

Powder-Coated Busbar

Qingneng Electric





清能电气
QINGNENG ELECTRIC

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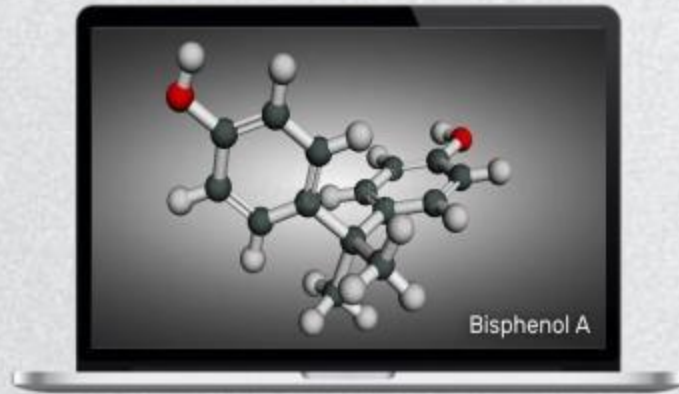
1 Introduction

01: Background 02: Advantage 03: Comparison



Background

With the increasing maturity of high-power electronic systems, the demand for higher power density is becoming a core competitive advantage for busbar products. Qingneng has developed dip-coated busbars, utilizing high-polymer insulation materials and high directional stability, combined with optimized space design, to enable the products to perform better in more demanding applications.



Polymer Insulation

Epoxy powder coating ensures that the busbars maintain good performance under higher operating temperatures and humidity levels.



High-purity Conductor

High-purity conductor ensures that the temperature rise remains within a controllable range under higher current carrying capacity, thus maintaining system stability.



Optimized Design

A more rational space design allows customers to connect various functional components more flexibly within a limited space.



Advantage



- Reduce system cost
- Improve current carrying capacity
- Improve space utilization
- Improve heat resistance
- Applicable in high humidity



Comparison

Traditional Connector

Copper plates/wires as conductors and outer plastic (PVC, heat shrink tubing, rubber, etc.) as insulation material, only ensures the circuit conduction.

Tend to age

Limited transmission power

Limited working condition

Low space utilization

VS

Powder-Coated Busbar

High-quality copper conductors and epoxy resin and other polymer insulation materials effectively ensures the system can operate safely under higher temperatures and humidity conditions.

Long lifetime

Higher power density

Applicable in harsh condition

Compact structure

2 Parameter

01: Basic

02: Conductor

03: Plating

04: Coating





Basic

| Item | Characteristics |
|--|--------------------------------|
| Conductor | Cu(T2Y2)/Al(1060-H24/1060-H12) |
| Conductor Thickness (mm) | 1.0~12.0 |
| Coating Thickness (μm) | 200~1000 |
| Electroplating | Sn/Ni |
| Withstand Voltage (V) | 300~20000 |
| Temperature Raise (K) | ≤ 40 |
| Ambient Temperature ($^{\circ}\text{C}$) | -50~+125 |
| Relative Humidity | 85%/95% |



Conductor

| | Cu | Al |
|-----------------------------------|------|------|
| Density (kg/m ³) | 8950 | 2710 |
| Melting Point(K) | 1355 | 932 |
| Resistivity (μΩ·mm) | 17.8 | 26.5 |
| Thermal Conductivity (W/(m·K)) | 401 | 237 |
| Specific Heat Capacity (J/(kg·K)) | 386 | 900 |
| Expansion Coefficient (ppm/K) | 17.5 | 23.2 |
| Mohs Hardness | 3.0 | 2.75 |

Notes:

1. Thickness of Cu: 0.5~8.0mm
2. Thickness of Al: 1.0~5.0mm

Plating

| | Sn | Ni |
|-----------------------------------|------|------|
| Density (kg/m ³) | 7300 | 8902 |
| Melting Point (K) | 505 | 1726 |
| Resistivity (μΩ·mm) | 113 | 68.5 |
| Thermal Conductivity (W/(m·K)) | 66.8 | 90.5 |
| Specific Heat Capacity (J/(kg·K)) | 227 | 440 |
| Expansion Coefficient (ppm/K) | 22 | 13.4 |
| Mohs Hardness | 1.5 | 4 |

Notes: Min. Thickness: 5μm



Coating

| Item | Value | Test Method |
|---|--------------------|--------------------|
| Dielectric Strength (kV/mm) | 47 | ASTM D149 |
| Dielectric Loss (%) | 4.3 | ASTM D150 |
| Dielectric Constant | 4.6 | ASTM D150 |
| Volume Resistivity ($\Omega \cdot \text{cm}$) | 5×10^{15} | ASTM D257 |
| Bonding Strength (kg/cm) | 433 | ASTM D1002 |
| Flame Retardance | Pass | UL94/V-0 |
| Hardness | >90 | Buchholz DIN 53153 |
| Abrasion Resistance (g) | 0.08 | ASTM D4060 |
| Moisture Resistance (%) | C<3 | 85°C/95%RH 1500h |
| Salt Spray Test | Pass | ASTM B117 1000h |
| Ambient Temperature (°C) | -50~+125 | EN60068-2 |

3 Showcase





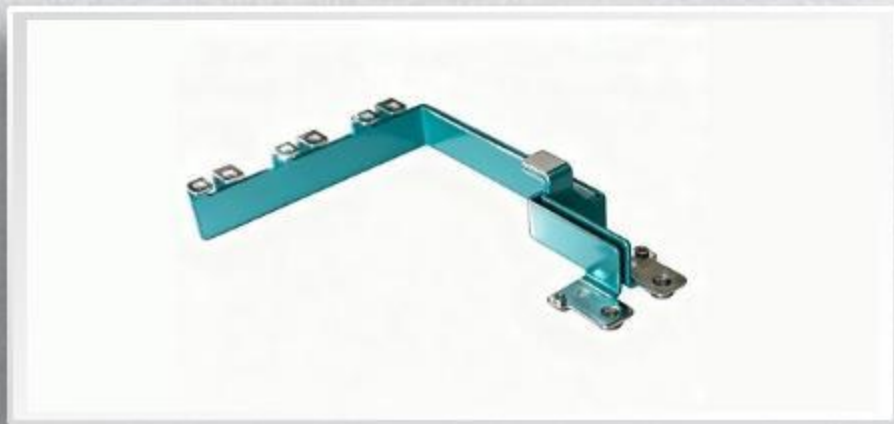
Showcase



Complex Busbar



New Energy Busbar



E-Vehicle Busbar



Power Grid Busbar

4 Application

01: Manufacture 02: New Energy 03: Transport Traction





Manufacture

01



Frequency Conversion

Intelligent and automated electrical solutions for industrial production, improving efficiency, reducing energy consumption, and ensuring safe production.



02



Power Quality

We provide comprehensive power quality monitoring, analysis, and management solutions to ensure the stable operation of power systems.



New Energy



WIND POWER

Achieves optimal electromagnetic compatibility, and greatly reduces power loss during transmission.



E-VEHICLE

We provide professional electrical solutions for new energy vehicles and charging facilities to promote green travel.

SOLAR POWER

Efficient/reliable electrical solutions for the photovoltaic energy industry, contributing to the development of clean energy.



POWER STORAGE

We optimize the circuit structure to minimize installation difficulty and error probability, gaining a compact system layout with improved space utilization.





Transport Traction



Railway



Shipping



Mining



清能电气
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The End



Contact



Contact Us

ADD: Dongfu Road, Jiaxing, Zhejiang, China
TEL: +86-573-89118950
E-mail: global@qndq.com