
Effect of Solar Radiation on Outdoor Metal-Enclosed Switchgear

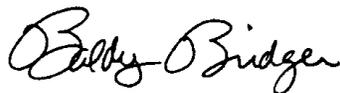
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From time to time we get questions about the rating of outdoor metal-enclosed switchgear which is exposed to solar radiation. It is fairly obvious to anyone who thinks about it that switchgear sitting out in the sun gets hotter than switchgear sitting in the same ambient air temperature inside a building where it has no solar exposure. How should we handle this extra heat?

Metal-enclosed switchgear built to ANSI standards, as is all Powell switchgear, is rated in accordance with the usual service conditions set forth in those standards. All four of the ANSI product standards we commonly use (C37.20.1 for low voltage switchgear, C37.20.2 for metal-clad switchgear, C37.20.3 for interrupter switchgear, and C37.23 for bus duct) include as one of the usual service conditions that the effect of solar radiation is not significant. Thus, all testing and rating of switchgear ignores the effect of solar radiation.

When switchgear is installed in a location where solar radiation is significant, there is another ANSI standard to give guidance in properly applying the switchgear. ANSI/IEEE C37.24-1986, *IEEE Guide for Evaluating the Effect of Solar Radiation on Outdoor Metal-Enclosed Switchgear*, gives the information necessary to allow calculating the derating of the continuous current capability of switchgear exposed to the sun. This standard is site-specific; the derating depends on the location of the switchgear installation.

As a switchgear manufacturer, we assume that our customers specify switchgear ratings in accordance with the usual service conditions given in the product standards. We further assume that the specifier will do the necessary evaluation and either limit his loads or upgrade his ratings to take care of any solar radiation derating that is needed. If requested, we will be glad to discuss this derating with our customers, and to assist them with the calculations if necessary, but we should not be expected to automatically quote a 2000A circuit breaker where a 1200A circuit breaker is specified, just because the installation is outdoors in Yuma, Arizona.



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