

# Case Study: Power Isolation in a Low Voltage System



# Quad Plus®



## Panel design and system integration for a low voltage control cabinet

### Objective

- Provide Panel Design, System Integration, and Commissioning

### Solutions

- Configured all new compatible hardware into an existing system
- Used an SCE Enclosure that has a sequester Lock Boxes

### Results/Benefits

- Existing system tie-ins (Ethernet, hardwired e-stop, UPS) are clearly marked and identifiable in the control cabinet.
- The sequestered arc-rated lockbox allows the customer to isolate the main power source and enter the cabinet without shutting down the entire system.
- All internal and field wire runs inside the control cabinet are isolated to align with today's electrical standards.

### Background

The customer modified an existing machine that required new electrical controls in a limited space. This control panel's components consisted of a rectifier unit, a couple of servo drives, and distributed IO. These components not only had to fit in a small area, but also had to be integrated into the existing system, which included the following: ethernet connection for device-level communication, a hardwired e-stop, and an uninterrupted power source. The customer also wanted the capabilities to lock-out the main 480 power to isolate the main circuit breaker from other components in the control cabinet.

### Quad Plus Solution

Our solution began with designing a system of compatible hardware that could be seamlessly integrated. Our experts researched the original program and electrical schematics to devise a smooth installation and startup plan. The design also had to be aligned with current electrical standards, including the National Electric Code (NEC) and UL Standards. Design requirements included AC and DC circuit isolation for a low voltage application, and all terminations, namely the e-stop tie-in and uninterrupted power sources, had to be easily recognizable in the prints and pull list.

Due to the limited space within the cabinet, we were unable to use a sequester bay type enclosure for main power feed isolation. Instead, we used an SCE enclosure with an arc-rated lockbox so the customer could isolate the main breaker from the rest of the components in the cabinet. Because there was an additional UPS used for control power (24VDC), the lockbox allowed the customer to isolate and de-energize the 480v portion of this panel.

Quad Plus was able to configure all new compatible hardware into an existing system. This allowed for a seamless installation and integration during startup.