



Flexibility and Custom-Design Expertise Provide Solutions for National Laboratory

S&C Featured Solution: S&C Custom Metal-Enclosed Switchgear

Customer Challenge

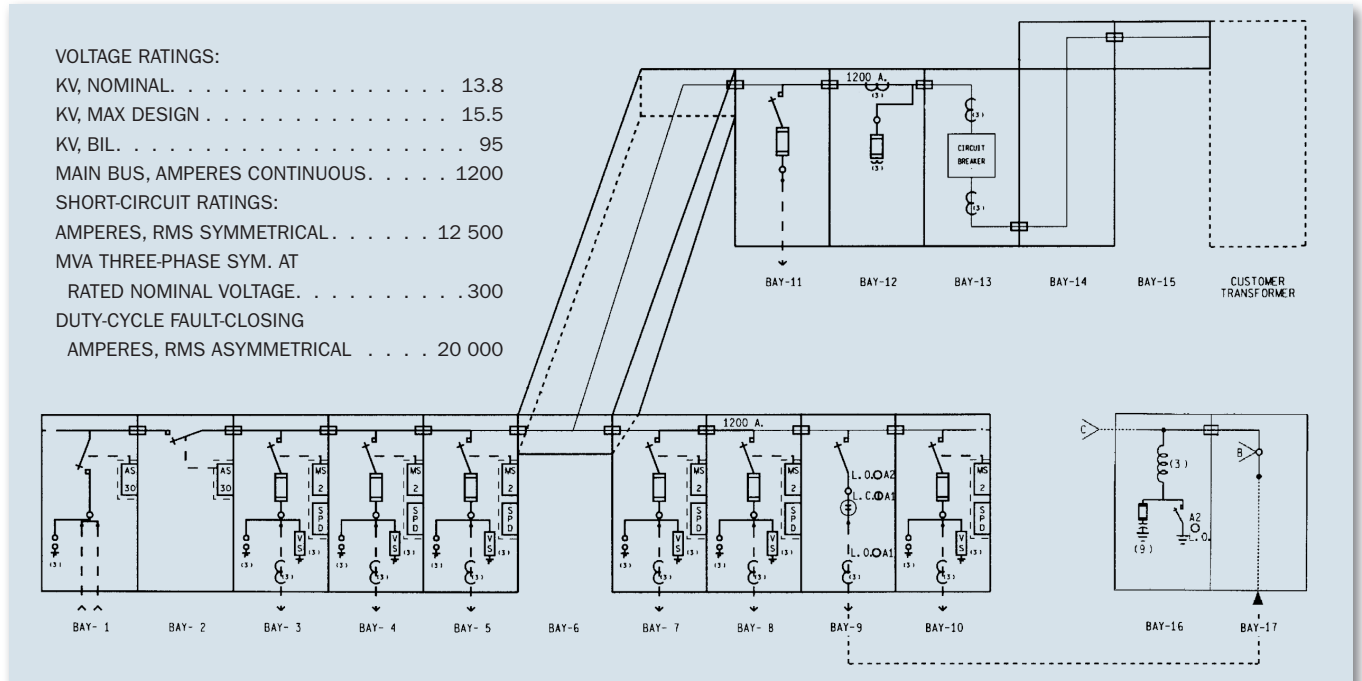
A major national research laboratory required service-entrance switching and protection for a lab expansion. The project engineers understood the economic and application benefits of fused load-interrupter switchgear, but had a number of special requirements which threatened to dramatically inflate the price tag for the project.

S&C Solution

A 17 bay lineup of S&C Metal-Enclosed Switchgear was selected based in part on S&C's ability to custom-tailor a variety of components to precisely meet

the needs of the application. S&C's pre-engineered System II Modular Metal-Enclosed Switchgear was used for the "standard" feeder bays (bays 1-5, 7, 8, and 10), while specially-designed S&C Custom Metal-Enclosed Switchgear was used to meet the unique requirements of bays 6 and 11-17. This combination provided a custom-designed solution specially tailored to the needs of the application, while simultaneously taking advantage of the economies of pre-engineered load-interrupter switchgear.

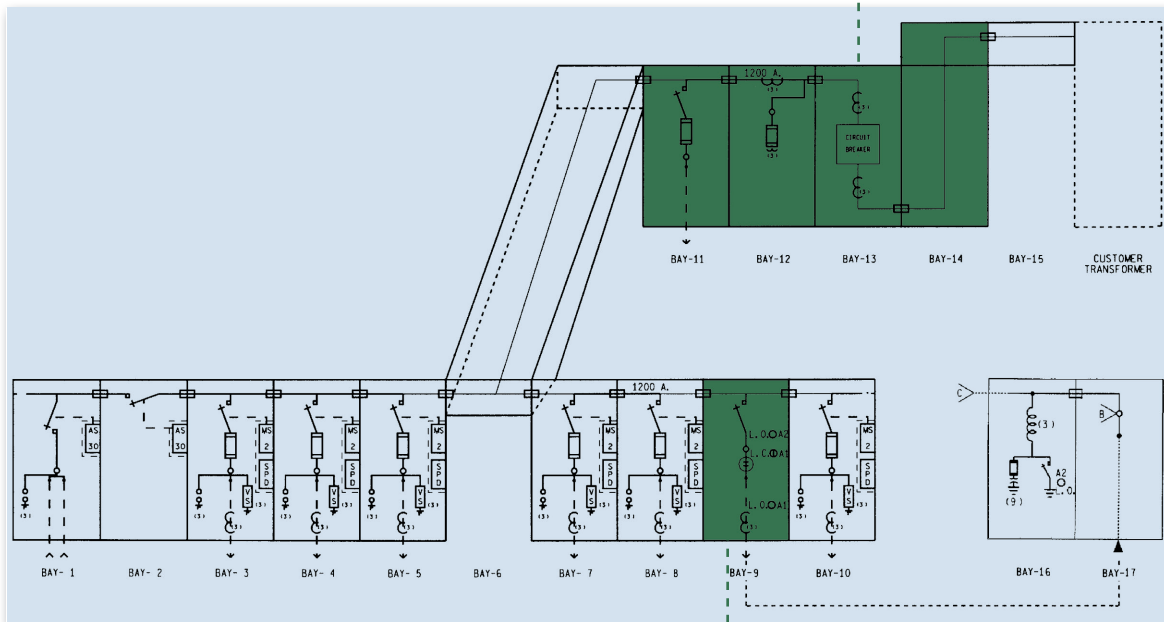
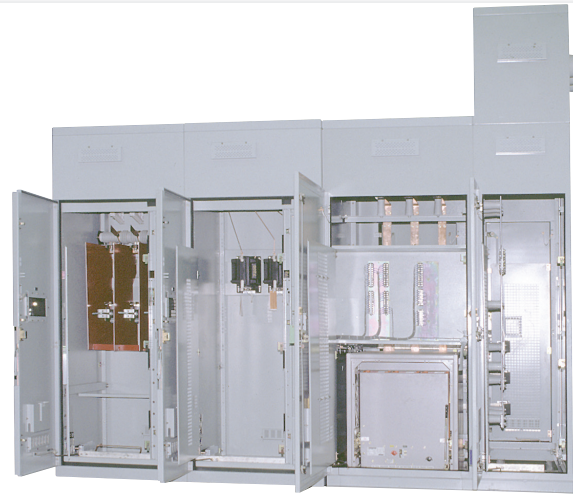
The one-line diagram is shown below, and descriptions of some of the specific functions and special features are detailed below and on the following page.



The primary service entrance is a 115-kV utility source connected to an S&C Series 2000 Circuit Switcher (not shown). The Circuit Switcher feeds a 115/12.47-kV step-down transformer which is in turn connected to the switchgear lineup through a bus duct (Bay 15). Bay 1 serves as an alternate service entrance bay. If maintenance must be performed on the primary service-entrance equipment, or if a problem occurs on the utility system, a mobile generator may be connected to bay 1 to provide an alternate source of power during the interruption.



A draw-out vacuum circuit breaker was utilized in the main incoming section to meet the specific relaying requirements of this application. The circuit breaker also meets the special requirements associated with capacitor switching so that it can switch the entire downstream load including the capacitor bank in bay 16.



The separate 3600 kvar metal-enclosed capacitor bank in bays 16 and 17 provides voltage regulation for the system and includes provisions for adding additional banks in the future. A vacuum switch was utilized in bay 9 (shown at left) to meet the special requirements associated with switching a capacitor bank of this size.

The remaining feeder bays, which serve all of the loads in the expanded facility, utilize S&C Power-Operated Mini-Rupter Switches with Power Fuses for reliable, economical switching and protection. S&C Type SPD Open-Phase Detectors in each bay provide single-phasing protection for downstream three-phase loads.