station workplace audit to verify performance of ESD equipment while identifying any potential issues. At this time, permanent ESC monitors are installed at critical workstations for real-time voltage monitoring and detection, providing immediate notification and permanent recordkeeping.

As with traditional solutions, permanent ESC monitors require use of split-conductor; however, half of the wrist strap connects the user to ground and the isolated half measures body voltage. Alarm notification sounds if body voltage measurements are in excess of the predetermined level. A proximity channel in conjunction with sensing antenna will detect a charged human body as it approaches.

While similar types of plant-wide environmental data acquisition systems have been in place for years, they have typically measured temperature, humidity, gas pressure and gas flow. ESC /ESD data acquisition systems are designed to offer a more comprehensive understanding of the overall impact of electrostatic variables in the manufacturing process.

Going forward, modern ESD professionals must focus on the net result of individual ESD protective products and their impact on ESC control to achieve a full understanding of workstation static management. As technologies improve, the message remains clear – eliminate ESC to control ESD.

Based on an article originally published by Simco-Ion.