



G CORNER
Design & Engineering Solutions

BUSBAR SYSTEM FLEXIBLES

G Corner designs and manufactures specialist high DC current flexibles for use in high current DC busbar systems.

There are a number categories of flexibles produced:

- ▶ Busbar system expansion flexibles
- ▶ Transformer/Rectifier connection flexibles
- ▶ Connection flexibles to DC isolation switches
- ▶ Intercell and endcell electrolyser connection flexibles

Expansion Flexibles

The purpose of fitting expansion flexibles are twofold, firstly they help with tolerances on installation allowing some movement as the busbar system is installed, secondly and the primary reason is that the expansion flexibles allow for a certain amount of linear expansion and contraction in the busbar system caused by thermal cycling as the ambient and operating temperatures rise and fall inside the tankhouse.

The expansion flexibles are bolted into the busbar system, are usually around a length of 1.2 meters and sized at the same overall dimensions as the individual busbar laminations. The flexibles are made up from a number of thin high conductivity Cu-ETP copper strips and consolidated into a solid mass at the ends. This will therefore give the same current density as the solid busbars with an improved lower temperature rise than the busbar due to the increased surface area offered by the laminated copper strips in each flexible.

Transformer/Rectifier Connection Flexibles

It is essential to connect the solid busbars of the positive and negative busbar feeders to the connection tabs on the T/R unit through a series of flexible connections. The aim of these flexibles is to avoid any possibility of the solid busbars stressing the connections on the T/R unit. These stresses can be caused through thermal expansion of the busbar system, misalignment of the busbar system on assembly or small vibrations from within the T/R unit.

The T/R connection flexibles are usually designed to be more flexible than the expansion flexibles with a thickness, made up from multiple laminations of thin high conductivity Cu-ETP copper strips, the same as of the width in that you would have twice or three times as many T/R flexibles compared to the number of solid busbars.

The current density of the T/R connection flexibles is usually a little higher than that for the main busbar system, but this is compensated by a lower temperature rise due to the increased surface area of the flexibles provided by the multiple lamination design. Copper plates are 'shaved' during the main manufacturing process, to remove any excessive surface oxides and to give a good surface finish suitable for the electrical contact faces of the busbars.



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