



Powell Technical Brief #20

Application of Dummy Circuit Breakers in Metal-Clad Switchgear

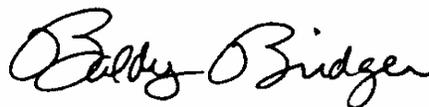
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Dummy circuit breakers are used in metal-clad switchgear to provide a method of disconnecting and isolating a circuit or circuits without using a circuit breaker. A common use of a dummy circuit breaker is as a temporary connection in a switchgear cell where a circuit breaker will be installed as part of a planned future expansion. Another use might be to isolate one end of a tie bus or cable from a switchgear bus.

Because a dummy circuit breaker is really a set of three jumper bars mounted on a breaker carriage, it has absolutely no current interrupting rating. If an attempt is made to withdraw the dummy circuit breaker with current flowing, arcing will occur at the primary disconnect fingers. This may result in operator injury, equipment damage, or both. Therefore, dummy circuit breakers normally are interlocked with other switching devices so that the dummy cannot be withdrawn until the other devices are opened, insuring that no current is flowing in the dummy.

A particular application that can be troublesome is isolating a tie cable that has been opened by a circuit breaker at the other end. If the cable is still attached to an energized bus through the dummy breaker, cable charging current will flow through the dummy. It only takes a few hundred feet of 15 kV cable to draw a charging current of as much as half an amp. This highly capacitive current is difficult to interrupt. It is recommended that the interlocking for any circuit involving power cable and a dummy circuit breaker be arranged so that the cable is completely deenergized before the dummy circuit breaker is removed to isolate the cable.

Deenergizing the unloaded bus of a lineup of metal-clad switchgear by withdrawing a dummy circuit breaker is an acceptable application. The limited length and very low capacitance of a switchgear bus structure keeps the charging current low enough to be successfully interrupted by withdrawing a dummy circuit breaker.



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