

# Monitoring Laminated Busbar Solutions

Expertly engineered for reliable performance



**MERSEN**

Eldre | Ferraz Shawmut | R-Theta

# Mersen Monitoring Laminated Busbars are engineered to meet your custom needs

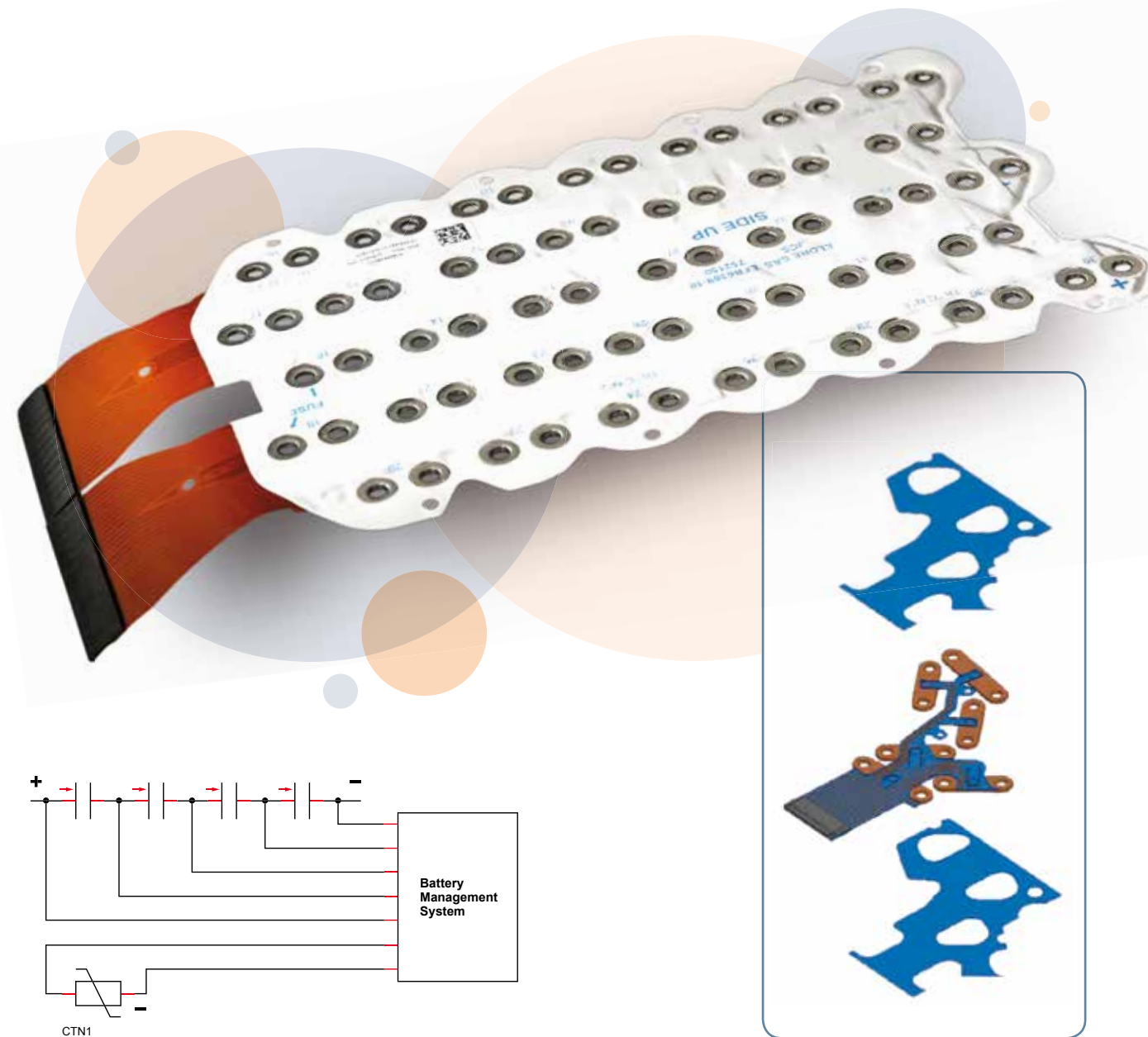
## LAMINATED BUS BAR WITH MONITORING INTEGRATED

To cope with the growing demand of constant voltage and temperature monitoring in power electronics applications such as lithium-ion and ultracapacitors packs, Mersen has engineered an innovative concept that combines in a single customized device a laminated busbar, a flexible circuit, thermal sensors and other custom electronic components. It allows, with only one part, to make both the power connections and the signal collection from each cell independently, so the status of each cell is delivered to the Battery Management System via a custom connector.

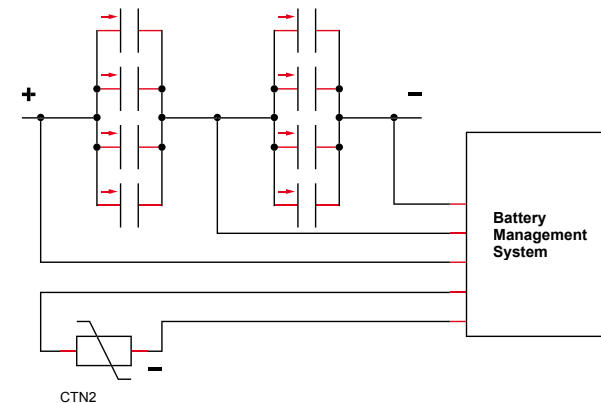
This is a smart answer to the market need since it solves major problems of current technologies ordinarily used to make the power connections such as series of small copper bars, cables or PCBs. Indeed, Mersen Monitoring Bus Bar gives the user improved product quality providing easy handling, quick assembly time, voltage drop reduction, wiring errors suppression and, with the case of a PCB, improved current carrying capacity and enough flexibility to withstand the micro-movements of the cells during the charge/discharge process.

Moreover, common monitoring technologies generally use small wire harness attached manually to collect data on each cell, and then to carry the data to an outside processor. On the contrary, Mersen Monitoring Bus Bar includes a flex circuit directly integrated into the bus bar network, thereby eliminating the set-up time needed for attaching the wires harness.

The Mersen Monitoring Bus Bar can also integrate a water-cooling pipe when thermal considerations exceed conventional means of heat dissipation. This prevents the system from overheating, and allows it to remain at the highest level of performance and safety.



X Cells in serial with voltage and thermal management



X Cells in serial and parallel with voltage and thermal management

### CONDUCTORS MATERIAL

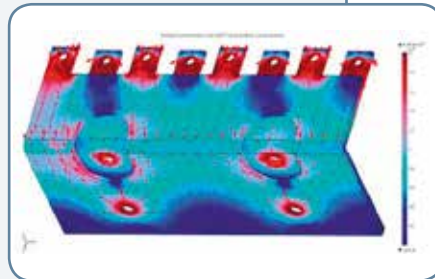
- Copper, aluminum, brass etc.
- Several plating options: Sn, Ni, Ag etc.
- Standard thicknesses (mm): 0.5; 0.8; 1; 1.5; 2; 2.5; 3; 3.5; 4
- Possibility of custom thicknesses: less than 0.5 mm or more than 4 mm

### INSULATION MATERIAL

- Insulation selected according to your requirements of temperature, pollution degree, humidity rate and classification (UL, CSA...)
- Wide range: PET; Aramid paper; PEN; PVF; PI etc.

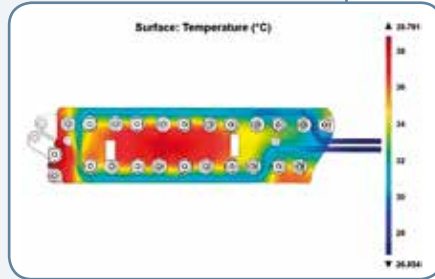
### ELECTRICAL SPECIFICATIONS AND SIMULATION

- Voltage: up to 10 kVAC
- Current: up to 2kA
- Power range: 1kW ... 5MW
- Above ranges can be adapted to fit specific requirements
- Lower inductance and impedance
- Possibility of current flow and inductance simulation



### THERMAL SPECIFICATIONS AND SIMULATION

- Working temperatures from -40°C up to 220°C
- Possibility of thermal simulation
- Possibility to integrate a cooling pipe for thermal management



### MONITORING SPECIFICATIONS

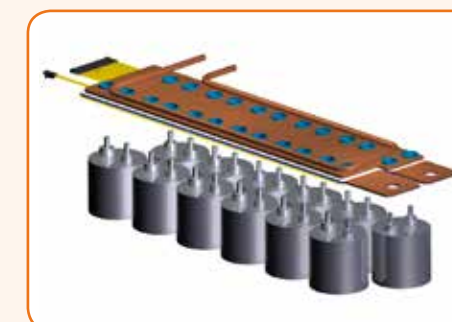
- Monitoring of voltage, charging state and temperature
- Best signal quality thanks to a highly engineered and precision controlled welding technique
- Thermal sensors integrated
- Possibility to integrate other types of electronic components on request
- Delivery of the data from each cell to a custom connector

## CUSTOMER'S BENEFITS

- Signal and power connections in one device
- Improved inventory management
- Faster assembly time
- Withstanding of cells micro-movements during charge/discharge process
- No wiring errors
- Best signal quality by a highly engineered and precision controlled welding technique to reduce the voltage drop
- Increased current carrying capacity
- Possibility to integrate a water-cooling pipe

## MONITORING LAMINATED BUSBARS SOLUTIONS

### LI-ION BATTERY PACKS



### SUPERCAPACITORS





**MERSEN**  
 Expertise, our source of energy

**A WORLD LEADER  
 in safety & reliability  
 for electrical power**

### A GLOBAL PLAYER

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

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.

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