

Facility Safety

A full-page background image of a male worker in a white hard hat, safety glasses, and orange gloves. He is wearing a grey t-shirt and dark overalls with a red pocket. He is focused on working with a complex piece of industrial machinery, possibly a pump or engine, with various pipes and hoses. The background is slightly blurred, showing an industrial setting.

MANAGEMENT

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2019 TOP PRODUCTS & SERVICES

Continuous “Hands Off” Insulation Resistance Testing of Critical Motors

For decades, plant personnel have performed insulation resistance tests with handheld megohmmeters to prevent motor failures that lead to costly unplanned shut-downs, penalties and re-winding repairs.

Portable megohmmeters also require electrical technicians to manually disconnect the equipment cables and connect the test leads on potentially energized or damaged equipment to perform the manual testing. These tests expose technicians to potential arc flashes when they access the cabinet. In the United States non-fatal arc flash incidents occur approximately 5 to 10 times per day, with fatalities at the rate of approximately one per day.

“Hands-Off” Monitoring

The continuous monitoring system also allows for a “hands-off” approach that does not require service technicians to access control cabinets to perform a manual insulation resistance test. Instead an analog meter

outside on the control cabinet door shows the insulation resistance megohms readings in real time.

Preventing Arc Flashes

Perhaps more importantly, Ricky Loupe, electrical and instrument manager at a large plant that makes a powdered form of Polyvinyl Chloride (PVC) as well as the primary component ingredient, vinyl chloride said the “hands off” approach reduces employee exposure to potential harm from arc flashes.

“With the continuous insulation resistance monitoring devices, you eliminate the potential harm of arc flashes by not having the technician open cabinets for megohm testing at all,” said Loupe.

Arc flashes are an undesired electric discharge that travels through the air between conductors or from a conductor to a ground. The flash is immediate and can produce tem-

peratures four times that of the surface of the sun. The intense heat also causes a sudden expansion of air, which results in a blast wave that can throw workers across rooms and knocked them off ladders.

Arc flash injuries include third degree burns, blindness, hearing loss, nerve damage, and cardiac arrest and even death. Among the potential causes of an arc flash listed by NFPA 70E includes “improper use of test equipment.” Although de-energizing equipment before testing and wearing appropriate personal protective equipment (PPE) is recommended, the best solution is to eliminate the need to access the control cabinets at all to perform insulation resistance tests. In addition to the risk of arc flashes, Loupe has witnessed another potential risk firsthand that can occur if a motor shorts out within feet of an employee. **FSM**
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