

Case Study

Switch-Rated Devices Give Edison Welding Institute Flexibility and Efficiency

The need to quickly and safely disconnect and reconnect welding equipment, while continually moving it to one of the 100+ workstations at the Edison Welding Institute (EWI) was a huge challenge. The solution was to install MELTRIC Switch-Rated plugs and receptacles. The MELTRIC Switch-Rated devices provide a combination plug/receptacle and disconnect switch in one device. This allows EWI workers to safely make and break connections, even under full load, without the need for additional voltage testing or suiting up in arc rated Personal Protective Equipment (PPE). Since switching to MELTRIC, moving equipment has been much easier. With MELTRIC, EWI saved time, gained greater flexibility, and improved safety.

EWI is the leading North American engineering and technology organization dedicated to the applied research and development of materials joining and welding. It provides expert materials joining assistance, as well as research, consulting, and training, to its members in the aerospace, automotive, government, energy, and chemical, heavy manufacturing, medical, and electronics industries. Its 40,000 sq. ft. high-bay laboratory provides the space to set up individual workstations for a large number of projects simultaneously. Three 1,600 amp bus bars provide 480V power throughout the laboratory, with more than 100 separate power drops for welding power supplies.

Because of the nature of EWI's assignments, workspace layouts and equipment are constantly being rearranged. Manager, Welding and Testing Labs, Andy Joseph says, "We have nearly every one of the recognized welding processes commonly used today, and they all require electricity. The equipment for all these different procedures takes space, but we're not using them all at the same time, so we need to be able to change them out." Previously, fused disconnects were attached directly to the overhead bus bars, with pin and sleeve connectors at the workstations. Safety was a concern because the disconnects were located at the ceiling level. Joseph explains, "We had to use a 20-foot pole with a hook on the end to turn off the power to a plug. Disconnecting live would have been an unsafe option." He adds, "From a safety standpoint, there was no way to disconnect quickly if someone was getting hurt."

As a remedy, EWI first considered installing disconnect switches at ground level for each location. This still would have required the pin and sleeve plugs to connect the equipment, and the switch boxes would have taken up valuable space. Joseph notes, "With 120 of the old connectors, we would have had to buy 120 disconnect boxes that would have required extra wiring."

Instead, Joseph selected MELTRIC Switch-Rated plugs and receptacles, which combine the two functions. With Switch-Rated devices installed at more than 100 locations in the lab, disconnecting power is a simple and



Three MELTRIC Switch-Rated welder receptacles provide power for Gas Metal Arc Welding (GMAW) in an EWI work cell.



Welding technician Tim Moore prepares a GMAW torch on a mechanized fixture.

Switch-Rated Devices Give Edison Welding Institute Flexibility and Efficiency

safe operation. A push-button disconnect on the receptacle breaks the circuit and ejects the plug to its rest position. The plug can then be withdrawn from the receptacle in complete safety because the circuit is totally deenergized. Separation of the plug from the receptacle provides NFPA 70E-required visual verification of deenergization.

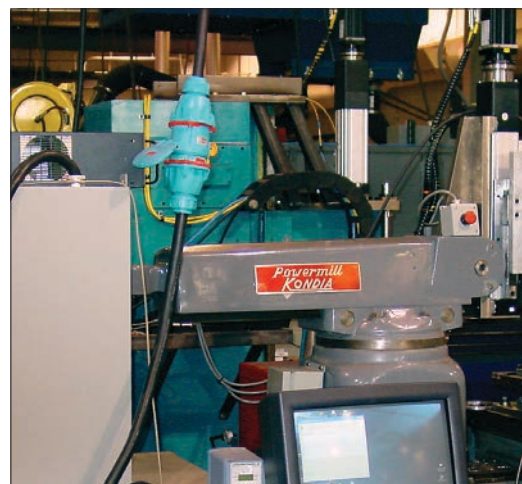
Safety was the key factor in the decision to use MELTRIC Switch-Rated plugs and receptacles. According to Joseph, simplified compliance to the NFPA 70E Standard for Electrical Safety in the Workplace was an additional benefit to using MELTRIC devices. He says, "With the disconnects overhead, we would have to suit up with PPE because there was no way to verify that the power was disconnected without someone going up in a manlift. Having the disconnect switch right in the plug eliminates the need for an arc flash hazard assessment or suiting up."

Switch-Rated devices also provide greater flexibility in EWI's operations. Joseph points out, "We have a limited amount of space and are continually changing out equipment for different projects. When we start or finish a project, we can pull out one setup and bring in another quickly and safely." Approximately half of the EWI laboratories are set up for systems welding, with the other half divided between arc welding and laser welding. Joseph explains, "We may have to move one technology into another area, and MELTRIC devices make that very simple."

Another benefit is cost-savings from the easy plug and play installation of Switch-Rated devices. According to Joseph, installation is simplified with MELTRIC compared to the inconvenience of installing their former pin and sleeve connectors. "The old connectors require soldering," he notes, "and we are constantly swapping equipment in and out. Changing MELTRIC devices are a timesaver by comparison."

In addition to the welding power supplies, EWI uses auxiliary equipment such as hoists, wire feeders, fume extractors, welding positioners, robotics, and travel carriages. Joseph says he purchased MELTRIC 20 amp and 30 amp Switch-Rated devices for these applications, all rated for 480V operation.

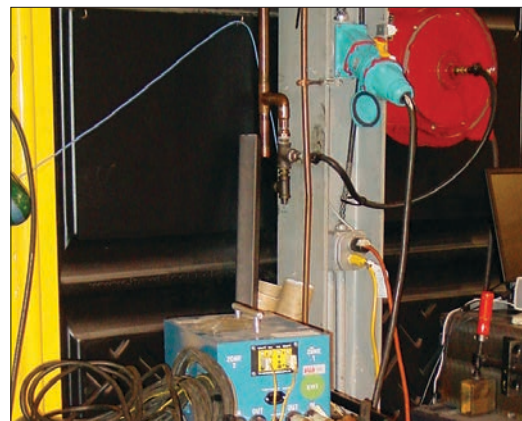
In summary, Joseph states, "Probably the biggest benefit for us has come from efficiency improvements. Previously, because of the difficulty with making disconnects during a changeover, we would leave workstations set up because it was hard to take them apart and put them back together. This made floor space hard to come by. It also caused some turf wars on how space was being used. Now, changeouts are easier to accomplish and we have a more presentable area. The engineers and technicians don't have to worry about someone else tearing down their workstation because it is easy to set up again."



A Switch-Rated inline plug and connector provides power to a control station for ultrasonic machining, soldering, and seam welding equipment.



EWI technician sets up a GMAW torch powered via a MELTRIC Switch-Rated plug and receptacle.



MELTRIC Switch-Rated device (on column) allows this TIG welder to be safely and quickly disconnected and relocated.