



GREEN IDEA
INTRODUCTION MANUAL
产品介绍手册

北京睿电新能源技术有限公司
BeiJing GreenIdea New Energy Technology Co.,Ltd.



Green Idea Introduction Manual

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ABOUT GREENIDEA 公司介绍

2009



"Beijing Ruidian" has been committed to serving the production and operation maintenance, technological transformation, and supply of spare parts for wind power enterprises since its establishment in January 2009. It has served more than 500 wind farm projects and has developed into a modern technology company that integrates research, production, sales, and operation.

The company's production and research base is located in the Qingdao Airport Industrial Park in Shandong, continuously attracting international technology talent; improving the supply chain for high-end material imports; rationally utilizing the surrounding machining industry cluster conditions; leveraging the strong logistics system of the international port city; meeting the research, production, and supply transportation needs of products to achieve the path of international operation for the enterprise.

2017



The research and development center was established in June 2017, and began the development of the Yaw Series new products and new materials.

2023



In March 2023, mass production of yaw noise-damping pads, calipers, and noise-dampening brake pads was achieved.

2020



In December 2020, a series of new products such as pads, calipers, and brake shoes passed form tests and successfully entered trial operation in the wind field.

2024



By September 2024, the initial strategic operation layout will be completed, with significant sales results and a series of products achieving comprehensive market coverage.

Production base

Concentrated material processing industry supporting area

Advanced CNC production and processing equipment

Powerful modern logistics management system

Operations Center

The core organization of scientific management

High precision and cutting-edge human resource allocation

Professional marketing system

Professional team

International Level R&D Team for Polymer Materials

High-level mechanical design and R&D team

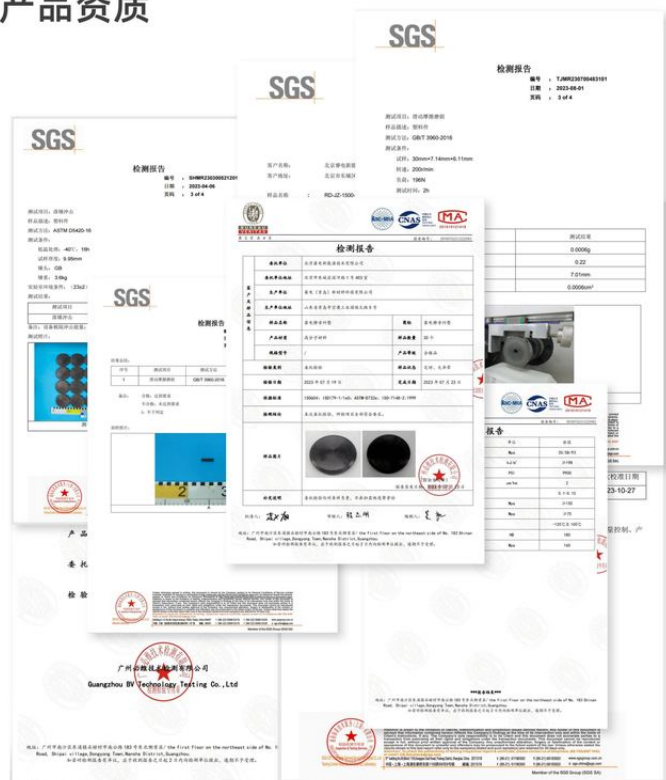
Industry-leading operations and maintenance technical construction team

R&D TESTING 研发检测

ABOUT QUALIFICATION 公司资质



PRODUCT QUALIFICATION 产品资质



MATERIAL ADVANTAGES 材料优势

MATERIAL ADVANTAGES 01

Shock-absorbing capability

A perfect match of material rigidity and flexibility is achieved according to usage requirements, resulting in ultra-strong shock absorption performance that effectively eliminates vibrations.

MATERIAL ADVANTAGES 02

Oil-resistant

The surface energy of the material is extremely low and will not be contaminated by waste oil, gear oil, lubricating oil, or other oil stains.

MATERIAL ADVANTAGES 03

Chemical pollution resistant

The molecular activity of material chemistry is weak and it hardly reacts chemically with solid and liquid substances such as oil stains, carburetors, and adhesive removers.

MATERIAL ADVANTAGES 04

Impact resistance

Based on research achievements in polymers, using naturally impact-resistant materials (special military new materials) as the substrate to give the product super strong impact resistance.

MATERIAL ADVANTAGES 05

Cold resistance

The material is not affected by extreme temperatures, and its performance does not change in low-temperature environments below -40°C, ensuring that the product can maintain excellent working performance even in extremely cold weather.

MATERIAL ADVANTAGES 06

Strong wear resistance

The perfect molecular chain structure enhances the stability between molecules, endowing the material with exceptional wear resistance.

MATERIAL ADVANTAGES 07

Low water absorption rate

The material is non-absorbent, can be used for a long time when exposed to salt spray and humid environments, while maintaining good product performance.

MATERIAL ADVANTAGES 08

The friction coefficient is stable

The unique nano-formulation and special microscopic spherical structure keep the material's friction coefficient stable over a long period. (The yaw power of the unit remains stable without the need for frequent torque adjustments during winter and summer.)



PRODUCT PROFILE 产品介绍

GreenIdea Silent Cushion A revolutionary product that solves yaw vibration.

GreenIdea products have independent intellectual property rights from material formulation to processed finished products.



Gamesa



Sinovel, CRRC, XJ Group
Corporation, Shengyu Group,
Jingcheng New Energy



TIANWEI



ENVISION



Vestas



Copper bush liner

Performance parameters Low friction RD-JZ material

The company independently possesses a new materials research and development center. The core team has internationally leading product innovation capabilities in the research and development of new materials, the application of new processes, and the promotion of new technologies.

Performance	test method	unit	number
Colour	-	-	dark gray
Density	ISO 1183-1	g/cm ³	0.98
Water absorption property			
-Soak in water at 23 ° C for 24 hours/96 hours (1)	ISO 62	mg	2.00
	ISO 62	%	0.001/0.001
-Continuous in air at 23 ° C/50% RH	-	%	0.001
-Immersion in water at 23 ° C	-	%	0.001
Thermal Performance (2)			
melting point(DSC, 10 °C/min)	ISO 11357-1/-3	° C	180
Glass transition temperature(DSC, 20 °C/min) - (3)	ISO 11357-1/-2	° C	154
Thermal conductivity at 23 ° C		- W/(K.m)	0.43
Coefficient of linear thermal expansion			
-Average value between 23 - 60 ° C	-	m/(m.K)	50 x 10 ⁻⁶
Thermal deformation temperature			
- methodA: 18 Mpa	+ ISO 75-1/-2	° C	110
Maximum allowable operating temperature in air			
- short time(4)	-	° C	165
- continuity: 5,000 / 20,000 h (5)	-	° C	100 / 90
Minimum operating temperature (6)		° C	-50
Mechanical property at 23 ° C			
Tensile test (7)			
- Tensile stress at yield/tensile stress at break(8)	+ ISO 527-1/-2	MPa	90
- tensile strength (9)	+ ISO 527-1/-2	MPa	93
- Yield tensile strain (10)	+ ISO 527-1/-2	%	25
- Tensile strain at break (10)	+ ISO 527-1/-2	%	150
- Tensile elastic modulus (11)	+ ISO 527-1/-2	GPa	120
compression test (12)			
- 1 / 2 / 5 %Normal strain compressive stress	+ ISO 604	MPa	35/58/93
-compressive strength (13)	-	MPa	≥ 190
-Pendulum impact test - without notch (14)	+ ISO 179-1/1eU	kJ/m ²	210
-Pendulum Impact Test - Notch	+ ISO 179-1/1eA	kJ/m ²	160
-Ball indentation hardness (15)	+ ISO 2039-1	N/mm ²	>45
-Rockwell hardness (HRC) (16)	+ ISO 2039-2		38
-shear strength (17)	ASTM-D732e	Mpa	≥ 100
Friction performance at 23 ° C			
-Rate of wear (18)	ISO-7148-2:1999	um/km	1
-Dry and dynamic friction coefficient (19)	ISO-7148-2:1999		0.1-0.14
-Maximum allowable dynamic load (20)	-	Mpa	≥ 150
-Maximum allowable static load (20)	-	Mpa	220
-Maximum PV value (20)	-	Mpa·m/s	1.5

PRODUCT PROFILE 产品介绍

RD - MUTE BRAKE PADS

Greenidea Silent Yaw Brake Pads - A revolutionary product that completely solves yaw vibrations and noise.



Gamesa



HEW



Goldwind



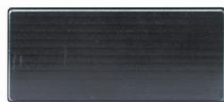
Goldwind



Jiuhue Energy



XEMC Wind Power



Windey

Performance parameters

Friction Material RD-JQ

The company independently owns a new materials research and development center. The core team has internationally leading product innovation capabilities in the research and development of new materials, the application of new processes, and the promotion of new technologies.

Performance	test method	unit	number
Colour	-	-	dark gray
Density	ISO 1183-1	g/cm ³	1.3
Water absorption property			
-Soak in water at 23 ° C for 24 hours/96 hours (1)	ISO 62	mg	2.00
	ISO 62	%	0.001/0.001
-Continuous in air at 23 ° C/50% RH	-	%	0.001
-Immersion in water at 23 ° C	-	%	0.001
Thermal Performance (2)			
melting point(DSC, 10 °C/min)	ISO 11357-1/-3	° C	180
Glass transition temperature(DSC, 20 °C/min)- (3)	ISO 11357-1/-2	° C	154
Thermal conductivity at 23 ° C		- W/(K.m)	0.43
Coefficient of linear thermal expansion			
-Average value between 23 - 60 ° C	-	m/(m.K)	5.3 x 10 ⁻⁵
Thermal deformation temperature			
- methodA: 18 Mpa	+ ISO 75-1/-2	° C	110
Maximum allowable operating temperature in air			
- short time(4)	-	° C	165
- continuity: 5,000 / 20,000 h (5)	-	° C	100 / 90
Minimum operating temperature (6)		° C	-50
Mechanical property at 23 ° C			
Tensile test (7)			
- Tensile stress at yield/tensile stress at break(8)	+ ISO 527-1/-2	MPa	-
- tensile strength (9)	+ ISO 527-1/-2	MPa	-
- Yield tensile strain (10)	+ ISO 527-1/-2	%	-
- Tensile strain at break (10)	+ ISO 527-1/-2	%	-
- Tensile elastic modulus (11)	+ ISO 527-1/-2	GPa	-
compression test (12)			
- 1 / 2 / 5 %Normal strain compressive stress	+ ISO 604	MPa	50/70/100
-compressive strength (13)	-	MPa	≥ 90
-Pendulum impact test - without notch (14)	+ ISO 179-1/1eU	kJ/m ²	150
-Pendulum Impact Test - Notch	+ ISO 179-1/1eA	kJ/m ²	120
-Ball indentation hardness (15)	+ ISO 2039-1	N/mm ²	>45
-Rockwell hardness (HRC) (16)	+ ISO 2039-2		49
-shear strength (17)	ASTM-D732e	Mpa	≥ 100
Friction performance at 23 ° C			
-Rate of wear (18)	ISO-7148-2:1999	um/km	6.8
-Dry and dynamic friction coefficient (19)	ISO-7148-2:1999		0.4
-Maximum allowable dynamic load (20)	-	Mpa	≥ 90
-Maximum allowable static load (20)	-	Mpa	100
-Maximum PV value (20)	-	Mpa·m/s	0.8

PRODUCT PROFILE 产品介绍

Copper sheathed products



Performance parameters High resistance RD-SCP material

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Performance	test method	unit	number
Colour	-	-	dark gray
Density	ISO 1183-1	g/cm ³	1.3
Water absorption property			
-Soak in water at 23 ° C for 24 hours/96 hours (1)	ISO 62	mg	2.00
	ISO 62	%	0.001/0.001
-Continuous in air at 23 ° C/50% RH	-	%	0.001
-Immersion in water at 23 ° C	-	%	0.001
Thermal Performance (2)			
melting point(DSC, 10 °C/min)	ISO 11357-1/-3	° C	180
Glass transition temperature(DSC, 20 °C/min) - (3)	ISO 11357-1/-2	° C	154
Thermal conductivity at 23 ° C		- W/(K.m)	0.43
Coefficient of linear thermal expansion			
-Average value between 23 - 60 ° C	-	m/(m.K)	5.3 x 10 ⁻⁵
Thermal deformation temperature			
- method A: 18 Mpa	+ ISO 75-1/-2	° C	110
Maximum allowable operating temperature in air			
- short time(4)	-	° C	165
- continuity: 5,000 / 20,000 h (5)	-	° C	100 / 90
Minimum operating temperature (6)		° C	-50
Mechanical property at 23 ° C			
Tensile test (7)			
- Tensile stress at yield/tensile stress at break(8)	+ ISO 527-1/-2	MPa	-
- tensile strength (9)	+ ISO 527-1/-2	MPa	-
- Yield tensile strain (10)	+ ISO 527-1/-2	%	-
- Tensile strain at break (10)	+ ISO 527-1/-2	%	-
- Tensile elastic modulus (11)	+ ISO 527-1/-2	GPa	-
compression test (12)			
- 1 / 2 / 5 %Normal strain compressive stress	+ ISO 604	MPa	50/90
-compressive strength (13)	-	MPa	≥ 90
-Pendulum impact test - without notch (14)	+ ISO 179-1/1eU	kJ/m ²	150
-Pendulum Impact Test - Notch	+ ISO 179-1/1eA	kJ/m ²	120
-Ball indentation hardness (15)	+ ISO 2039-1	N/mm ²	>45
-Rockwell hardness (HRC) (16)	+ ISO 2039-2		38
-shear strength (17)	ASTM-D732e	Mpa	≥ 100
Friction performance at 23 ° C			
-Rate of wear (18)	ISO-7148-2:1999	um/km	2
-Dry and dynamic friction coefficient (19)	ISO-7148-2:1999		0.3-0.4
-Maximum allowable dynamic load (20)	-	Mpa	≥ 90
-Maximum allowable static load (20)	-	Mpa	100
-Maximum PV value (20)	-	Mpa·m/s	0.8

Sliding liner products

Comparative Analysis of Products Between Beijing GreenIdea
New Energy Technology Co., Ltd. and Competing Products

Number	Brand	Operating conditions	Current usage status
1	FDE(UK)	Need additional greasing	Large vibration
2	Mitsubishi PETP(Japan)	Need additional greasing	Poor low-temperature resistance;High noise level;Unstable friction coefficient
3	JHS(Germany)	Need additional greasing	Poor resistance to chemical contamination;Easily breakable;Prone to vibration;
4	Mitsubishi nylon(Japan)	Need additional greasing	Poor low-temperature resistance;Easily breakable
5	MAX(China)	Need additional greasing	Poor resistance to chemical contamination;Easily breakable;Prone to vibration;
6	Deva(Germany)	Need additional greasing	High noise and significant vibration
7	GreenIdea(China)	Without adding grease	Mute;Stable friction coefficient;Low-temperature resistance;Wear-resistant

Brake Friction Products

Comparative Analysis of Products Between Beijing GreenIdea
New Energy Technology Co., Ltd. and Competing Products

Number	Brand	Type	Current usage status
1	Huaruifeng(China)	powder metallurgy	Not resistant to oil stains;Large vibration;Damage the friction disc
2	Zongcheng(China)	powder metallurgy	Not resistant to oil stains;Large vibration;Damage the friction disc
3	Svendborg(Germany)	powder metallurgy	Not resistant to oil stains;Large vibration;Damage the friction disc
4	ICP(UK)	epoxy resin	Easily breakable;Not wear-resistant;Prone to vibration
5	JHS(Germany)	epoxy resin	Easily breakable;Not wear-resistant;Prone to vibration
6	Huawu(China)	phenolic resin	Not resistant to oil stains;Prone to vibration
7	Boyun(China)	phenolic resin	Not resistant to oil stains;Prone to vibration
8	GreenIdea(China)	Nano high-performance composite material	Mute;Stable friction coefficient;Low-temperature resistance;Wear-resistant

At present, GreenIdea's product offerings are primarily categorized into two lines:Sliding liner products and Brake Friction Products.

Sliding liner products	The biggest difference between GreenIdea products and other products is that GreenIdea products do not require oiling. They feature a stable friction coefficient, no vibration (this can be guaranteed), and a stable braking torque. The main pain points of other products currently are as follows: dry friction causes vibration; although applying grease can eliminate vibration, it will reduce the braking torque and lead to a series of other problems, such as faults in the yaw motor reducer and the entire yaw transmission chain.Moreover, when problems occur, it is easy to overlook the root cause of the faults.
Brake Friction Products	The biggest difference between GreenIdea products and other products is: GreenIdea has developed a unique formula, so its brake pads do not produce vibration and will not damage the main disc. A common drawback of other products is: due to the excessively high metal content in their material formula, the overall hardness of the material is too high, which easily damages the mating friction main disc during the friction process and tends to cause vibration. (Currently, yaw vibration is also an industry-wide common issue.)
Pricing Strategy	For GreenIdea's gasket products, their prices are lower than imported brands and slightly higher than domestic brands. For brake pad products: Their prices are higher than those of powder metallurgy products (500).They are lower than imported polymer-based products (2500).GreenIdea's price range is (1200-1500), which is for a single brake pad matching the 120 caliper.
Parameter Performance	In terms of performance, GreenIdea's gaskets and brake pads far outperform other domestic and international brands. In terms of parameters, we can not only provide standardized products but also match products with different parameters for different units to better adapt to the operation of wind turbines. (For example, for Envision 2.x MW units,we use gaskets with a friction coefficient of 0.15 for the upper gasket and 0.3 for the lower gasket, which perfectly solves many problems existing in unit yaw. We will not provide more cases here as they involve trade secrets.)Brake pads are currently the only manufacturer that promises to solve yaw vibration.

PRODUCT PROFILE 产品介绍

Accessory products



ADAPTED MODEL 适配机型

Companies solve the most cutting-edge, challenging, and prominent practical problems for wind power clients through independent research and development, technological breakthroughs, and continuous expansion of service scope.

**Compatible with all
domestic and international fan models**



PRODUCT DISTRIBUTION

产品分布



24-hour online monitoring of the yaw system operation status

Monitoring the wear switch signal status of damping materials such as friction plates and pads of the actuators.

Real-time monitoring of the yaw motor operating temperature.

Real-time monitoring of yaw rate

COOPERATIVE CLIENTS

合作客户

