

Aluminum Foam Transition Washer for Power Connections

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ABSTRACT

Different types of transition washers are commonly used to improve the current transfer across the contact interface and the performance of bolted connections. These washers are usually made of aluminum or copper alloys and have either serrated or profiled surfaces intended for disruption of the oxide layers on the contacting surfaces. The aim of this study is to compare the efficiency of the washers commonly used in bolted joints with those made of aluminum foam material. Aluminum foams are a new class of materials with very interesting properties such as enhanced abilities for energy and sound absorption, as well as enhanced impact, insulating and shielding characteristics. Bolted joints, assembled with the common types of transition washers and those made of aluminum foam, were subjected to current cycling tests. The changes in the connection resistance and contact force were continuously monitored and used as the qualifying indicator of the join performance. The results showed that the bolted joints assembled with the aluminum foam washers performed significantly better than other types of transition type washers.