Safe, Environmentally friendly, Service-free

天津沃尔法电力设备有限公司
TIANJIN WOERFAR ELECTRIC EQUIPMENT CO., LTD

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2025-V1

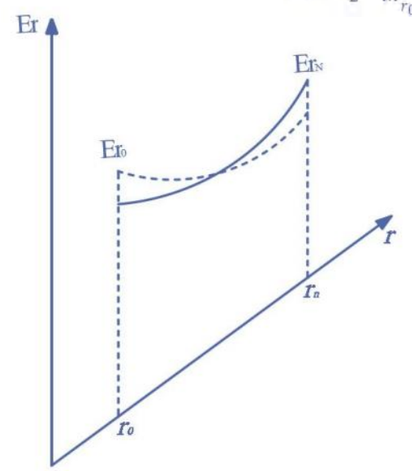
WOERFAR

天津沃尔法
电力设备有限公司
TIANJIN WOERFAR ELECTRIC EQUIPMENT CO.,LTD.

Products

JGM Power station tubular busbar
FDLGM Wind power tubular busbar
WDF Cable distribution box
SRGE/SRG fiberglass sleeving

$$E_r = \frac{U}{2} \cdot \frac{l_0 + l_n}{ln\frac{r_n}{r_0}} \cdot \frac{1}{rl}$$



WOERFAR

沃尔法

Profile

Tianjin Woerfar Electronic Equipment Co., Ltd. is a high-tech enterprise invested and built by Shenzhen Woer Heat-shrinkable Material Co., LTD. (002130) in the Jingjin Technology Valley, Wuqing District, Tianjin.

Our company is a national high-tech enterprise, with strong technical strength, has dozens of national patents, and passed ISO9001, ISO14001, ISO45001 system certification, the integration of the two certification. The main products include insulated tubular busbarbar, wind power tubular busbarbar, cable distribution box, fiberglass sleeving .

Wind power pipe busbar scattered arrangement, eliminate short-circuit between phases; 6 series aluminum alloy, high strength, creep resistance, anti-settlement; Single root current carrying, no biased load phenomenon; Insulation layer flame retardant layer integration, good heat dissipation.

The company's products were obtained by the CEPRI，TICW，XIHARI,CQC,CCDT and UL testing and certification. The products are widely and safely operated in the power system and are well received by users.

Adhering to the busbariness philosophy of "customer orientation, high quality, low cost, excellent service", Tianjin Wolfa Power Equipment Co., Ltd. is dedicated to providing quality products and efficient services for our customers.

Area：60000m² Patent：80+ Registered Capital：61million

Culture

Enterprise Vision

To be the leader in new material industry，Provide security and intelligent connectivity with leading technology .
To provide customers with safe, environmentally friendly, maintenance-free transmission solutions.

Core Value

Hard work
Pragmatic and efficient
Win-win cooperation

Enterprise Mission

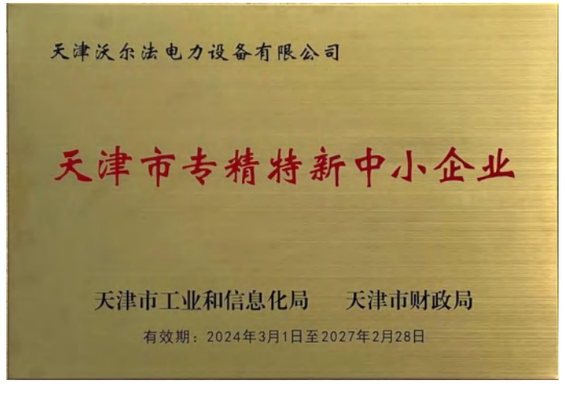
Enterprise success
Staff happiness
Repaying the society

Business Concept

Customer orientation
High quality
Low cost
Good service

Partners

Honor



Certifications

Patents

Test reports

Contents

Power station busbar

Craft and Structure

Insulated tubular bus body shall include:Tubular conductor,Conductor shield,Insulating layer(Multiple layers can be set),Insulating shielding layer(Multiple layers can be set),Metal shielding layer and cover layer.According to the molding process and insulation method，the insulated tubular busbar is divided into the following three types：

Capacitive bushing type structure

Using mechanical wrapping molding process，Multilayer insulating shielding layer is used to homogenize the electric field at the end of the bus bar and insulate the middle part.

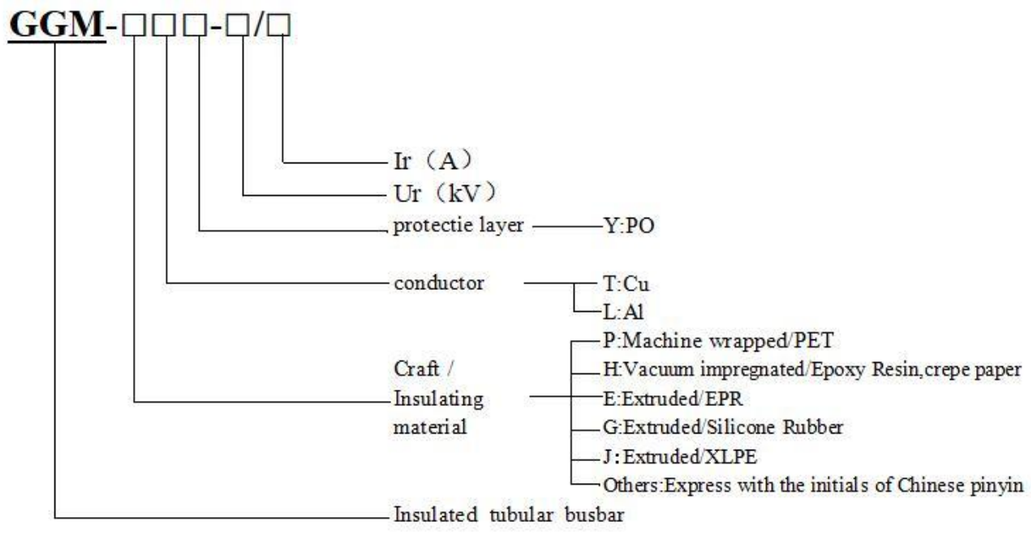
Power cable type structure

Using extrusion molding process，The stress cone is used to homogenize the electric field at the end of the bus bar.The middle part is insulated with a single insulating shield.

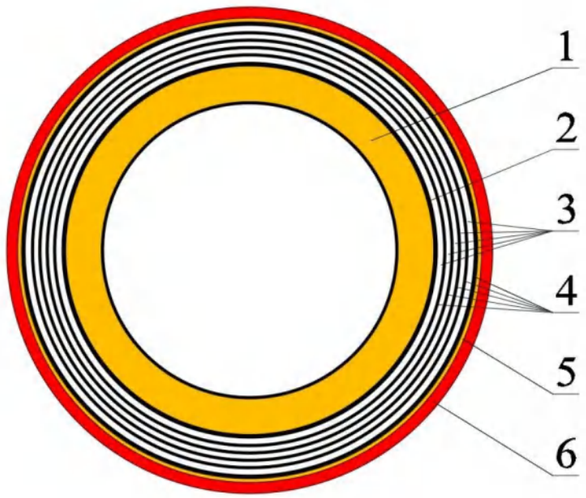
Capacitive bushing type and Power cable type hybrid structure

Using vacuum impregnation (epoxy casting) molding process，Multilayer insulating shielding layer is used to homogenize the electric field at the end of the bus bar.The middle part is insulated with a single insulating shield.

Demonstration of the type



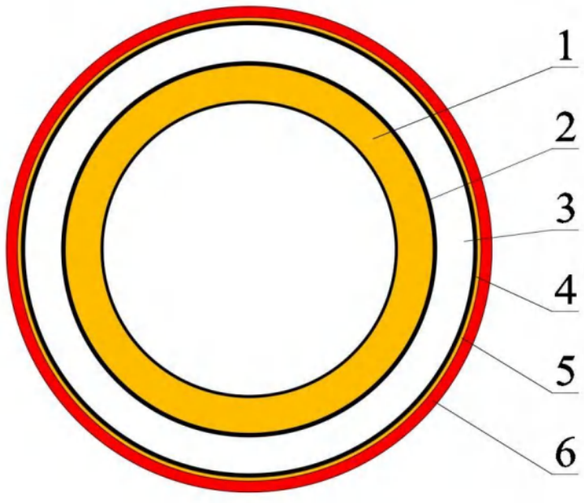
Cross-sectional view



1-Tubular conductor; 2-Conductor shield； 3-Insulating layers；

4-Insulating shields; 5-Metal shield； 6-Protective layer

Cross-sectional view of capacitor bushing insulated tubular bus bar

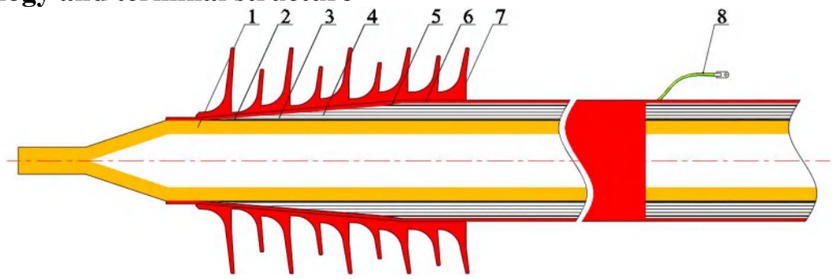


1-Tubular conductor; 2-Conductor shield； 3-Insulating layer；

4-Insulating shield; 5-Metal shield； 6-Protective layer

Cross-sectional view of power cable-type insulated tubular bus bar

Ontology and terminal structure

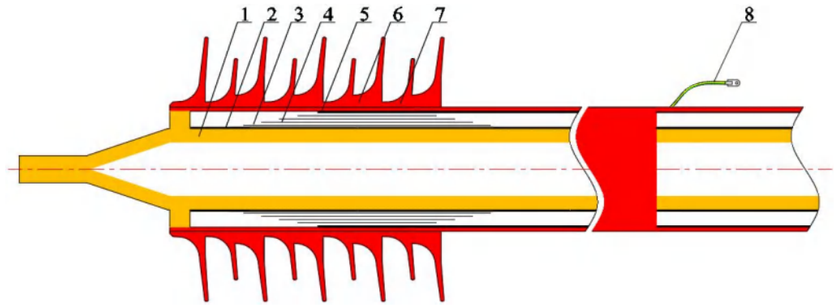


1-Tubular conductor; 2-Conductor shield; 3-Insulating layer(Multiple layers)；

4-Insulating shield(Multiple layers); 5-Metal shield; 6-Protective layer

7-Creeping increasing skirt(optional); 8-PE

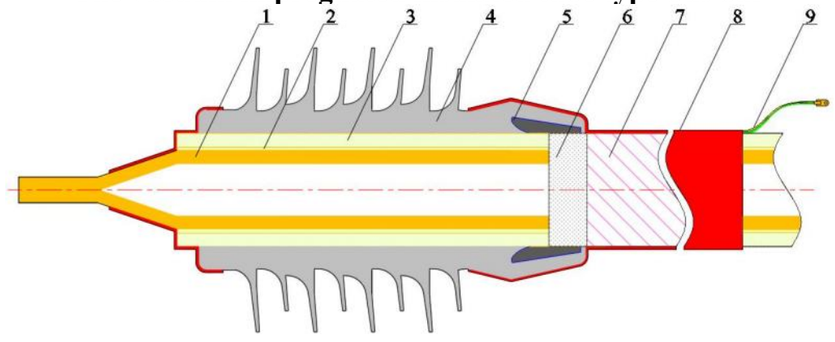
The machine wrapped type insulated tube bus bar



1-Tubular conductor; 2-Conductor shield; 3-Insulating layer; 4-Insulating shield;

5-Metal shield; 6-Inner protective layer; 7-Outer protective layer; 8-PE

The vacuum impregnated insulated tube type bus bar



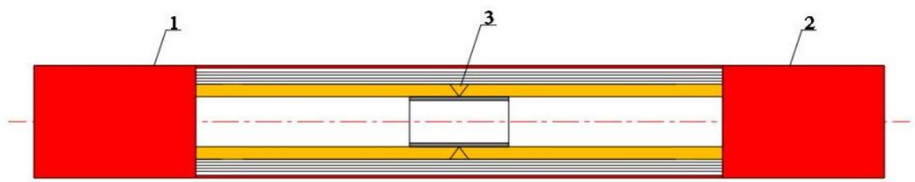
1-Tubular conductor; 2-Conductor shield; 3-Insulating layer; 4-Insulated terminal；

5-Stress cone and insulating shield; 6-Filling compound; 7-Metal shield;

8-Protective layer; 9-PE

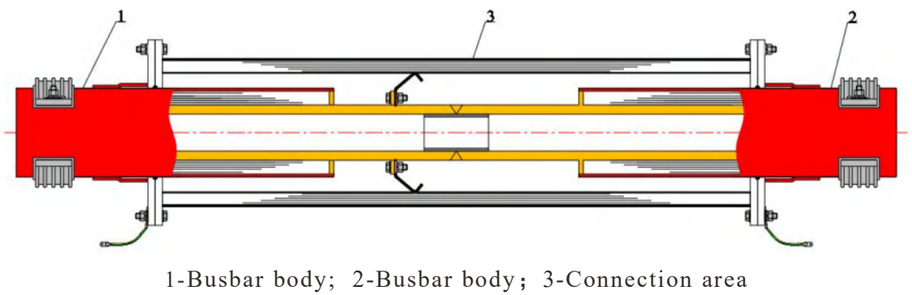
The extruded type insulated tube bus bar

Middle joint structure



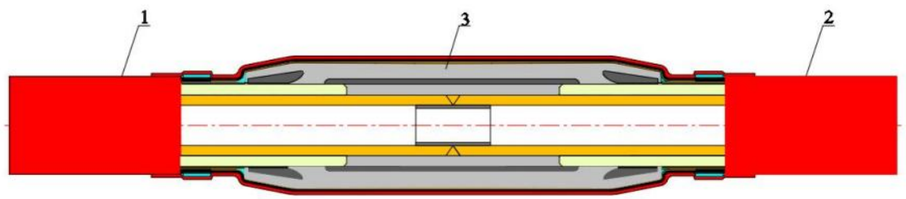
1-Busbar body; 2-Busbar body; 3-Connection area

Connection of machine wrapped bus bar joint



1-Busbar body; 2-Busbar body; 3-Connection area

Connection of vacuum impregnated bus bar joint



1-Busbar body; 2-Busbar body; 3-Connection area

Connection of extruded bus bar joint

Products of 1kV and below

The products are used for power transmission and distribution in low-voltage power supply systems, and can be used in 10kV substations to replace 1kV and below cables and bus bar. The products are divided into three-phase four-wire system and three-phase five-wire system, which can be arranged in multiple layers or single layer. they have the advantages of large current carrying capacity, high protection level, convenient power distribution, safety and reliability, clear and simple wiring, and suitable for laying in a variety of complex environment spaces. Compared with the bus bar trough and cable, it has the advantages of large transmission capacity, small line loss, easy to occur interphase short circuit or short circuit to the ground, especially suitable for low-voltage distribution and large current transmission system of industrial and mining enterprises and commercial and residential buildings, hotels, hospitals and other power supply systems.

Operating condition

- ◆ Altitude： ≤4000m， Above 4000m requires special design
- ◆ Ambient temperature：- 50℃~50℃
- ◆ Relative humidity：Daily≤95%, monthly≤ 90%(25℃)
- ◆ Seismic intensity： ≤8
- ◆ Installation category：III
- ◆ Pollution level：IV
- ◆Special requirements：Please consultation with the manufacturer

Parametric performance

- ◆ Rated voltage ： ≤1kV
- ◆ Rated current：630A~8000A
- ◆ Rated frequency：50(60)Hz
- ◆ Rated short-time withstand current：12.5kA / 25kA / 40kA / 63kA / 80kA / 100kA
- ◆ Rated peak withstand current：31.5kA /52.5kA / 84kA / 126kA / 168kA / 200kA
- ◆ Material sorts：IIIa
- ◆ Overvoltage categorys：III
- ◆ Power frequency withstand voltage：3.5kV(5s)
- ◆ Maximum temperature rise：≤60K

Products of 3.6kV~40.5kV

The products are used to connect terminals of various electrical equipment. Every phase of the product is independently sealed, and the whole process is shielded from environmental interference, and the reliability is high. The guide body is tubular, with low skin effect coefficient, large current carrying capacity, high mechanical strength, strong ability to withstand short circuit current, and large installation span. It can be directly installed on the metal frame, eliminating the need for wall busbarhing and pillar insulators, and has strong seismic performance. Easy to install and maintenance free.

Operating condition

◆Altitude： ≤1000m，Above 1000m requires special design
◆Ambient temperature：- 50℃~50℃
◆ Relative humidity：Daily ≤95%, monthly≤ 90%(25℃)
◆Seismic intensity： ≤8
◆Pollution level：IV
◆Special requirements：Please consultation with the manufacturer

Parametric performance

The insulation level of insulated tubular busbar of 3.6kV~40.5kV

Ue kV	Um kV	Fr Hz	Power Frequency Withstand Voltage kV	Lightning impulse Withstand voltage kV	Partial discharge level		Dielectric loss tanδ
					Measuring voltage kV	Quantity of apparenct discharge pC	
3	3.6	50/60	25	40	3	≤5	Measuring voltage: 10kV tanδ≤0.005 Ambient temperature:-10 ~40℃
6	7.2	50/60	32	60	6	≤5	
10	12	50/60	42	75	15	≤5	
20	24	50/60	65	125	24	≤5	
35	40.5	50/60	95	200	45	≤5	

Current performance

◆Rated frequency:50Hz（60Hz）
◆Rated current:630A~12500A
◆Rated short-time withstand current(4s)：16kA~200kA
◆Rated peak withstand current：2.5 times the rated short-time withstand current
◆Maximum temperature rise:50K

Products of 72.5kV and above

The products are used to connect the transformer neutral point with the arc suppression coil. SF_6 closed combination electrical GIS spacing busbar, in and out busbar; Ultra-high voltage SF6 composite electrical appliance H · GIS instead of overhead lines; High voltage and high current long distance transmission lines. It is the best substitute for high voltage insulated cable, GIS branch busbar and inlet and outlet line, gas insulated metal enclosed transmission line GIL. This product is green, safe and reliable, saving land and easy to maintain.

Operating condition

◆ Altitude： ≤1000m，Above 1000m requires special design
◆ Ambient temperature：- 50℃~50℃
◆ Relative humidity：Daily ≤95%, monthly≤90%(25℃)
◆ Seismic intensity： ≤8
◆ Pollution level：IV
◆ Special requirements：Please consultation with the manufacturer

Parametric performance

The insulation level of insulated tubular busbar of 72.5kV~252kV

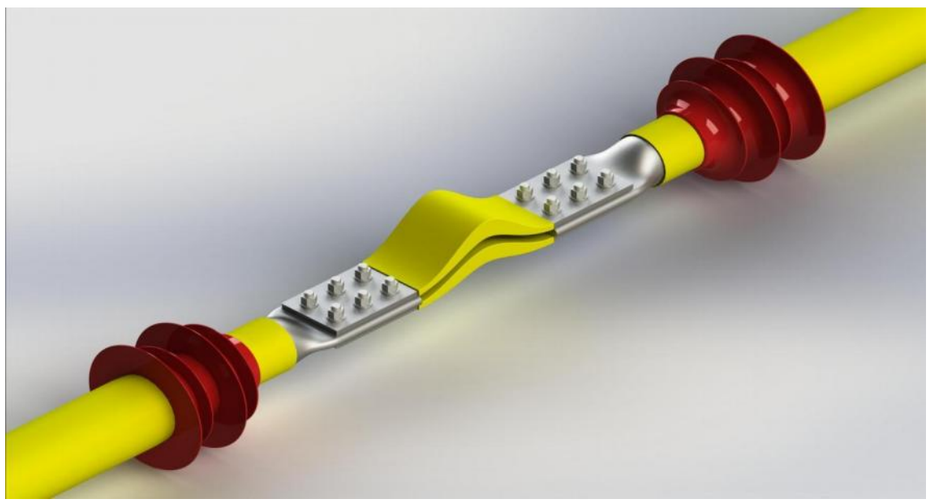
Um kV	Lightning impulse Withstand voltage kV	Power Frequency Withstand Voltage kV	Partial discharge level			Dielectric loss tanδ
			Pre-applied voltage kV	Test voltage kV	Quantity of apparenct discharge pC	
72.5	325	155	155	87	≤5	Measuring voltage: 10kV tanδ≤0.005 Ambient temperature:-10 ~40℃
126	550	230	230	151	≤5	
252	1050	460	395	302	≤5	

Current performance

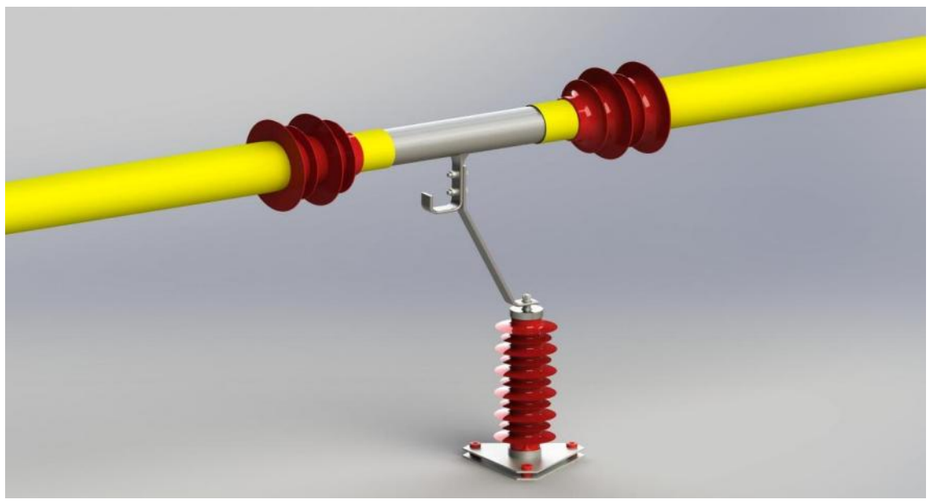
◆Rated frequency:50Hz（60Hz）
◆Rated current:630A~12500A
◆Rated short-time withstand current(4s)：16kA~200kA
◆Rated peak withstand current：2.5 times the rated short-time withstand current
◆Maximum temperature rise:50K

Typical Installation Structure

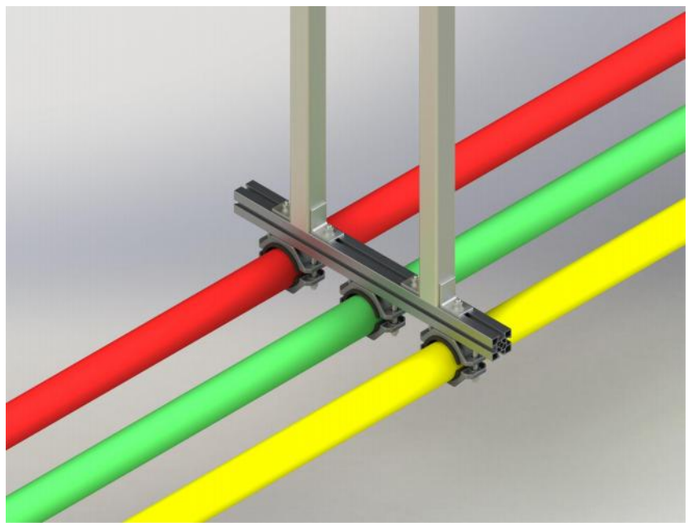
Busbar expansion joint



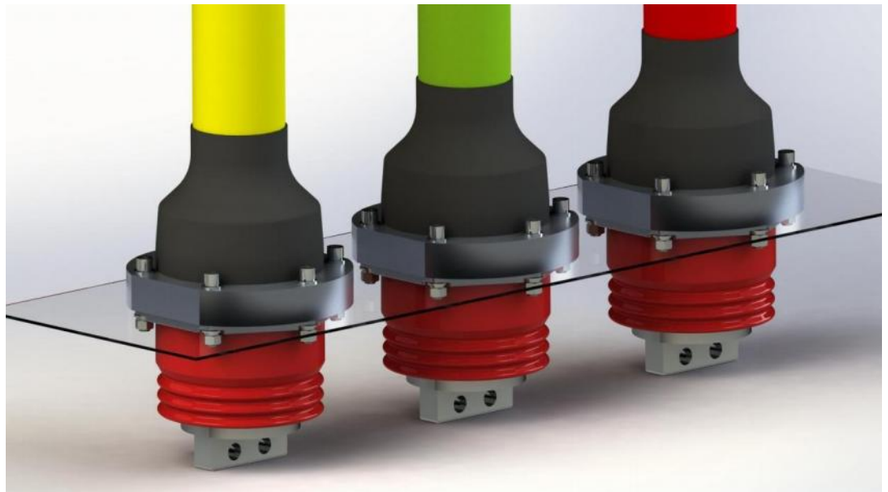
Connection of lightning arrester



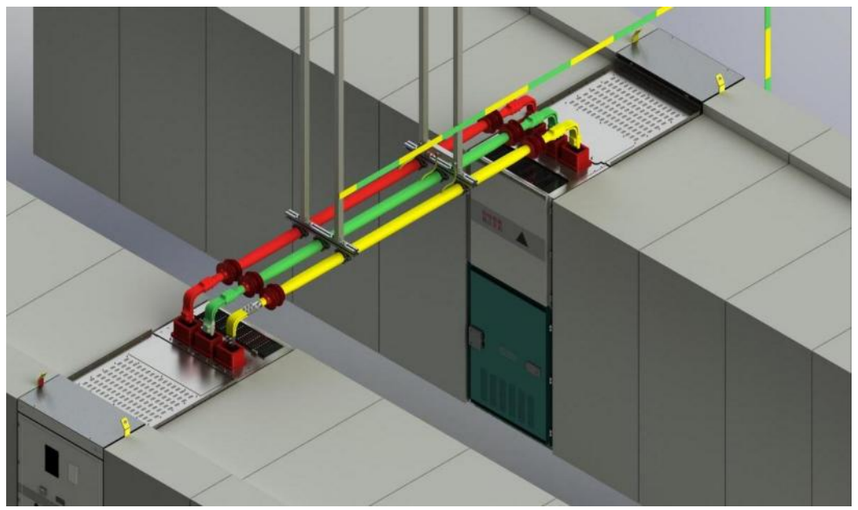
Fixing of bus bars



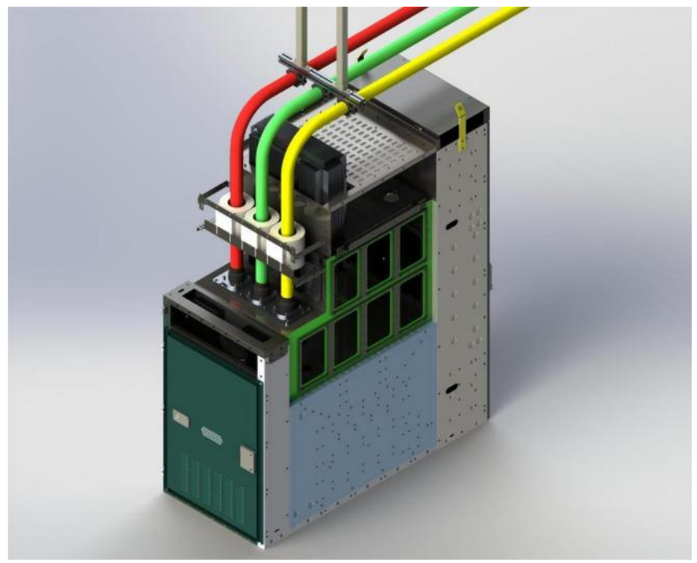
Splice with inner cone



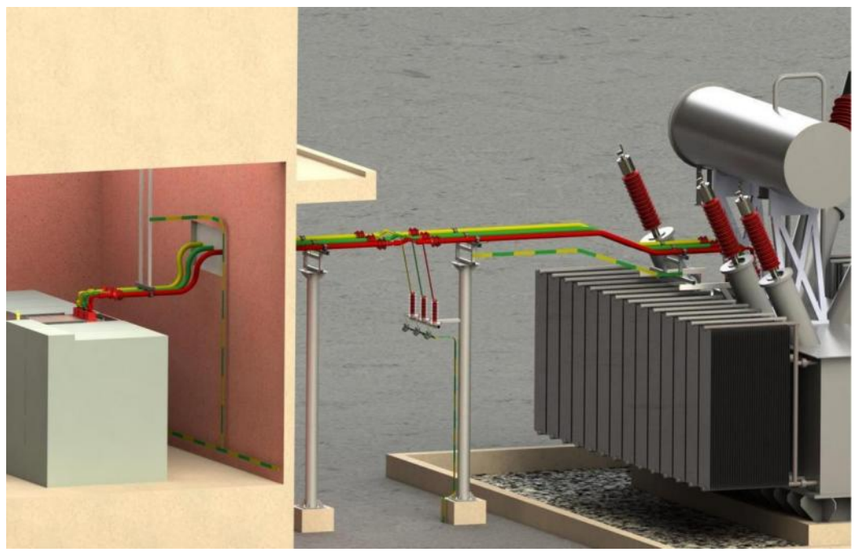
Open connection between switchgear



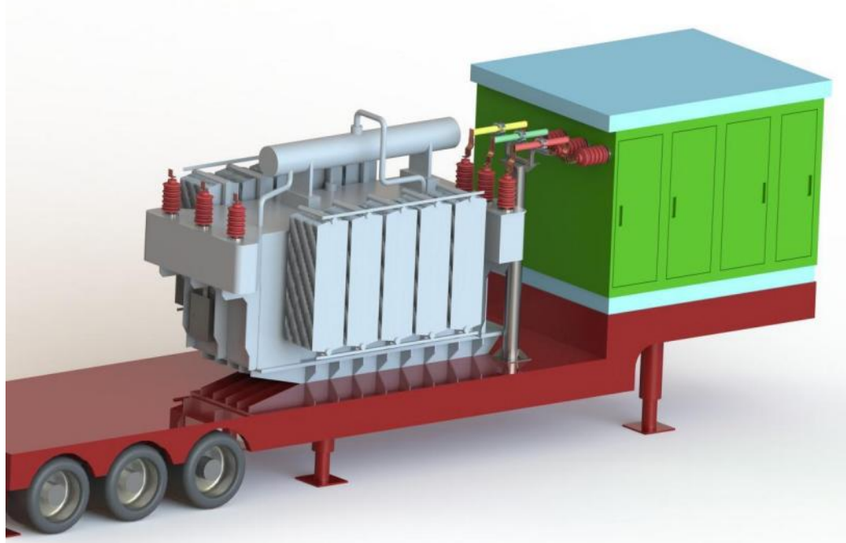
Inflatable connections between switchgear



Connection between transformer and switchgear



Connect between the vehicle transformer and switchgear



Application cases

12kV/3150A Hydroelectric generation

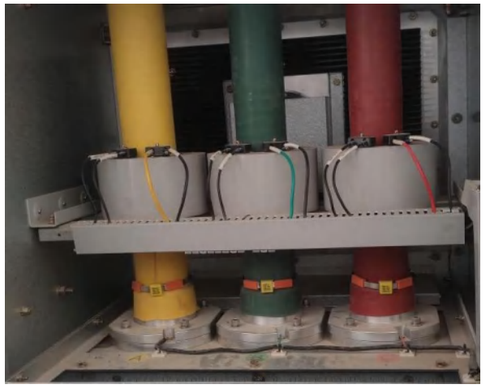
12kV/5000A Biomass power generation

12kV/8000A Thermal power generation

40.5 kV/ 5000A Wind power generation

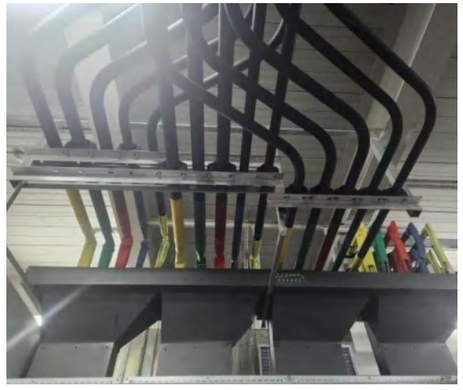
12kV/4000A Waste heat power generation

12kV/6300A Solar power generation



40.5kV/3150A Connection to GIS

12 kV/ 5000A Paper mill



0.4 kV/ 1600A Workshop power consumption

72.5kV/1600A State Grid substation

12kV/6000A Peak regulation and energy storage

12kV/ 4000A Petrochemical industry

Wind power tubular busbar

Product description

◆It is applied to the inner part of the tower cylinder to carry out the power transmission from the generator outlet to the converter cabinet. Aluminum alloy round tube is used as conductor and polyolefin heat shrink tube as insulation layer. The support structure is used to fix the bus and bear the weight of the bus. The lateral support structure has the function of limiting the bus bar in the horizontal direction and guiding and relieving the heat expansion and cold contraction in the vertical direction. The connecting structure plays the role of connecting the busbars between the tower segments. The transfer structure is responsible for connecting the bus and the incoming and outgoing cables.

◆Advantage:Disperse layout, prevent short-circuit between phases; 6 series aluminum alloy, high strength, creep resistance, anti-settlement; Single root current carrying, no biased load phenomenon; Insulation layer flame retardant layer integration, good heat dissipation.

◆Welded wind power tubular busbar:The supporting structure is located at the bottom of the tower, and several lateral supporting structures are arranged above the supporting structure. The connecting structure between the tower segments is an external liner with the same material as the main busbar. The outer liner is welded to connect the upper and lower busbars. Heat expansion and cold contraction are absorbed at the top of the bus bar. Suitable for rigid tower with light product weight and low tower height.

◆Bolted wind power tubular busbar： The support structure is located on the upper part of each tower barrel, and several side support structures are arranged below each support. The connection structure between the tower segments is T2 copper soft connection. Soft connection The upper and lower busbars are connected by bolt. Thermal expansion and contraction are absorbed in soft joints. It is suitable for flexible towers with heavy product weight and high tower height.

Operating condition

◆Use environment:grasslands,mountains,gobi,desert,ocean,etc.

◆ Altitude:Arbitrary altitude

◆ Ambient temperature:- 50℃~70℃

◆ Relative humidity:Daily ≤95%, monthly≤ 90%(25℃)

◆Seismic intensity: ≤8

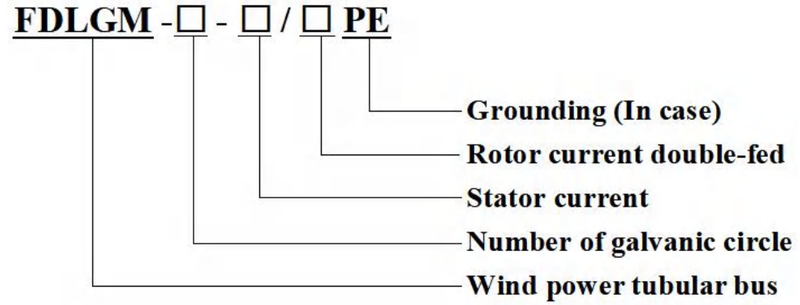
◆ Installation category:III

◆ Pollution level:IV

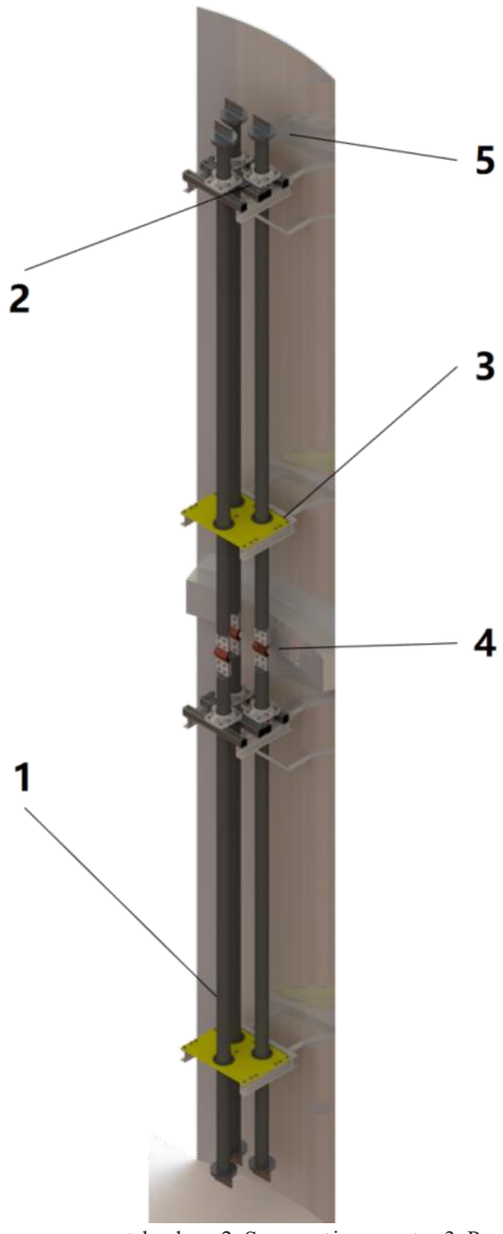
Parameter

Parameter of Materials and Products			
Metal grade	Al 6101B-T6	Rated voltage	≤3.0kV
Specific conductance	≥55% IACS	Rated current	≤6000A
Specific resistance	31nΩ*m	Power frequency withstand voltage	5kV,5s
Material sorts	IIIa	Impulse withstand voltage	±12kV
Protection against electric shock category	I	Short-time withstand current	85kA,1s
Overvoltage category	IV	Peak withstand current	187kA
Conductor coating	Cu+Ni	Degree of protection against mechanical impact	＞IK10,50J
Pollution level	3	Degree of protection	IP65
Salt spray resistance	720h	Seismic intensity	8

Demonstration of the type



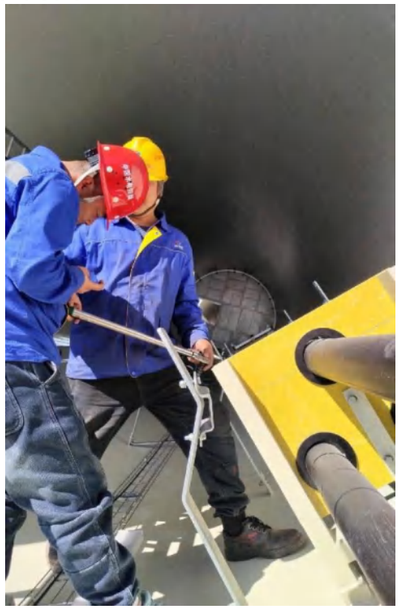
Structure



1-busbarbar component body 2-Supporting part 3-Positioning part
4-Connecting part 5-Switching part

Wind power tubular bus bar

Construction

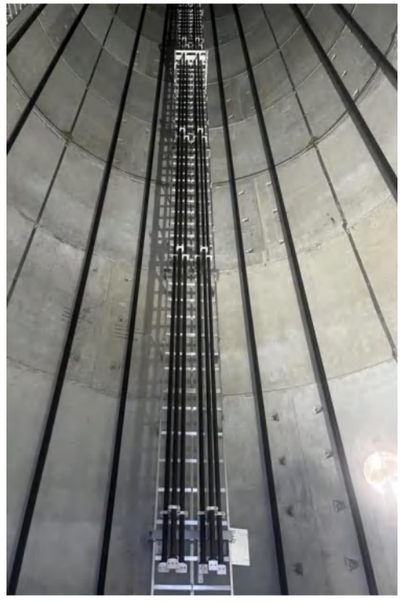


Tower Plant Construction

Wind Farm Construction

Product Application

Steel Tower



Hybrid Tower

Cable branch box

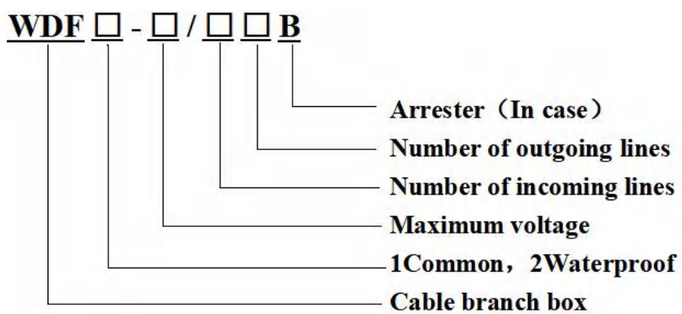
Product description

In recent years, the cable distribution box is widely used in the power distribution network system to distribute electric energy. Is the city network transformation, photovoltaic power generation, wind power generation and other supporting equipment, it can be installed in outdoor and indoor, power cable and box transformer, load switchgear, load switch-fuse combination electrical cabinet, ring network power supply unit, etc., play a tap, branch or conversion role, to provide great convenience for cable networking. Its main feature is two-way door, the use of wall bushing as a connection busbar, its connection mode is simple and convenient, with small length, clear cable arrangement, three-core cable without large span cross, fully insulated, fully closed, corrosion resistance, maintenance-free, safe and reliable, environmental adaptability.

Advantage

- ◆ Altitude:≤2000m，Above 2000m requires special design
- ◆ Ambient temperature:- 35℃~50℃
- ◆ Relative humidity:Daily ≤95%, monthly≤ 90%(25℃)
- ◆ Seismic intensity: ≤8
- ◆ Pollution level:III
- ◆ Special requirements:Please consultation with the manufacturer

Demonstration of the type



Parameter

Um（kV）	Ir（A）	Power frequency withstand voltage（kV）	Lightning impulse voltage（kV）	Short-time withstand current（kA）	Peak withstand current（kA）	IP code
12	≤1250	42	75	20	50	IP54
40.5	≤1250	95	185	20	50	IP54

Product pictures

12kV cable branch box

40.5kV cable branch box

Flexible fiberglass sleeving

Product description

The flexible glass fiber insulating sleeve is made of high heat resistant and alkali free glass fiber woven into a tube, and the outer layer is heated and cured by silicone rubber with special formula properties. In addition to its strong dielectric properties, high heat resistance, good self-quenching and flexibility, it also has a certain inner diameter micro-expansion performance, which is more suitable for automotive wire harnesses, H&C motors, generators, inductors, inverters, reactors, heating lighting and other mechanical equipment and other fields, playing a role in temperature resistance, protection and insulation.

Advantage

- ◆ Excellent temperature resistance, can be used for a long time at -50℃~200℃;
- ◆ Breakdown voltage is significantly higher than the corresponding voltage level;
- ◆ Excellent flame retardant, can guarantee to meet the UL1441 flame retardant VW-1 standard;
- ◆ Outstanding flexibility and strong tear resistance; Good resistance to mechanical damage;
- ◆ Made of environmentally friendly material, halogen-free, in line with RoHS, REACH;
- ◆ Special silicone formula material, waterproof, hydrophobic performance is excellent;
- ◆ Excellent bending and cracking resistance at high and low temperatures, suitable for special environmental scenarios;
- ◆ It has certain expansibility, suitable for special working conditions such as transition joints;

Parameter

Items	Results
Temperature tolerance	265℃±2℃,168h≥1/2 Initial withstand voltage value
Thermal aging	265℃±2℃,168h No crack
Cold bending	-50℃,24h No crack
Horizontal combustion	UL1441
Vertical combustion	UL1441
Hydrolytic stability	70℃,14d No sticky, deformation or softening
Oil resistance	100℃,96h No sticky, deformation or softening
Environmental protection	RoHS，REACH；

Specification and models

Diameter（mm）	tolerance（mm）	Minimum wall thickness（mm）		Packing Specifications（m/reel）
		4kV	7kV	200
1.0	+0.3	0.35	0.37	200
1.5	+0.3	0.35	0.37	200
2.0	+0.3	0.35	0.37	200
2.5	+0.3	0.35	0.37	200
3.0	+0.3	0.37	0.40	100
3.5	+0.3	0.37	0.40	100
4.0	+0.4	0.37	0.40	100
4.5	+0.4	0.37	0.40	100
5.0	+0.5	0.40	0.45	100
6.0	+0.5	0.40	0.45	100
7.0	+0.5	0.40	0.45	100
8.0	+0.6	0.40	0.45	100
9.0	+0.6	0.40	0.45	50
10.0	+0.6	0.45	0.50	50
12.0	+0.8	0.45	0.50	50
14.0	+0.8	0.45	0.50	50
16.0	+0.8	0.45	0.50	50
18.0	+0.8	0.45	0.50	25
20.0	+0.9	0.45	0.50	25
22.0	+1.0	0.50	0.55	25
25.0	+1.0	0.50	0.55	25

Application scenarios

- ◆New energy vehicle wire harness protection, heat-resistant insulation protection;
- ◆Enhance the insulation and heat resistance of motor coil conductor;
- ◆The main insulation of the flat line of the motor is easy to install and use;
- ◆Outstanding electrical breakdown resistance of wire harnesses in the field of rail transit;
- ◆Electrical appliances with wire harness heat insulation, insulation, anti-leakage breakdown;

New energy automobile　Motor　Rail traffic　Home appliances

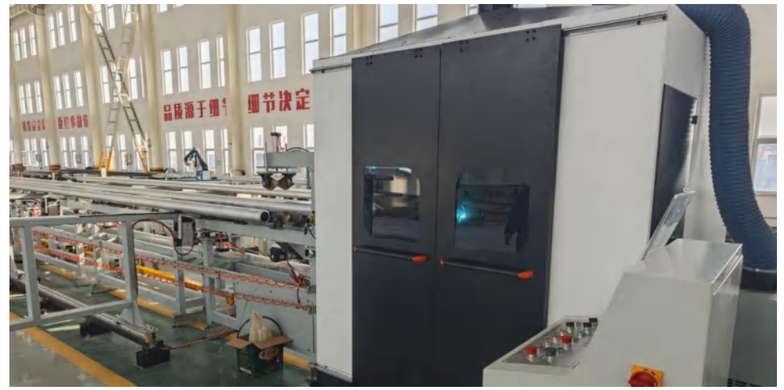
Plant equipments

Production equipment

Machine wrapped type busbar production equipment

Vacuum impregnated type busbar production equipment

Extruded type busbar production equipment



Automatic welding equipment

Wind power bus automatic production equipment

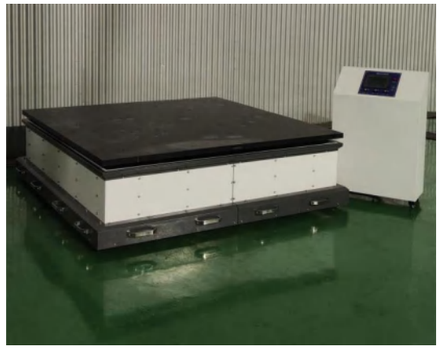
Automatic pipe bending equipment

Testing equipment

Salt spray test equipment

Constant temperature test equipment

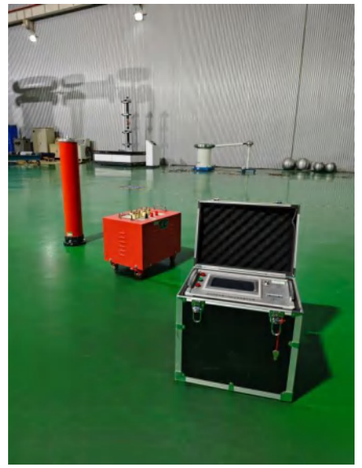
High-voltage testing equipment



Vibration test equipment

Ultrasonic fault detector

Withstand voltage detection equipment



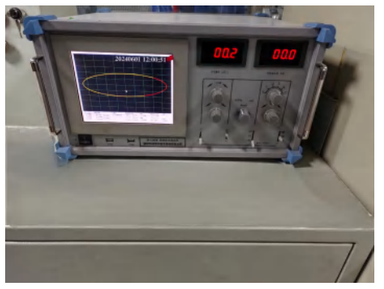
Portable AC withstand voltage equipment

Portable DC withstand voltage equipment

Insulation resistance test equipment

Loop resistance test equipment

Dielectric loss tester



Instrument for measuring partial discharge