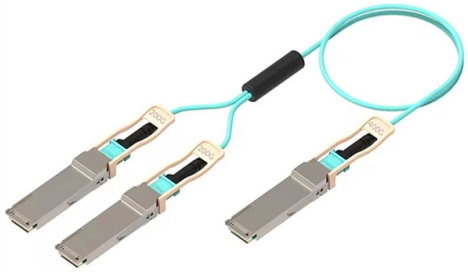
Busbar Lap-in



Overview

This paper is focused on multi-planar hybrid busbars made from copper and aluminum for electric energy distribution systems. The objective is to provide an overview of its assembly by injection lap riveting in multidirectional tools and to comp. This paper is focused on multi-planar hybrid busbars made from copper and aluminum for electric energy distribution systems. The objective is to provide an overview of its assembly by injection lap riveting in multidirectional tools and to compare the electrical performance of its joints against that of conventional (in-plane) busbars.The injected lap riveted joints require a dovetail ring hole and a countersunk hole to be first machined in the overlapped copper and aluminum sheets and then to inject the semi-tubular rivets by compression through the lined-up holes in order to fix the sheets in position. In this work, the injection of the semi-tubular rivets was carried out in a laboratory multidirectional tool set that converts the vertical press stroke into two-orthogonal horizontal movements by mea. ••Multi-planar hybrid busbar joint consisting of a three-conductor rake-shaped elbow.••Innovative assembly of the rake-shaped elbow by injection lap riveting in a multidirectional tool.••Evaluation of the electrical performance of the rake-shape elbow in direct current (DC).••Importance of the mechanical and electrical combined design of multi-planar hybrid b. Multi-planar hybrid busbarsInjection lap rivetingFinite element modellingExperimentationInjection lap riveting (ILR) is a mechanical joining process originally proposed by Ferreira et al. (2021) to connect two sheets made from similar or dissimilar materials placed one on top of the other, at ambient temperature. The process belongs to the sub-category of joining by plastic deformation with auxiliary external elements (Meschut et al., 2022) (Fig. 1a) and requires first to machine a dovetail ring hole and a countersunk hole in the lower and upper sheets, respectively, and then to inject a semi tubular rivet by compression through the lined-up holes to create a mechanical interlocking that fixes the two sh...

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