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Decontactors Give Edison Welding Institute Flexibility and Efficiency

At the Edison Welding Institute (EWI), the need to continually move welding equipment between more than 100 different work stations made it difficult to quickly and safely disconnect electrical power each time. By installing a combination plug/receptacle and disconnect switch at each location, EWI has been able to save time, gain greater flexibility and improve safety. The Meltric Decontactor Series switch-rated plugs and receptacles now used at the facility allow workers to safely make and break electrical equipment connections, even under full load.

EWI is the leading engineering and technology organization in North America 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 work stations for a large number of projects simultaneously. Three 1,600 amp bus bars provide 480 volt 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 work stations. 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." From a safety standpoint, he adds, 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's Decontactor Series switch rated plugs and receptacles, which combine the two functions. Now with Decontactors installed at more than 100 locations in the lab, disconnecting power is a



Three switch-rated welder receptacles provide power for Gas Metal Arc Welding in a EWI work cell.



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

simple and safe operation. Pressing a push button off-switch on the Deconnector receptacle breaks the circuit and ejects the plug to its rest position. Then the plug can be withdrawn from the receptacle in complete safety, since the circuit is already dead. When the plug and receptacle are separated, de-energization can be visually verified, and a safety shutter on the receptacle prevents access to live contacts.

Safety was the key factor in the decision to use the switch rated plugs and receptacles. According to Joseph, simplified compliance to the NFPA 70E Standard for Employee Workplaces was an additional benefit to using the Deconnectors. He says, "With the disconnects overhead, we would have had to suit up with PPE (personal protective equipment) 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."

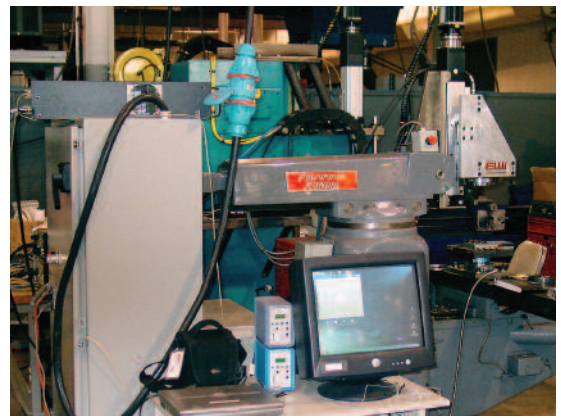
In addition to safety, the Deconnectors provide greater flexibility in EWI's operations. Joseph points out, "We have a limited amount of space and are continually changing out equipment for different projects. When we start or finish a project, we can pull out one setup and bring in another quickly and safely." Approximately half of the 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 the Deconnectors make that very simple."

Another benefit, according to Joseph, is the easier installation of the Deconnectors compared to the previous pin-and-sleeve connectors. He says the Deconnectors offered a relative cost savings because of the inconvenience of installing the former connectors. "They required soldering," he notes, "and we are constantly swapping equipment in and out. Changing the Deconnectors is a timesaver by comparison."

They are used on other applications as well. 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 20 each of Meltric's 20 amp and 30 amp Deconnectors for these applications, all rated for 480 volt 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, we have a more presentable area, and the engineers and technicians don't have to worry about someone else tearing down their workstation because it is easy to set up again."

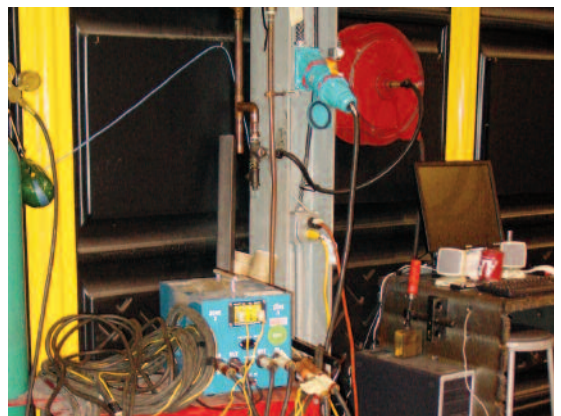
The Deconnectors used at EWI were provided through Meltric distributor Johnson Electric Supply, of Columbus.



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 gas metal arc welding torch powered via a switch rated Deconnector plug and receptacle.



Deconnector (on column) allows this TIG welder to be safely and quickly disconnected and relocated.