FGI 新风光

WindSun Science & Technology Co.,Ltd.

FGI 新风光

/Commited to promoting the power electronic equipment to integrate various industries/

Save **Energy**

Serve **Society**

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ABOUT US

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Large scientic engineering equipment development

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R&D innovation platform (1 station/ 1 base/10 centers)

With thirty years of energy-saving development 7 mergers and reorganizations, 4 plant relocations, more than 300 honors, Customer recognition comes from FGI's manufacturing improvement. FGI has developed a lot over the past half century.

From 1970 till now, time changes for a half century.

In 1970, the state-owned Wenshang Radio Factory was established, and from 1990 to 1992, the first generation of silicon thyristor low-voltage inverter was developed under the guidance of Li Ruilai (former factory director and chief engineer), which pioneered the early research of domestic low-voltage inverter, and the first low-voltage inverter passed the appraisal of Shandong Province Electronic Products Supervision and Inspection Institute in 1992. Through the tenacious efforts of the team, the products were gradually serialized to contribute to the development of the national energy-saving project and the industry, and since then the leading series of inverters have continued till now.

The enterprise has undergone several restructurings and reorganizations for development. In 2008, we launched venture capital investment and completed the relocation of the new plant in the Economic Development Zone. In 2011, we adopted Shandong Energy's strategic investment and formed a mixed ownership enterprise with multiple shareholdings held by Shandong Energy Group. In 2015, we transformed our shareholding system and established new FGI which has a modern enterprise management structure including the Party Committee, Board of Directors, Supervisory Board, Senior management and labor union.

On April 13, 2021, FGI successfully landed on the science and technology innovation board, which is the seventh "new energy industry", the second "smart grid industry", the first "state-owned enterprises in Shandong" listed company, realizing the new development of traditional enterprises.

Power electronics is profoundly changing the global energy system and will gradually spread to every corner of the world! We have always been based on power electronics technology, seeking and exploring to provide solutions and services covering the whole value chain and the whole life cycle for customers in the power, industrial and infrastructure sectors. We are committed to building new power systems, accelerating energy transformation with digitalization, helping to achieve carbon neutrality, and creating a better future for mankind together.

ENTERPRISE CULTURE

Mission

Master core technology, continuously to promote the power electronic equipment to integrate various industries.

Vision

Save energy, serve society, strive for century-old company.

Core value

Integrity, Innovation, Cooperation, Struggle

Business Philosophy

Product-based, market-oriented, customer-centered, striver-oriented
Adhere to hard work, insist on self-criticism and promise, pursue steady development

Talent Philosophy

Talent is the core competitiveness

Learning Philosophy

Learning ability is social adaptability

Service concept

Service is everywhere. Customers are the first.

Quality Philosophy

Quality is the life of the enterprise, life is a one-way trip

Communication Philosophy

With sincerity for communication

Market Philosophy

Marketing is to create customer value

Safety Philosophy

Safety is the basis for the survival and development

TOP 500 OF GLOBAL BRAND

500 TOP

Shandong Energy Group Top 500 in the world

DEVELOPMENTAL MILESTONE

In 1970
"Four Oriented" Gathered talents
State owned Wenshang Radio Factory was established

In 2004
Ownership reform to inject vitality
Restructured to establish FGI

In 2011
Enterprise Mixed ownership reform to enhance power
Attracted investment from Shandong Energy Group for flourishing development.

In 2019
Build a talent gathering place
Established Jinan Branch and R&D Center

In 2021
A new chapter of corporate listing
Listed on the Sci-Tech Innovation Board. Code No.:688663

In 2022
Focus on global development
Established Suzhou Branch and Overseas Department

In 2023
Layout of new industrial highland
Established Qingdao Branch

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FGI New voyage
Further development

R&D HISTORY

1970~1989

The state-owned Wenshang Radio Factory was established, and some graduates from famous universities, including Li Ruilai, were assigned here to develop and produce (military) transmitters. The factory developed while building, and has produced radios, pulse signal generators, band-pass filters, pile testers, cashmere moisture detectors, automatic telephone billing devices, etc. Among them,the pile testers were of excellent quality and well-known in China and continued to be produced until 1990, and the improved model of the 3866 signal generator continues to be produced until today.

1990

Approved by Shandong Provincial Electronics Industry Bureau, FGI established a project to develop inverters.

1992

The first 22kW/380V frequency convertible governor was successfully operated, which was an early step into the field of motor frequency conversion and energy saving in China.

1999

The first to successfully develop three-level medium-voltage inverter in China and run it in Shengli Oilfield, and then began to promote it in the oilfield.

2000

The first domestic 220kW/380V four-quadrant (hoist) inverter was successfully operated in Baoan coal mine. The first 560kW/6kV high-voltage inverter of FGI was successfully operated on the oil transmission pump in Liaohe Oilfield, which is one of the first high-voltage inverters in China.

2001

Cooperated with Dagang Oilfield Drilling and Production Design Institute and successfully developed linear motor inverter.

2002

FGI, Shanghai Jiaotong University, and Anhui University of Technology developed reactive power compensation methods and compensation devices for power grids and were invited to participate in the national drafting and validation of low-voltage inverter in the same year, showing its technical strength.

2004

The first 6kV hoist (four quadrant) high voltage inverter in China was delivered to the Mine for use.
The "electromagnetic bearing control system" developed by FGI was successfully applied to the 863 project of the key high-tech research in the energy field and the fourth-generation nuclear reactor-10 MW high-temperature gas-cooled reactor helium gas direct turbine cycle power generation system.

2005

The inverter for oil drilling rigs and high voltage hoist passed the expert appraisal and reached the international advanced level.

2006

FGI independently developed the first"regenerative energy feed-back device" in China, which was successfully put into operation in the TianJin subway. FGI's "plasma vertical displacement fast control power supply" was successfully applied to the "EAST nuclear fusion test device", a major scientific research project undertaken by the Institute of Plasma Physics of the Chinese Academy of Sciences. FGI's "500kW superconducting energy storage inverter and its switching system with the power grid" was successfully applied to the "superconducting energy storage system" of the Institute of Electrical Engineering of the Chinese Academy of Sciences.

2007

The first high voltage SVG of FGI is applied in Huainan Mining Bureau.

2009

The establishment of academician workstation for power electronics technology and new energy equipment in Shandong Province has enhanced the R&D power of FGI.

2013

FGI won the second prize of the National Technical Invention Award for the project "Key Technology for High-Efficiency Operation and Control of Motor System under Complex Working Conditions and its Application".

2015

FGI regenerative braking energy absorbing inverter for rail transit, obtained the EU safety approval (CE certification).

2016

We provided superconducting energy storage and current limiting system for the project "Development and grid-connected operation of superconducting energy storage and current limiting system for new energy generation" of the National "12th Five-Year Plan" 863 Program, which pioneered the application of multi-functional superconducting power devices in power grids, especially in wind farms.

2017

Won the "2017 National Intellectual Property Advantage Enterprise" and took the lead in organizing the review meeting of the national standard "Regenerative Braking Energy Absorbing Inverter Device for Urban Rail Transit (Draft for Review)".

2018

FGI "100 megawatt high-voltage water-cooled SVG" successfully passed the type test of China Academy of Electricity. Signed a strategic cooperation agreement with Cardiff University.

2019

FGI participated in the preparation of the international standard "Energy Feedback System for DC Traction Power Supply System". The national standard "Regenerative Braking Energy Absorption Inverter for Rail Transit", which is led by our company, was published and officially implemented on December 1.

2021

FGI was invited to participate in the drafting of standard "Technical Specification for Fire Test of Lithium-ion Battery Energy Storage System" and "General Technical Specification for Safety of Lithium-ion Battery System for Energy Storage"; the IEEE standard "Energy Feedback System - DC Traction Power Supply System" was adopted and released for implementation. "Key Control Technology and Application of Electric Energy Purification for High Ratio New Energy Power System" won the Second Prize in National Science and Technology.

2022

The first 6kV high-voltage energy storage emergency power supply system without transformer for coal mines in China was successfully put into operation in Xinglong Zhuang Coal Mine of Shandong Energy Group.FGI was awarded as "National Knowledge Product Demonstration Enterprise".

2023

Established WindSun (Qingdao Traffic Technology Co.,Ltd. FGI was successfully selected as one of the national model enterprises for creating world-class professional leaders.

2024

In May, awarded the 2024 National Manufacturing Single Champion.

Future

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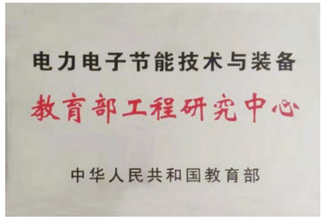
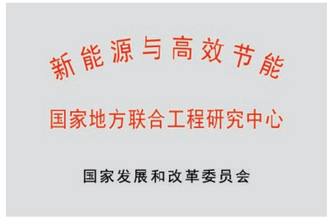
INNOVATION DRIVEN





Research and innovation platform

- Academician Workstation of Shandong for Power Electronics Technology and New Energy Equipment
- Postdoctoral Innovation Practice Base of Shandong Province
- Shandong Province Power Quality Engineering Laboratory
- Shandong Provincial Rail Transit Traction and Control Engineering Laboratory
- National Joint Engineering Research Center for New Energy and High Efficiency Energy Conservation
- Shandong Industrial Design Center
- Shandong Enterprise Technology Center
- Shandong Software Engineering Technology Center
- Shandong Province one enterprise one technology research and development center
- Shandong Variable Frequency Speed Control Technology Research and Promotion Center
- Engineering Research Center of Ministry of Education for Power Electronics and Energy Saving Technology and Equipment

Scientific research achievements

1 National Technical Invention Second Prize

1 National Science and Technology Progress Second Prize

3 National "863" programs

1 National large scientific project equipment

5 National key new products

4 Shandong Science and Technology Progress Awards

350+ Patents

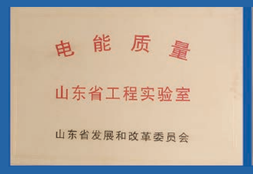
40+ Computer software copyright certificates

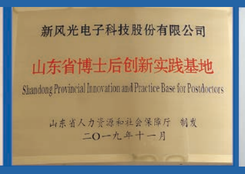
10 Software product registration certificates

2 Technology innovation programs for enterprises of the Ministry of Science and Technology

3 National Torch Program

HONOR & CERTIFICATION





CE Certificate

Flameproof Certificate

National Type Test

In 2023, successfully selected as National World-Class Professional Leading Demonstration Enterprise.

PCCC Certificate

Patents

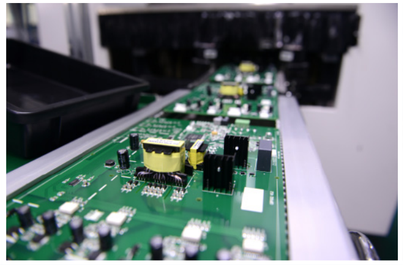
National Standard

Software copyright certificate

Certificate of utility model patent

Design certificate

MANUFACTURING STRENGTH



wave-soldering

Wave soldering-AOI automatic optical inspection

Plug-in line production

Component manufacturing center

PCB three-proof painting line

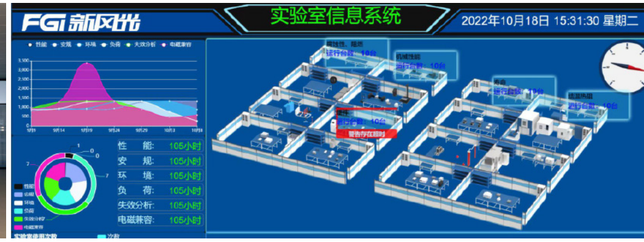
PCB board testing-FCT, ICT functional test line

SMT-AOI automatic placement-optical inspection line

AGV automated assembly line

Fully Automatic plug-in machine

Power Technology Research and Engineering Equipment Test & Certification Center



CNAS laboratory

MES (manufacturing execution system)

manipulator arm

AGV

QUALITY ASSURANCE

29

National/industry standard formulation

50+

Years of R&D and manufacturing experience

28000+

High voltage cascade products in operation

Central control room of test system

Product performance test

FCT circuit board performance test

10,000 kilowatt-class high-power full-load test system

Salt spray simulator

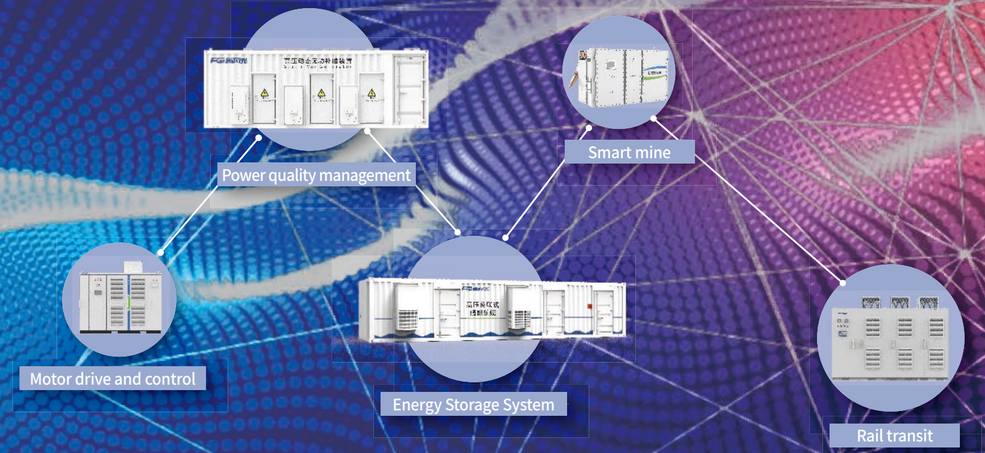
Low pressure, high and low temperature simulator

Temperature shock simulator

High temperature and high humidity test chamber

PRODUCT ARRAY

There are five sectors mainly including motor drive and control, power quality management, rail transit equipment, smart mine, energy storage system, widely used in photovoltaic, wind power and other new energy industries as well as power, coal, metallurgy, mining, petrochemical, rail transportation and other traditional industry sectors.

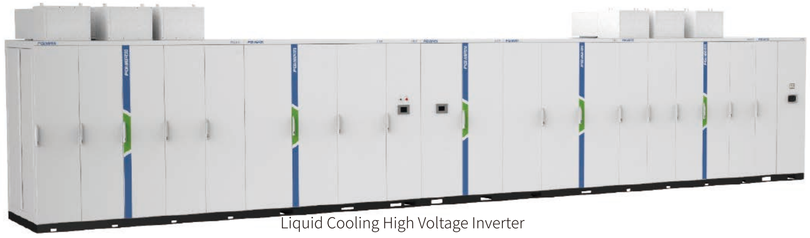


Motor Drive and Control

EFFICIENT ELECTRICITY

High Voltage Inverter

Standard High Voltage Inverter

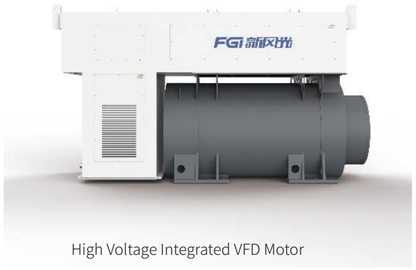


Liquid Cooling High Voltage Inverter

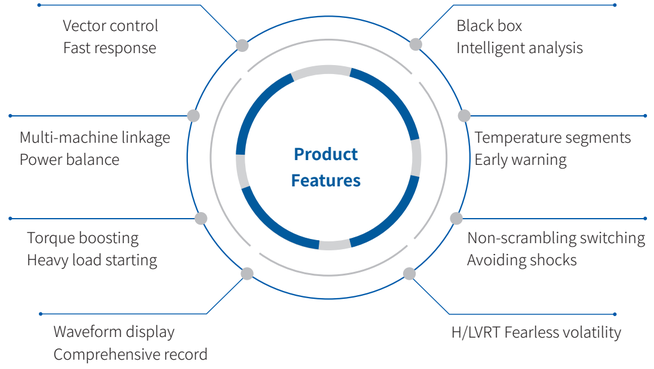
Product Function

FGI new generation high performance vector inverter, new design concept, advanced control platform, upgraded manufacturing process, wide power range, full function coverage, high reliability, strong scalability, simple operation and more freely motor drive control. Widely used in biological fermentation, central air conditioning, water supply, mining, petrochemical, chemical, pharmaceutical, metallurgy, cement, high-speed spindle, metal processing, tissue machinery, textile, high-speed fans, printing and packaging machinery, mixing, factory dust removal ventilation and other industries.

Four-quadrant Inverter



High Voltage Integrated VFD Motor



L/MV Inverter

High performance vector inverter

Product Features

- Book-shaped design
- Multiple motor tuning
  Precise parameters
- Mainstream Industrial
  Communications
  Wide applications
- Multiple braking modes
  Fast stop
- Synchronous asynchronous
  integration
  Free drive & Control
- Multi-protection technology
  Safe and reliable
- Multi-channel expansion slot
  Richly equipped
- RPM tracking technology
  Smooth start

Standard vector inverter

- Speed Control
- Torque control
- Vector control
- Asynchronous motor
- Synchronous motor
- Synchronous reluctance motor

- High-speed processing
  chip Precise control
- Synchronous and asynchronous
  Integrated drive control
- Excellent master-slave control
  Power balance
- Multi-protection technology
  Safe and reliable

Special core for mining inverter

- Vector control technology
  Excellent performance
- Module structure
  Easy integration
- Low frequency torque boosting
  Heavy load starting
- Multiple motor tuning
  Accurate parameters

- Book-shaped design,
  delicate and flexible
- Versatile installation,
  easy integration
- Excellent performance
  wide application
- Independent ducts,
  upgraded protection
- Multi-protection,
  safe and reliable
- Feature-rich, small
  but comprehensive

Compact inverter

- Optical Fiber Communication Technology
- Synchronous Waveform Generation Technology
- High-Current Power Terminal Plug-in Technology
- Power Module Redundancy Control Technology

FD800 Engineering Transmission Inverter

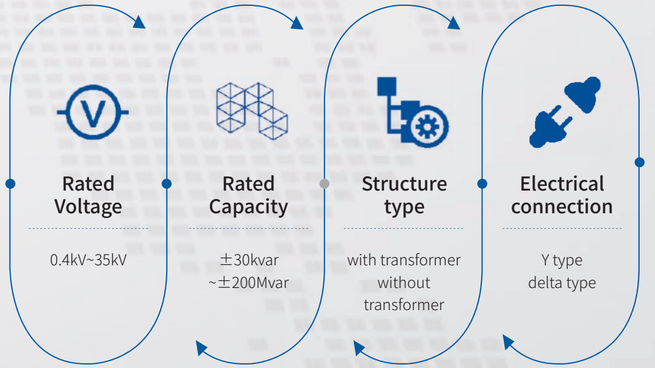
Power Quality Management

FRIENDLY ELECTRICITY

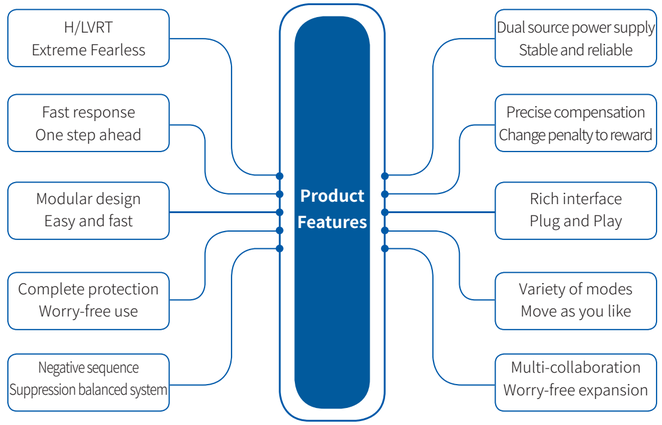
6-35kV SVG (Air cooling Outdoor)

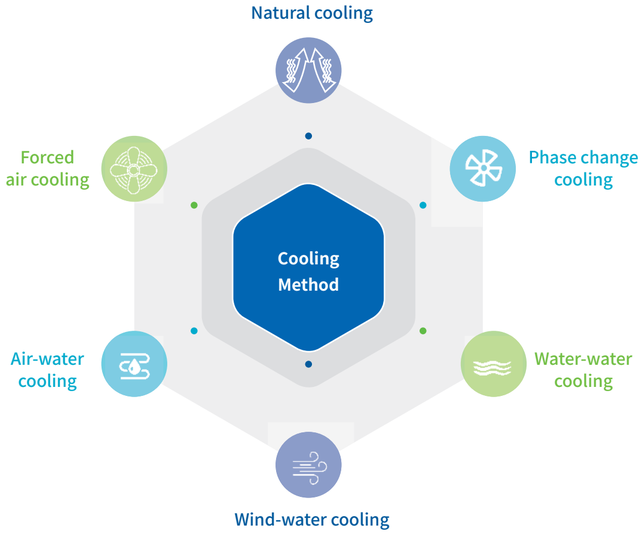
6-35 kV SVG (liquid cooling outdoor)

Static Var Generator (SVG)



0.4kV-35kV SVG (air cooling indoor)





6-35kV SVG (liquid cooling indoor)

Smart Energy Storage

STORED ELECTRICITY

FGi 3S (PCS, BMS, EMS) independent research and development capabilities and a rich layout of energy storage products: 1000V and 1500V low-voltage energy storage systems, with flexible power and capacity configurations; 6kV-35kV high-voltage cascade energy storage systems, which feature advantages such as large single-unit capacity, single-rack control,no transformer, high efficiency, high-quality output waveform, and automatic bypass; 100kW/215kWh industrial and commercial energy storage systems with All-In-One design, occupying a small footprint, easy to construct, and flexibly expandable. These series of energy storage products are widely used in various scenarios including power power-side generation-distribution-storage, grid-side medium and large energy storage stations, and user-side power supply areas and industrial parks, collaboratively building an interconnected "energy router."

High Voltage Unit Cascaded Energy Storage System Without Transformer

- High protection level, High adaptability
- Without transformer, High efficiency
- PCS voltage range 6-35kV
- One-piece design, easy installation and maintenance
- Automatic redundancy design for high reliability
- Multi-level parallel connection, Scalable to 100 MW level

Product Function

1000V/1500V Three-phase Power Conversion System

1500V PCS Integrated with Transformer

Low Voltage Energy Storage System

- Professional LFP
- High security battery mode
- Compact space layout
- Flexible capacity allocation
- High energy density
- Smart Thermal System

Industrial and Commercial Energy Storage System

- **High Safety**: Single Rack Design, No Parallel Capacity Loss, Reduced Thermal Runaway Risk, Immersive Active Firefighting, Intelligent Safety Alarms
- **High Performance**: Support for Multiple Parallel Units, Demand Control, Anti-Reverse Flow, Load Tracking
- **High Density**: Integrated Design, Small Footprint, Simple Construction, Flexible Expansion
- **High Intelligence**: Distributed Database, Health Management and Proactive Operations, Cloud-Edge Collaborative Energy Scheduling

400V Distributed Energy Storage System (Air Cooling)

400V Distributed Energy Storage System (Liquid Cooling)

Smart Mine

FLAMEPROOF ELECTRICITY

Product Function

Flame-proof inverter is a high-efficiency, high-performance speed control method, through the control of an asynchronous motor (or synchronous motor), to achieve step-less smooth speed regulation, to meet the requirements of various machinery, the use of frequency conversion in coal mines has become the trend of mining equipment speed regulation.

Underground load mainly applies to belt machines, scrapers, winches, monkey cars, coal mining machines, all kinds of fans, water supply and drainage pumps and emulsification pumps, etc.

Voltage Ranges: 660V~ 10kV
Power Rangers:75kW~ 2600kW

Product Features

Human-machine interaction Intelligent control	Black box diagnosis Intelligent analysis	Compact size Flexible installation
Feature-rich Excellent performance	Multi-machine linkage Power balance	Multi-protection Safety and security

Flameproof SVG

Product Function

It adopts advanced instantaneous reactive power theory and power decoupling algorithm based on synchronous coordinate transformation to dynamically track changes in the power quality of the grid and regulate reactive power output with the set reactive power nature and size, power factor, and grid voltage as control targets and can realize curve-setting operation, improve power factor, balance three-phase voltage, suppress voltage flicker and voltage fluctuation, and control harmonic pollution, etc., to completely solve the power quality problems of underground coal mine power supply system.

Product Features

Harmonic control Ensure safety	Black box record Accurate diagnosis	Complete protection Worry-free use
Remote power delivery Voltage stabilization	Variety of modes Move as you like	H/LVRT Extreme fearless

1140V/3.3kV Mining grid regulation control device

Product Function

Our company proposes an innovative underground voltage regulation and control device, which can achieve reactive power compensation of the underground power supply system, improve the power factor of the power supply system, reduce the cable voltage drop loss caused by reactive power loss, and at the same time, adopt a compensation scheme to raise the voltage of the power supply system for the cable loss caused by active current, and then compensate the cable voltage drop loss caused by active current of the system, which can perfectly solve It can perfectly solve the problem of low voltage at the end of long-distance motors and stabilize the end voltage of the power supply grid, which can theoretically ensure that the end voltage of the long-distance power supply grid can be compensated to 97% of the rated grid voltage when the equipment started and 99% of the rated grid voltage when it is running at full load.

Underground long-distance power supply solutions

Rail Transit Products

REGENERATIVE ELECTRICITY

Bidirectional Converter

Product Features

- Rectifier-inverter multi-purpose
- High frequency circulating suppression technology
- High overload capacity
- Multiple redundancy Reliable performance

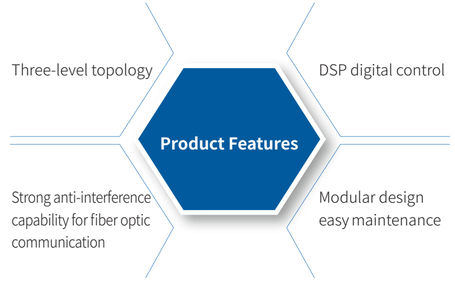
Product Function

The brake energy absorption device is the core equipment developed by FGI to handle the brake energy based on the high-power energy feed-back and grid-connected technology that has been mastered for more than ten years.

In 2009, the "regenerative energy feed-back grid-connected circuit and its control device" won the national invention patent, patent number: ZL200610044384.2. In 2014, it was Listed in the national torch plan project by the Ministry of Science and Technology. In 2018, the power supply system independently designed and systematically integrated by FGI and commissioned by the China Railway Inspection and Certification Center passed the expert acceptance and was put into operation.

In June 2022, FGI provided the first bi-directional converter that eliminated the traction rectifier unit in the whole line in China, leading the intelligent development of traction power supply once again in the highest altitude Lijiang Snow Mountain Rail Transit Line 1 in China.

Regenerative brake energy absorption device



SOCIAL RESPONSIBILITY

Practice the role of state-owned enterprises to help prevent the epidemic

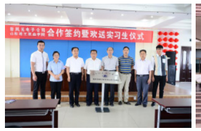
In the critical period when the national, provincial and municipal epidemic prevention and control situation is tight, the company resolutely implements the series of deployment requirements of epidemic prevention and control work, insists on high standing, strong determination, fast response and practical measures, practices the role of state-owned enterprises and helps prevent the epidemic.

Donate to school and give back to society

While striving to achieve high-quality corporate development, the company actively undertakes social responsibility, helps education careers, allows the fruits of corporate reform and development to benefit more workers and social groups in need, donates to schools and gives back to society.

Building educational practice bases to effectively serve social activities

FGI has established a long-term and stable school-enterprise cooperation mechanism with the Industrial College and set up a practice base.



Contribute to the double carbon goal promote green development

Promote intelligent and green technological reform achievements, strengthen benchmarking to lead and promote high-quality development of the enterprise, fully demonstrating the achievements of Energy Group in intelligent and green development and its determination to build a global clean energy supplier.

Active guidance to promote the scientific development of the industry

Actively undertake and participate in the activities organized by industry associations to promote industry development and progress by improving national/industry standard requirements.

GLOBAL
STRATEGY

50 +Years

FGI is deeply rooted in **China** and serves the **world**

LOOKING FORWARD
TO THE FUTURE

FGI will stick to its original intention, save energy, serve society, master the core technology, build a national brand with integrity, responsibility and commitment. We will build FGI into a domestic first-class public company of power electronics and energy routers with "advanced technology and excellent brand", and continue to promote the development of various industries of power electronics and equipment.

website

public WeChat

public vedio

FGI 新风光

WindSun Science & Technology Co.,Ltd.

Address: Jincheng Road, Economic Development Zone,
Wenshang, Shandong
Website: www.fgi-energyrouter.com
Email: overseas@fengguang.com

★ 202407