Water Cooled Laminated Busbars Solutions

Expertly engineered for reliable performance
Mersen’s Water Cooled Laminated Busbars are engineered to meet your thermal needs.

WHAT IS LAMINATED BUS BAR?
Laminated bus bar is an engineered component consisting of layers of fabricated copper or aluminium separated by thin dielectric materials, laminated into a unified structure. Sizes and applications range from surface-mounted bus bars the size of a fingertip to multilayer bus bars that exceed 6 meters in length. Laminated bus bar solutions are routinely used for low volumes of through tens of thousands per week.

WHY CHOOSE LAMINATED BUS BAR?
Bus bars reduce system costs, improve reliability, increase capacitance, and eliminate wiring errors. They also lower inductance and lower impedance. Plus, the physical structure of bus bars offers unique features in mechanical design. For example, complete power distribution subsystems can also act as structural members of a total system. Multilayer bus bars offer a structural integrity that wiring methods just can’t match.

LAMINATED BUS BAR WITH COOLING INTEGRATED
To cope with the global increase of temperature and space reduction in power electronic applications, Mersen has engineered an innovative concept that combines in a single customized device a laminated busbar with a water cooling pipe designed to meet your thermal needs.

Indeed, thermal considerations often exceed conventional means of heat dissipation whenever high frequency or high current densities enter into play. The “skin effect” created by the high frequency of the AC voltage and the high current densities reached because of space reduction make it essential to add water-cooling to the system to maintain a constant temperature and avoid overheating.

Moreover, the water cooled laminated busbar also contributes to cool surrounding connected components such as IGBTs or capacitors, but can also act as an heating device with warm water to avoid breaking these components in environments where ambient temperature is very low.

CUSTOMER’S BENEFITS
- Higher power admissible
- Metal savings
- Hot spots suppression
- Global heat decrease close or below ambient temperature
- Custom path of the pipe to cool surrounding components
- Increased current density
- Possibility to inject warm water to heat surrounding components in low temperature environments

COMPARISONS WITH AND WITHOUT COOLING

Test 1500A with cooling
- Reduces Temperature by 23°C

Test 1500A without cooling
- Average Temp.: 43.5°C

Test 1500A with cooling
- Average Temp.: 18.5°C

Test 1500A without cooling
- Average Temp.: 31°C

Comparisons with and without cooling

WATER COOLED LAMINATED BUSBARS SOLUTIONS

BATTERY
- Li-ion battery packs

CAPACITOR BANK
- DC-link capacitors
- Ultracapacitors

POWER CONVERSION
- On-board converter
- Sub-station converter
- Inverter
- Rectifier

POWER SUPPLY
- Power supply units
- UPS
- Power amplifier

DRIVES
- LV drive
- MV drive
A WORLD LEADER
in safety & reliability
for electrical power

Mersen designs innovative solutions to address its clients’ specific needs to enable them to optimize
their manufacturing process in sectors such as Energy, Transportation, Electronics, Chemical,
Pharmaceutical and Process Industries.

A GLOBAL PLAYER

Global expert in materials and equipment for extreme environments and in the safety and reliability of electrical equipment.

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