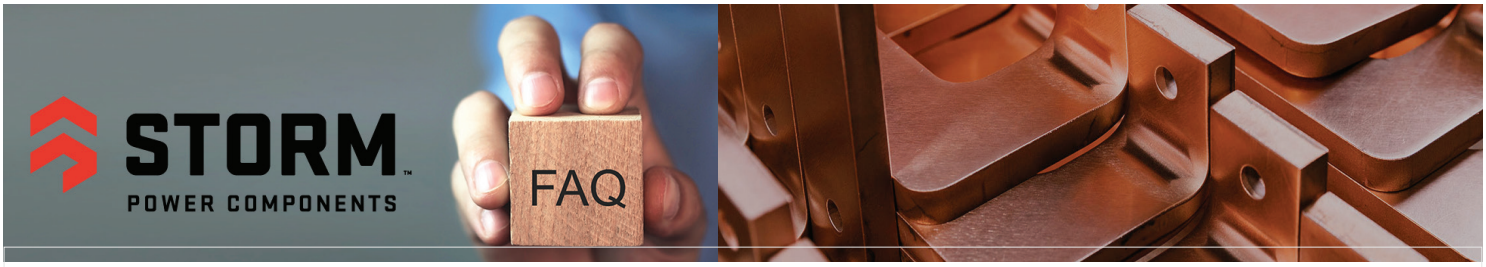
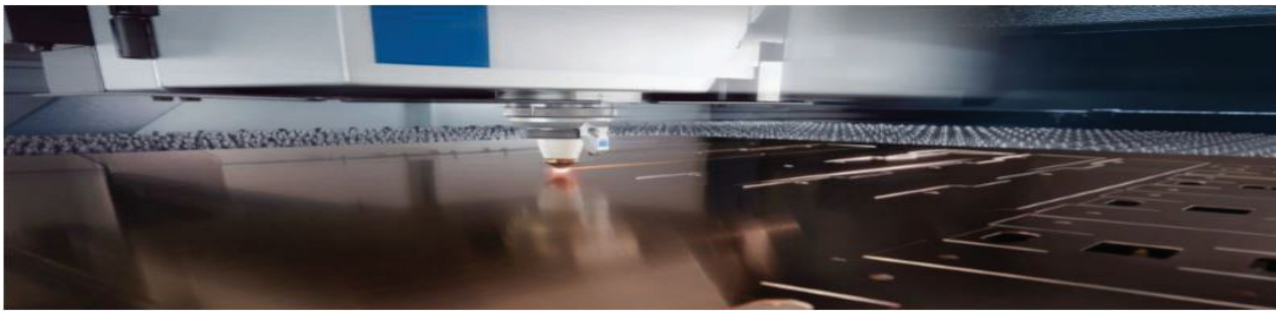


As a leader in busbar design and manufacturing, Storm Power Components continually gets a wide range of questions on key issues regarding busbars. - including this one.

What are Practical Limits on Length of Busbars?

While there is no absolute maximum length for a busbar, the practical limitations imposed by mechanical stability, electrical performance, thermal management, and installation challenges must be carefully considered. By addressing these factors, longer busbars can be implemented effectively in a wide range of applications. These limits are influenced by several factors:

Mechanical Stability and Support: As busbars increase in length, they are more prone to sagging due to their weight. To maintain structural integrity and ensure proper alignment, additional support brackets or insulators may be required at intervals along the length of the busbar.
Thermal Expansion: Long busbars are more susceptible to thermal expansion and contraction. This can cause mechanical stress, leading to warping, buckling, or even damage to connections. Expansion joints or flexible connectors are often needed to accommodate these movements.
Electrical Performance: Over long distances, there is an inherent voltage drop due to the resistance of the busbar material. Longer busbars have greater inductance and impedance, which can impact performance of high-frequency signals and lead to issues such as signal reflection or distortion.
Heat Dissipation: Long busbars may have difficulty dissipating heat effectively, especially if they are carrying high currents. Overheating can lead to insulation damage, increased resistance, and reduced lifespan. Adequate cooling or ventilation is necessary to manage temperature rise over extended lengths.
Current Distribution: In very long busbars, there can be uneven current distribution, especially in multi-layer or laminated busbars, which can cause localized overheating or inefficiencies.
Manufacturing and Installation Challenges: Fabricating and transporting very long busbars can be challenging. Handling, aligning, and securing long busbars during installation can be difficult, requiring specialized techniques. The risk of damage during transportation or installation increases with length.
Cost Considerations: Material and Manufacturing Costs: Longer busbars require more material and more complex manufacturing processes, leading to higher costs. Additionally, the cost of additional supports, insulation, and cooling solutions must be considered.



Storm Power is the leader in designing and manufacturing busbars of all types and lengths. Our newest machine features a 20' long bed and a 24KW fiber laser capable of cutting copper or aluminum at speeds in excess of 1200 IPM.

For more information on designing long busbars, Contact Storm Power Here.