大禹电气
DAYU ELECTRIC



GBT-LCI Series Current Source High-voltage Variable Frequency Drive (VFD)

GBT-LCI Current Source VFD

大禹电气科技股份有限公司
DAYU ELECTRIC TECHNOLOGY CO.,LTD.

Stock code：874361

地址：湖北省孝感市经济开发区航天大道2号
邮编：432000
销售电话：0712-2883450
客服电话：0712-2886983
传真：0712-2883716
邮箱：dayudq@dayudq.com
网址：www.dayudq.com

Add：No.2 Hangtian Avenue，Xiaogan，Hubei Province，China
P.c.：432000
Tel：0712-2883450
Fax：0712-2883716
E-mail：dayudq@dayudq.com
website：www.dayudq.com

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Technology creates infinite possibilities for energy saving of motors



COMPANY PROFILE

Dayu Electric Technology Co., Ltd. was established in 1996. As a key national high-tech enterprise, it is rooted in the Xiaogan National High-tech Zone, Hubei Province, a national-level hometown of filial piety culture. It is committed to becoming a well-known electrical control system solution provider in China, providing users with integrated industry-wide solutions for electrical control system planning and design, intelligent power transmission and distribution equipment manufacturing, power equipment and EPC, and operation and maintenance services, as well as products and technical services, to help users achieve energy conservation and emission reduction, and enhance the safety, reliability and intelligence level of the power system.

Since establishment, Dayu Electric has always adhered to the dual commitment of quality and service. It is specialized in the research and development, as well as manufacturing of various large and medium-sized motor soft starters, variable frequency speed control devices, power compensation, load as well as efficient and energy-saving electrical equipment. The Company's products not only sell well in domestic industries such as industrial, municipal, new energy and JG, but are also exported to overseas markets in Europe, America, Asia and Africa, gradually establishing a global sales and service network. It has been listed as a key national SRDI "Little Giant" enterprise, and has been selected into the list of "Golden Seed" Listed-company Candidates in Hubei Province as well as the list of Military-civil Fusion Demonstration Enterprises.

In terms of technological innovation, the Company has carried out in-depth industry-university-research cooperation with top domestic universities such as Tsinghua University and Wuhan University, and has established a powerful technological R&D platform. The Company has led the drafting of 16 national and industry standards, holds over 110 patents, has been recognized as a national intellectual property demonstration enterprise, and has established three innovation platforms: "Hubei Province Engineering Technology Research Center for Motor Soft Starter", "Provincial-level Enterprise Technology Center", and "Hubei Province Engineering Laboratory". This is also the first private enterprise in Hubei Province that integrates "Academician and Expert Workstation", "Postdoctoral Research Workstation", and "High-skilled Talent Workstation". It has undertaken numerous scientific research projects such as the National Science and Technology Major Project, the Science and Technology Innovation Program, the National Torch Program, the National Key New Product Program, and the National Innovation Fund in Hubei Province. It has won the title of "Hubei Famous Brand" for six consecutive years. The Company also actively fulfills its social responsibilities and has successively received numerous honors, including "National Advanced Collective for Assisting and Supporting People with a Disability", "Hubei Province Disability Employment Demonstration Base", "National Model Workers' Home", and "Hubei Province 20-Year Contribution Award for Hope Project".

Innovation starts the dream, and diligence creates great achievements! Dayu Technology is determined to build an outstanding national electrical enterprise brand, and is committed to becoming a leading enterprise in motor control in China. With its independently developed high-voltage VFDs, it aims to achieve batch substitution of foreign equipment in core industries such as steel, petrochemicals, and new energy. The Company looks forward to sincere cooperation with friends from all sectors of society, jointly seeking development, and working together to create a bright future.

Academician and Expert Workstation

Postdoctoral Research Workstation

Five national standards

National Demonstration Enterprise for Knowledge Products

National Specialized, Refined, Unique and Innovative "Little Giant"Enterprise

DEVELOPMENT HISTORY OF THE COMPANY

1996

1996. Starting a Business · Building a Soft Start Foundation

The Xiaogan Dayu Electric Factory was established, focusing on the R&D and manufacturing of soft starters for motors. With breakthroughs in core technologies, it has filled the domestic market gap and gradually become a benchmark enterprise in the domestic industry.

2002

2002. Shareholding Transformation · Technology Upgrade

The Company carried out shareholding reform, bid farewell to family-style management, and established Xiaogan Dayu Electric Co., Ltd., establishing a modern enterprise governance structure. The independently developed 10MW "intelligent hydro-resistance soft starter" has been recognized as a "National Key New Product Program" and a "Hubei Famous Brand", and has become a technological leader in the industry.

2005

2005. Brand Upgrade · Product Iteration

The enterprise has changed its name to "Hubei Dayu Electric Co., Ltd." and its brand has expanded its reach from the local area to the entire country. The Company launched the third-generation electromagnetic voltage-regulation soft starter. By relying on completely independent intellectual property rights, the Company has filled the domestic equipment technology gap and further consolidated the market position.

2007

2007. Capacity Expansion · Talent Foundation Building

Relocating to the newly built plant in the Western District of Xiaogan National Hi-Tech Industrial Development Zone, the company ended the era of leasing and achieved large-scale production. Leveraging the opportunity of state-owned enterprise reform, it introduced seasoned management and technical professionals to establish its first subsidiary, namely Hubei Dayu Hanguang Vacuum Electric Co., Ltd., creating a diversified talent team.

2009

2009. Capital Operation · Innovation & Breakthrough

The company was renamed "Dayu Electric Technology Co., Ltd.", marking the launch of its capital operation strategy. The Wuhan R&D Center was established, attracting top-tier technical talent. With the independent development of a 30MW high-voltage solid-state soft starter - a breakthrough featured on CCTV's News Broadcast - the company has become an industry innovation leader.

2011

2011. Global Layout·Brand Development

The company relocated and established a modern production base, achieving a 300% increase in production capacity. By introducing Emerson technologies from the U.S., it launched products such as medium-voltage VFDs, catering to high-end industries including metallurgy, petrochemicals, and mining. Its products were exported to Asia, Africa, Latin America, and Europe and earned the title of "China's Well-known Trademark" the same year, propelling the brand's global influence.

2014

2014. Capital Empowerment · "New Board" Listing

On January 24, the company became the first in Xiaogan and among the first nationwide to list on the National Equities Exchange and Quotations ("New Third Board") with stock code 430386. On December 28, 2023, it achieved a secondary listing on NEEQ and secured Series A financing under stock code 874361, marking continuous enhancement of its capital strength.

2015

2015. Strategic Cooperation · Localization

The company has introduced strategic investors and deepened technological collaborations with global industry leaders such as Emerson and ABB, with a focus on developing ultra-high-power high-voltage VFDs. Actively implementing the national policy of "import substitution in high-end manufacturing," it is driving the localization and independent control of core equipment.

2017

2017. Leading Standard · Industry Benchmark

Recognized as a "National Intellectual Property Demonstration Enterprise," the company has participated in drafting five national standards, two local standards, and nine industry standards, solidifying its leadership in shaping industry technology standards.

2022

2022. High-End Breakthroughs · Defense-Sector Support

With strong technical expertise and reliable product performance, the company has expanded into defense-sector applications, with products serving marine, aerospace and other high-standard fields. This marks afurther extension from industrial automation to high-end equipment manufacturing, driven by Technology + Security.

2025

2025. New Energy Expansion · Globalization

Recognized as a national standardization pilot unit for high-end equipment manufacturing, the company secured strategic investment from Western Capital. It won multiple benchmark projects in compressed air and pumped storage sectors, including the world's first 300MW-level compressed air energy storage demonstration project. The company established its first overseas facility in Nigeria, Africa, while partnering with CRRC to expand operations in Indonesia.

ENTERPRISE HONOR AND QUALIFICATION

ENTERPRISE HONOR
AND QUALIFICATION













Ordering Instructions

Please provide the following accurate information when ordering:

- Model and specification of the required products:
- Main technical parameters of the controlled motor or system:
- Type, characteristics and technical parameters of the driven machinery load
- Requirements on installation and cabinet consolidation or the electrical or dimensional requirements of other relevant equipment
- Please specify other special requirements in contract or technical agreement.

Conditions of product service environment:

- Ambient temperature: -10°C ~ +50°C;
- The relative humidity of air shall not exceed 95%;
- The altitude shall not exceed 1000m:
- The installation inclination shall not exceed 5°
- Where there is no explosion hazard, violent vibration or impact, chemical corrosion or conductive dust. Where there are rainproof and lightning protection facilities.

GBT-LCI Current Source VFD

Reliable High-efficiency Energy saving

Dayu Electric continues its scientific research for "Energy-saving China"



Service Commitment

Provide free maintenance service during the warranty period	Always provide free consultation services	Make satisfactory reply to customers in 24 hours	In case on-site services are required, we promise to send technical service personnel to site in 24 hours within the province or 48 hours within the country

Overview of GBT-LCI Current Source VFD

The GBT-LCI Current Source VFD is a member of Dayu Electric's VFD series. Specifically designed for high-power, high-speed, or specialized applications of electrically excited synchronous motors, this device is ideal for loads such as test benches, marine propellers, rolling mills, semi-autogenous grinding & ball mills, large-scale water pumps, fans, and compressors.

Dayu Electric's VFD series covers a wide range of power and voltage capacities, with output voltages up to 13.8kV and power exceeding 100MW.

Such a drive solution can meet diverse requirements of customer applications while significantly enhancing operational efficiency and business performance. Customers can benefit from the built-in professional applications of Dayu Electric's Current Source VFDs, leveraging the significant advantages of high-precision control to drive business growth. Leveraging the significant advantages of high-quality control, they can drive business growth.

Achieve greater benefits with lower energy consumption

Dayu Electric offers an extensive range of high-voltage VFDs designed to enhance your productivity and profitability. Your production equipment will consume only the precise energy required to perform its tasks, eliminating any unnecessary energy consumption. High-precision control ensures efficient, long-term stable operation while optimizing raw material utilization. This will help you reduce costs and save time.

Dependable and reliable performance

Based on your specific industry and application requirements, we can provide customized drive solutions that fully meet your needs. Dayu VFD, with a power range from 280KW to over 72MW, can control a series of high-voltage equipment. By utilizing premium components and built-in specialized functions, Dayu VFDs ensure customers achieve high availability and safety in their production facilities. Leveraging proven VFD core technologies ensures smooth and reliable operation for customers' daily production.

Nationwide support to ensure complete peace of mind

Dayu Electric's nationwide service network ensures round-the-clock rapid service and support. We stand ready to assist whenever needed, providing you with complete peace of mind.

GBT-LCI Large Synchronous Motor Variable Frequency Speed Control Device

As a consistently top-performing product, GBT-LCI provides variable-speed control and soft start for customers' large synchronous motors, significantly enhancing industrial operations. GBT-LCI incorporates industry-specific functions and unique features that ensure reliable performance of customer production processes and systems, even under demanding environmental conditions.

Mature and reliable design

GBT-LCI employs highly mature technologies specifically designed to drive high-power synchronous motors, while also enabling soft start for large synchronous motors, which can effectively reduce grid and equipment impact.

The higher the performance requirements, the greater the benefits customers gain from motor speed control. Energy saving benefits can offset the cost of the transmission system in a short time, and the reduction of maintenance needs will help clients save more money and time.

GBT-LCI has won wide praise for its high availability and reliability due to its excellent performance over the years. GBT-LCI adopts simple design and mature components, which can realize trouble-free use and extend the normal operation time of the production process to a greater extent.

Such a transmission solution will make clients no longer worry and ensure their efficient operation day after day and year after year.



Multiple Value-added Benefits GBT-LCI Delivers to Customers

Energy saving

Dayu High-Voltage VFD drives motors according to the demands of the customer's production process, rather than operating at power frequency, thereby optimizing power consumption and enhancing process efficiency. In this way, customers can achieve energy saving and effectively reduce carbon emissions.

Proven technology

GBT-LCI VFDs and soft starters have demonstrated their higher reliability and availability in various industries and applications requiring high-power, high-voltage electricity.

Simple design ensures high reliability

GBT-LCI combines a simple, mature VFD design with redundant power components to ensure high reliability. Customers can benefit from multiple advantages of the VFD: easy voltage scalability, minimized harmonic impact on power supply systems, and over 99% VFD efficiency.

Tailored solutions for industry-specific needs

GBT-LCI is tailored to meet customers' specific requirements. GBT-LCI is utilized to control large synchronous motors, enabling soft start for large synchronous motors or serving as a gas turbine starter for large synchronous generators.

The rugged design of the VFD ensures high availability

By employing robust thyristor components and a fuse-less design, GBT-LCI ensures high availability even in harsh operating environments. Configurable redundant water-cooling units ensure continuity in customer production processes.

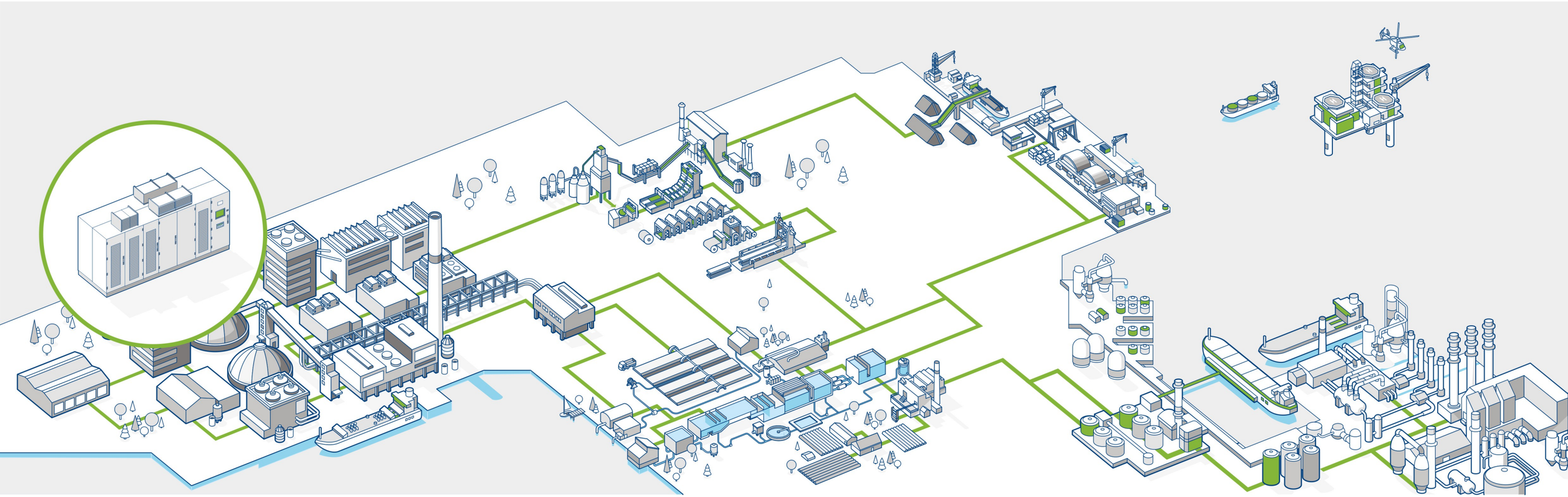
Ensure personal safety

Due to its advanced arc-proof design, GBT-LCI effectively safeguards both personnel and cargo from hazardous arc flash incidents. GBT-LCI features certified functional safety characteristics, ensuring system security and reliability.

Easy to maintain

Easy access to all components ensures simple and smooth maintenance of GBT-LCI. The maintenance-free pump design significantly reduces service requirements. In addition to powerful diagnostic tools, customers also benefit from convenient remote monitoring functions.

GBT-LCI Empowers Cross-industry Customers to Control Large Synchronous Motors

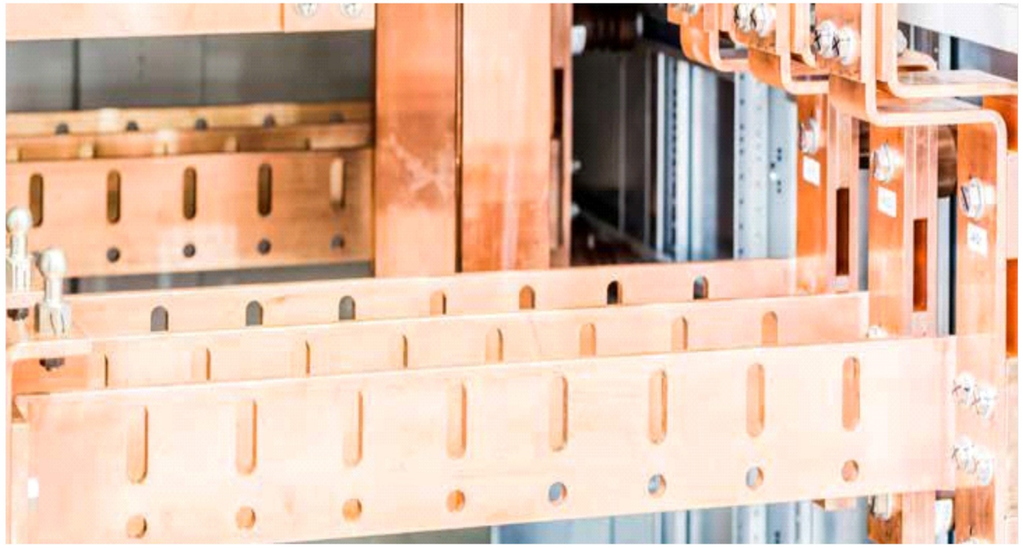


Application Field

Chemical industry, petroleum & natural gas	Power generation	Water industry
Compressor and extruder	Gas turbine and pumped storage power station starter, boiler feed pump	Pump

Metallurgy	Other applications
Blast furnace blower and wire rod rolling mill	Test bench and wind tunnel

Flexible Drive System Integration of GBT-LCI



When designing the VFD system, we account for all operational scenarios to deliver optimal solutions for customers

Mechanical system interface

The VFD system typically operates across a wide speed control range. Torque ripple occurs across varying frequencies. When designing the mechanical system interface, careful consideration must be given to torque between the motor and driven equipment. Torque analysis determines the rationality of shafting system design.

Power interface

The power system interface ensures the VFD's tolerance to grid disturbances, while the harmonics generated by the VFD fully comply with applicable grid standards.

Automation and operator interface

The automation and operator interface refers to the control station HMI interface for plant-level drive systems. Control room communication can be designed either as conventional wiring using analog/digital I/O modules, or as communication interfaces supporting serial data exchange.

Environment

When designing the drive system, country-specific and plant-specific characteristics must be considered. Equipment dimensions and weight, installation constraints, cooling medium specifications, and grid requirements must be clearly defined. Additionally, environmental factors, protection class, electromagnetic compatibility (EMC), and noise levels must be considered.

GBT-LCI Enhances Efficiency through Its VFD Suite



The VFD solution suite delivers superior efficiency and reliability to customers, thereby optimizing total cost of ownership

Integrated solution suite

Dayu is committed to delivering business support for customers, providing industry-specific VFD solution suites tailored to diverse applications. Dayu develops customer-specific VFD suites, including high-voltage VFDs, motors, and transformers, as turnkey solutions to fully meet individualized requirements.

Single point of contact

The synergistic effect of Dayu's products and services is designed to achieve customer expectations. Our motor-VFD solutions are engineered to meet customers' technical and commercial requirements across the entire product lifecycle from quotation and delivery to service and beyond.

Matched performance

To ensure design integrity and optimal equipment matching, Dayu products undergo comprehensive testing that validates performance for customer applications.

Technical Characteristics
Mature Solution with Multiple Distinctive Features

Reliable and simple design

GBT-LCI employs mature components specifically engineered for high-power and high-voltage applications.

Thyristor

Thyristor power semi-conductor is developed to deliver high power capacity, enhanced reliability, and minimized losses. It features low conduction and switching losses, enabling VFD efficiency up to 99%, including DC reactor components. Redundant power components further enhance the reliability and availability.

Rectifier

The rectifier serves as the grid-side converter unit, forming a fully controllable DC current source together with the reactor in the DC circuit. 6-pulse, 12-pulse, or 24-pulse rectifier configurations are available to minimize the VFD's harmonic impact on the power supply system to the fullest extent. GBT-LCI complies with stringent current and voltage harmonic distortion requirements specified by IEEE, IEC, and EN standards.

Excitation converter

The excitation of synchronous motors can utilize either brushless or slip-ring configurations. The excitation converter supplies the motor with field current across the entire speed range, including standstill conditions.

Inverter

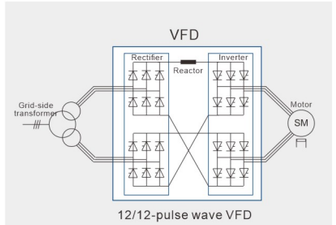
The thyristors in the inverter electronically switch the DC current to generate a three-phase AC system with variable frequency and voltage for motor supply. The motor voltage commutates the inverter phase currents. At extremely low speeds (0-10% of rated speed), forced commutation is employed when the motor voltage is insufficient to ensure reliable commutation. 6-pulse or 12-pulse inverter configurations are available to minimize the VFD's torque ripple effects on the motor.

Power supply voltage dips and outage ride-through

GBT-LCI features ride-through capability for brief grid and auxiliary voltage interruptions, ensuring uninterrupted operation in most scenarios.

Encoderless control

In harsh process environments, speed and rotor position encoders located at the motor shaft end are sensitive devices prone to failure. Dayu's GBTLCI operates without encoders, thereby ensuring higher availability and lower maintenance costs.



Example of GBT-LCI Variable-frequency Drive (VFD) Configuration

User-friendly control terminal

The system provides operators with a range of options via graphics and LCD touch screen, while digitally displaying real-time system status information.

Energy saving through motor and generator operation

Additionally, the synchronous motor driven by GBT-LCI can also operate as a generator without requiring additional power components. The GBT-LCI can feed generated power back to the grid when required. The regenerative operation mode is a cost-effective way to decelerate the motor.

Proven technology

The GBT-LCI ensures reliable operation even in harsh environments, with rated power reaching 100MW and beyond. Since its market introduction, the high-efficiency GBT-LCI has consistently served demanding applications requiring high power and voltage, delivering proven reliability.

Soft Start of Large Synchronous Motors and Generators

Direct-on-line starting of large synchronous motors can generate starting currents up to six times the nominal current, inducing significant electrical stress on the supply network, thermal stress on the motor windings, and mechanical stress on the shaft train.

The GBT-LCI soft starter effectively resolves all these challenges. This enables smooth acceleration of both the motor and load from standstill to rated speed. Then, the motor automatically synchronizes with the power supply system, the circuit breaker for constant-speed operation is closed, and the motor is connected to the grid for constant-speed operation.

Dayu Electric offers a variety of soft starter models with different configurations, which can reduce the impact of startup on the power grid and mechanical equipment while extending the service life of the equipment. Using one GBT-LCI soft starter allows for the sequential starting of multiple motors, even those with different rated power, thereby helping customers reduce investment costs.

Gas Turbine Starting Device

The gas turbine must start up and begin operating quickly within a short time. The GBT-LCI gas turbine starting device uses the generator as a motor and accelerates it beyond the ignition speed of the gas turbine. After that, the gas turbine can independently accelerate the generator to its rated speed and synchronize it with the power system.

Durability design of VFD

GBT-LCI adopts a robust VFD design and proven components to ensure long-term stable operation of customer systems and production processes.

Fuseless design

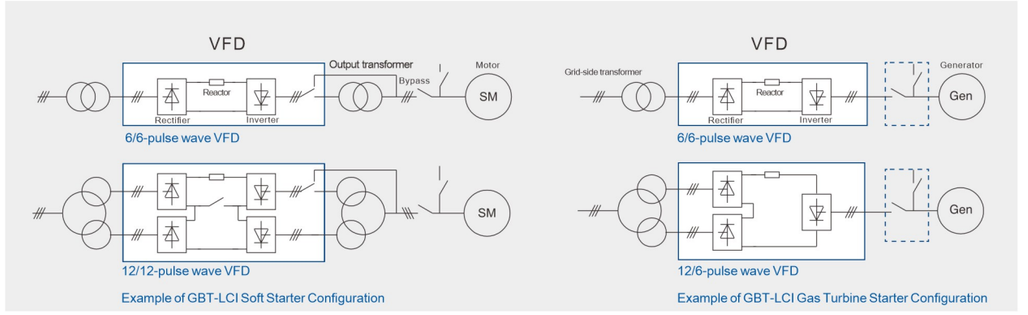
The high non-repetitive surge current capability of modern thyristors enables fuse-less VFD designs, resulting in fewer components and higher reliability. In case of a fault, the rapid overcurrent protection immediately blocks thyristor triggering and trips the main circuit breaker.

Series connection increases voltage and enhances redundancy

By utilizing series-connected thyristors to increase voltage, the GBT-LCI achieves significantly higher power output. Additionally, this series configuration enables redundant thyristor arrangements (n+1).

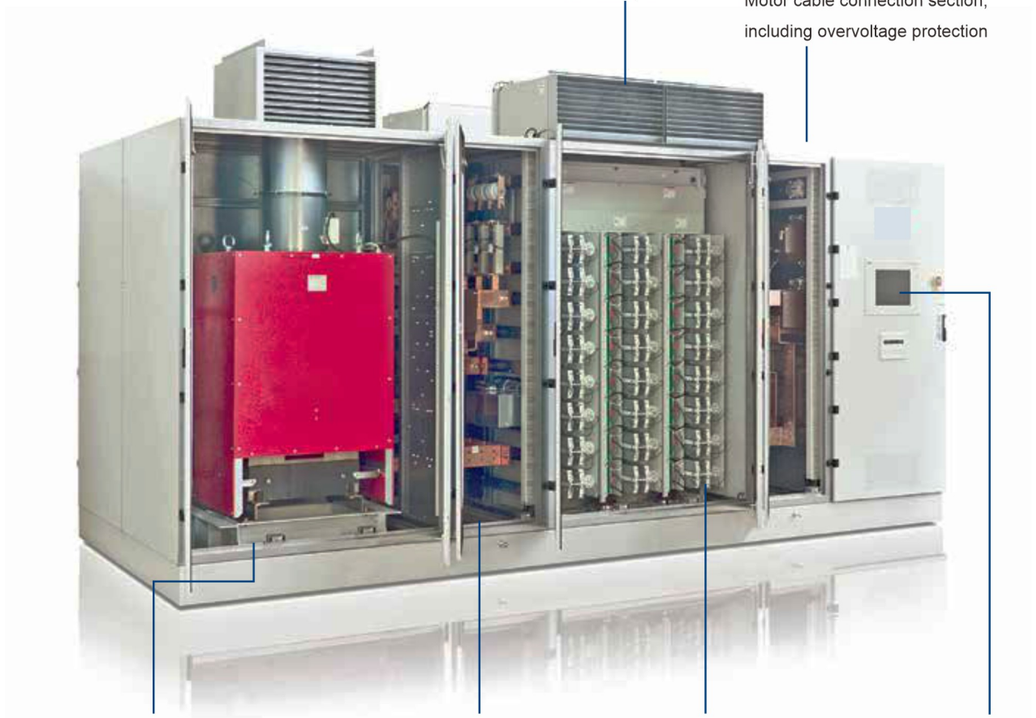
High-level personnel and equipment safety

Electric arcs may pose hazards to both personnel and cargo. Special precautions are required for systems where high-risk arcing fault currents may occur. Therefore, the GBT-LCI incorporates arc-proof design to safeguard personnel and equipment, thereby preventing unnecessary production downtime. The GBT-LCI is equipped with SIL (Safety Integrity Level) and PL (Performance Level) certified functional safety features, making customer systems safer and more reliable.



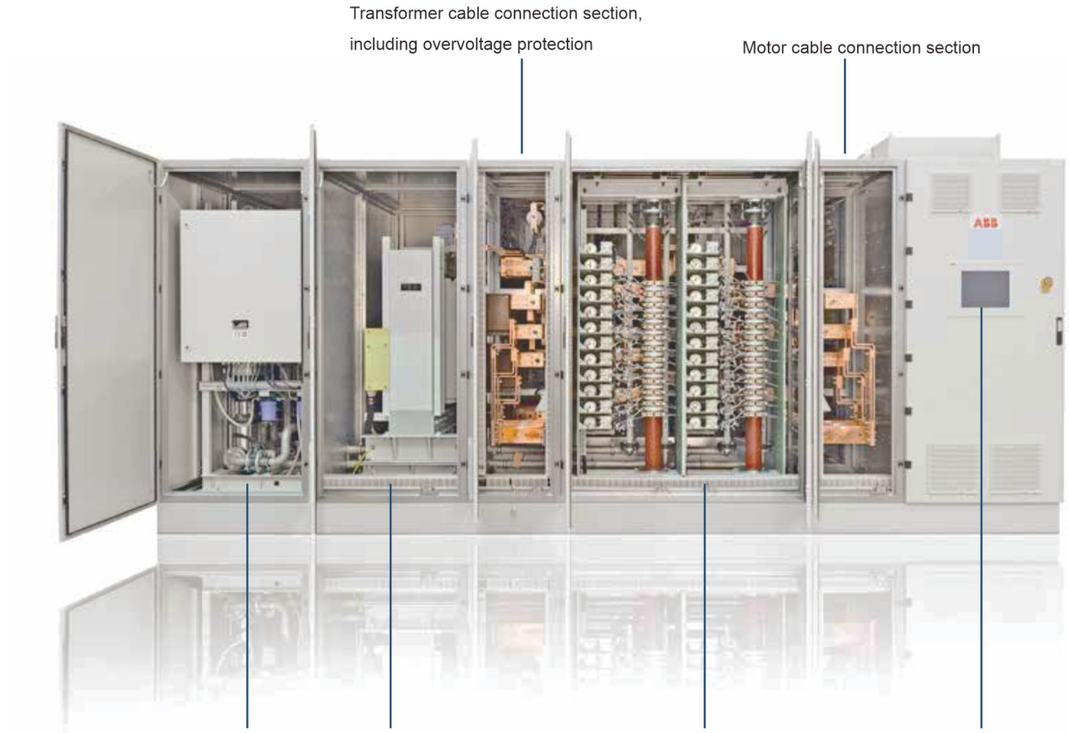
GBT-LCI Air-cooled Type

Air-cooled GBT-LCI serves as a soft starter for driving applications in the lower power range.



GBT-LCI Water-cooled Type

By utilizing water-cooled VFDs, efficiency can be enhanced to minimize heat dissipation into the equipment room more effectively, while also withstanding dusty and corrosive environments.



List of Technical Indexes

Input	
Input configuration	6-/12-/24-pulse thyristor rectifier
Input voltage	Any voltage can be applied to the corresponding primary side of GBT-LCI input transformer.
Fluctuation amplitude of input voltage	±10% without derating ±15% with derating (if less than -15%, cross-over voltage)
Input frequency	50/60Hz
Fluctuation amplitude of input frequency	±5%
Input power factor	Approximately 0.85 at rated speed/load
Input harmonics	Compliant with IEC 61000-2-4, IEEE 519, and GB/T 14549-93
Auxiliary voltage	Auxiliary: 380-690VAC 50/60Hz; three-phase; ±10%
Control voltage	90-300VDC or 90-265 VAC 50/60Hz, ±10%
Output	
Output power	2,000-72,000kW (higher power is available on request)
Output Voltage	2.1-2×10 kV
Output frequency	0-120 Hz
Motor type	Synchronous motor
VFD efficiency	>99%
Machinery	
Shell protection rating	Standard configuration: IP30 Optional configuration of air-cooled type: IP31 and IP41 Optional configuration of water-cooled type: IP31, IP41 and IP54
Cable entry	Bottom (optional from top)
Environment	
Altitude	1,000m (can be higher under derating)
Ambient air temperature	+5-+40°C (can be higher under derating)
Temperature of external cooling water	+2-+32°C (can be lower or higher under derating)
Noise	Water-cooled type: ≤ 75dB (A) Air-cooled type: ≤ 85 dB (A)
Cooling type	Air cooling and water cooling
Standard	EN, IEC and CE (CSA is optional)

Rated Value, Model and Voltage
GBT-LCI Water-cooled VFD

Motor data			VFD data			
Rated value			Model code	Power (kVA)	Length (mm)	Weight (kg)
kW	hp	A				
Water-cooled type; 12/12-pulse						
14000	19040	2350	W1212-211N465	15000	5350	8500
24000	32640	2350	W1212-372N465	26000	6250	10000
36000	48960	2350	W1212-563N465	40000	6450	11500
46000	62560	2350	W1212-714N465	50000	8050	17000
48000	65280	2350	W1212-774N465	53000	10050	19000
55000	74800	2350	W1212-855N465	60000	13850[1)]	22000
64000	87040	2350	W1212-986N465	70000	13850[1)]	23000
72000	97920	2350	W1212-1107N465	80000	13850[1)]	24000
Water-cooled type; 12/12-pulse; provide N + 1 thyristor redundancy						
14000	19040	2350	W1212-212R465	15000	6050	9000
24000	32640	2350	W1212-373R465	26000	6250	11500
36000	48960	2350	W1212-564R465	40000	8050	14500
46000	62560	2350	W1212-715R465	50000	8050	18000
48000	65280	2350	W1212-775R465	53000	10050	20000
55000	74800	2350	W1212-856R465	60000	13850	23000
64000	87040	2350	W1212-987R465	70000	13850	24000
72000	97920	2350	W1212-1108R465	80000	13850	25000
Air-cooled type; 12/12-pulse						
9100	12376	1600	A1212-211N465	10000	7250[2)]	7000
15800	21488	2000	A1212-302N452	17000	4950	8000
23900	32504	2000	A1212-453N452	26000	6750	11500

Notes:

The above is for reference only. The depth of the back-to-back configured LCI cabinet is 2,250mm

[1)]. Depth increased to 2,450mm

[2)]. Non-back-to-back configuration; depth: 1,125mm

[3)]. For VFDs exceeding the power ranges specified in the above table, please consult Dayu Electric for dimensional requirements

Rated Value, Model and Voltage GBT-LCI Air-cooled VFD

Motor data			VFD data			
Rated value			Model code	Power (kVA)	Length (mm)	Weight (kg)
kW	hp	A				
Air-cooled type; 6/6-pulse						
4600	6256	1800	A0606−211N465	6000	5250	6000
8700	11832	1800	A0606−372N465	11000	5950	7000
13100	17816	1800	A0606−553N465	17000	5250	9500
16700	22712	2200	A0606−594N452	22000	5250	10500
20500	27880	2200	A0606−715N452	27000	6750	14000
Air-cooled type; 12/12-pulse						
9200	12512	1800	A1212−211N465	12000	74502	7000
17400	23664	1800	A1212−372N465	23000	5250	9000
26200	35632	1800	A1212−553N465	34000	6750	12000
33400	45424	2200	A1212−594N452	44000	6750	13000
41000	55760	2200	A1212−715N452	54000	11950	18000
Air-cooled type; 12/6-pulse						
6300	8568	1800	A1206−131/1N465	7000	72502	7000
9200	12512	1800	A1206−171/2N465	11000	76502	8500
16000	21760	1800	A1206−332/3N465	18000	5250	10000
17400	23664	1800	A1206−37214N465	20000	5250	11000
23800	32368	2200	A1206−413/5N452	27000	6750	14000

Rated Value, Model and Voltage Gas Turbine Starter

Motor data			VFD data			
Rated value			Model code	Power (kVA)	Length (mm)	Weight (kg)
kW	hp	A				
Air-cooled type; 6/6-pulse						
4500	6120	1600	A0606−211N465	5000	3850	4500
9000	12240	2000	A0606−302N452	10000	4550	7000
11800	16048	2000	A0606−453N452	13000	6250	8500
15500	21080	2000	A0606−604N452	18000	6250	8500
Air-cooled type; 6/6-pulse						
5300	7208	1800	A1206−111/1N465	6000	5850	5800
9000	12240	1800	A1206−171/2N452	10000	6250	9000
11800	16048	2000	A1206−232/3N452	13000	7450	10000
15500	21080	2000	A1206−302/4N452	18000	7450	10000

Notes:

It is for indicative information only

LCI depth of back-to-back configuration: 2,250mm

[1]. Depth increased to 2,450mm

[2]. Non-back-to-back configuration; depth: 1,125mm

Application Case of GBT-LCI Current Source VFD

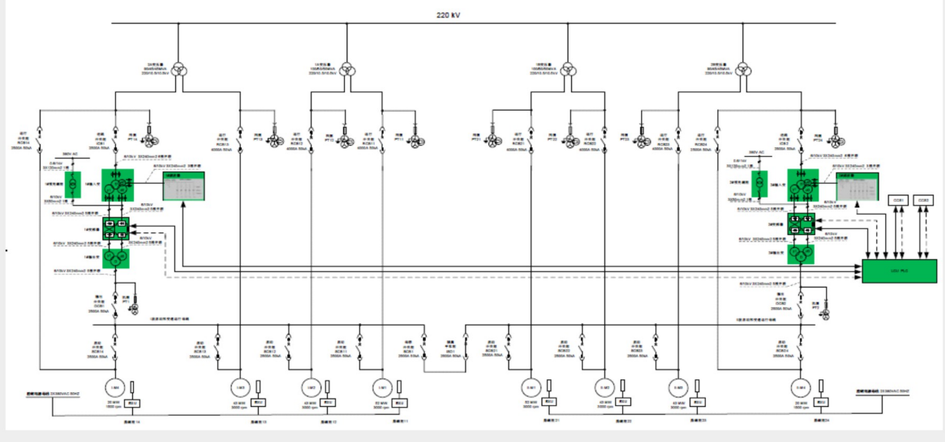
Application of LCI in Hubei Yingcheng 300MW Compressed Air Energy Storage Project

Project Overview



This project is a national pilot demonstration initiative for new energy storage technologies. It fully utilizes abandoned salt caverns in Yingcheng, Hubei as compressed air reservoirs, creating a massive "green super power bank". The Phase I project has been included in the third batch of the Catalogue of National First-of-its-Kind Major Technologies and Equipment (Projects) in the Energy Sector, featuring a single-unit capacity of 300MW and an energy storage capacity of 1,500MWh. Yingcheng has a long history of salt mining, with abundant underground salt cavern resources. This project repurposes abandoned salt caverns as gas storage facilities. Approximately 500m beneath the power plant site lies a salt cavern with a volume of about 650,000m^3. Two large compressors on the surface pump air into the cavern. Due to the dense structure and self-sealing properties of salt rock, the cavern maintains its designed pressure, preventing both gas leakage and structural collapse. Salt cavern energy storage offers advantages such as long lifespan, high efficiency, and low cost. This technology compresses air into a high-pressure state and stores it in underground salt caverns during periods of low grid demand. During peak electricity consumption, the compressed air will be released to generate power, effectively balancing supply and demand. This project effectively addresses the volatility, intermittency, and unpredictability of renewable energy generation, setting three world records in single-unit capacity, energy storage scale, and conversion efficiency.

Design Scheme



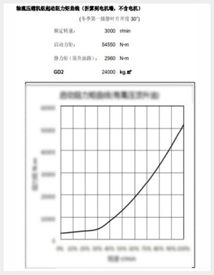
Primary Electrical Scheme Diagram

Motor and Load

First-stage compression section



Motor parameters

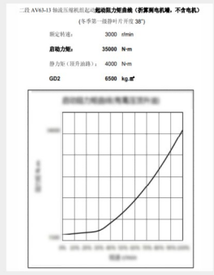


First-stage compressor starting resistance curve

Second-stage compression section



Motor parameters

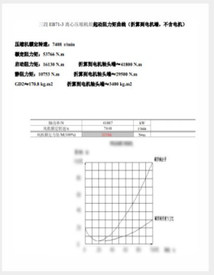


Second-stage compressor starting resistance curve

Third-stage compression section

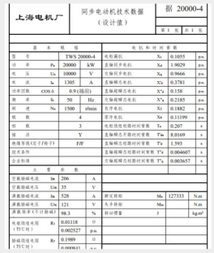


Motor parameters

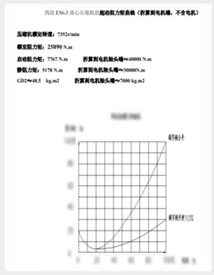


Third-stage compressor starting resistance curve

Fourth-stage compression section



Motor parameters



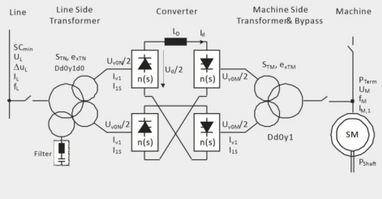
Fourth-stage compressor starting resistance curve

Description of Electrical Scheme

In this project, the compression section contains two lines. Each line has four compression units, respectively with a motor power of 52000kW/43000kW/43000kW/20000kW. Each line is equipped with a variable frequency speed control starting device, totaling two sets of variable frequency speed control units. The variable frequency speed control starting system must meet the "two-drive-eight" technical requirement, meaning each VFD can start eight units and regulate the speed of the fourth compressor on each line. The variable frequency speed control system must fulfill the demands of daily multiple, continuous, sequential, rapid, reliable, and safe starts. The total starting time for all four stages must be controlled within 180s. With a maximum single-unit power of 52MW per line, the final VFD is selected with a rated capacity of 25MW based on calculations.

VFD Parameters

Schematic Diagram of VFD System



Main VFD Data

Grid voltage	10.0kV
Voltage fluctuation range	±10%
Grid frequency	50Hz
Grid frequency fluctuation	±5%
Model	GBT-LCI.SO/DR A1212-554R465
Thyristor model & Qty.	96x3BHB010088
Qty. of thyristor of each bridge arm	3（+1）
Ambient temperature	40
Altitude	1000m
Max. motor power	25000kW
LCI VFD output power	25690kW
Operating voltage	10000V
Operating current	1685A
Operating frequency	50Hz
Fundamental power factor	−0.880
Auxiliary power supplies	380Vac/50Hz
Voltage fluctuation	±10%
Range of operating environmental temperature	5~40℃
Noise level	≤85dB（A）

Field Application

Equipment layout



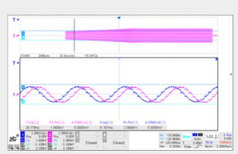


Operating Data

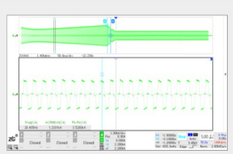




Starting process monitoring of A-line motors



Output phase voltage waveform



Output phase current waveform

Upon completion of the project's commissioning, the startup time and performance of all eight motors across the two lines fully met and even exceeded the design requirements.

Application of Domestic LCI in a Steel Plant Blower VFD Upgrade Project (Maintenance Works)

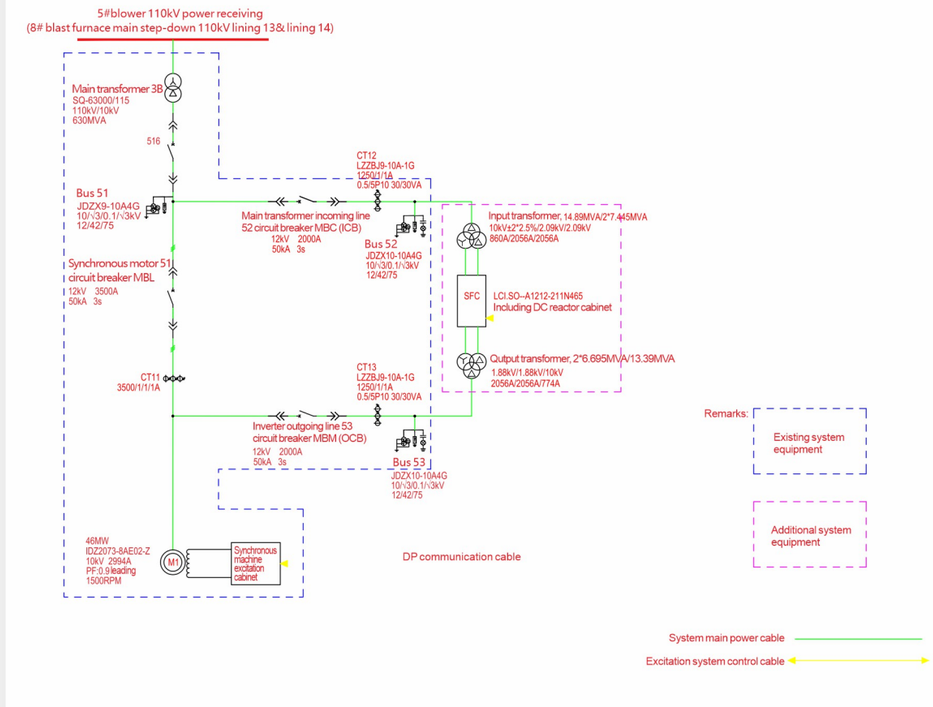
Project Overview





This project was invested in and constructed by Ouyeel Industrial Products Co., Ltd. The original equipment consisted of Siemens GL150 series frequency conversion cabinets driving Siemens 10kV/46MW blower motors. Due to the extended service life of the original Siemens VFDs, thyristor failures led to unsuccessful blower startups. Additionally, the prolonged after-sales service cycle of foreign products severely impacted blast furnace air supply operations, disrupting normal production. Dayu Electric provided a set of current-source frequency conversion equipment and integrated it with the original Siemens excitation system. After commissioning, the system achieved a successful startup on the first attempt.

Design Scheme



Motor and Load

Three-Phase Synchronous Motor with Salient Pole Rotor (Solid Pole)

Order No.
Order Date: 14.05.07
Manuf. No: D073162060I

Type	1DZ2073–8AE02–2	Cooling System	IC81W	Mounting	IM1005
Unit	1	Cooling Circuit	sec. prim.	Enclosure	IP54
Duty	air	Cool. Medium	water air	Ex–Protect	– –
Drive for	Compressor	Coolant Flow	80.62 m³/h 19.0 m³/h	Ex–Standard	– –
Type Dr.Mach.		Inlet Temp.	35 °C 45 °C	Insul. System	Micalastic
Required power	42942 kW	Ventilation System	stat.	Thermal Class	F
Standard	IEC 60034	Type of Fan	2AX1178–2Z	Service Altitude <=	1000 m
Rotation	ccw			Over–Speed	1800 min⁻¹
Excitation	brushless			Inertia Motor/Load	3.01 / 14.10 kgm²
Type Exc.Mach.	1JG3315–1AJ06–2				

Operating Data		Rated Point		
Output	kW	46000		
Voltage	V	10000		
Range	% ±	10 / 10	/	/
Frequency	Hz	50.0		
Range	% ±	2 / 2	/	/
Current	A	2994		
Speed	min⁻¹	1500.0		
Power Factor		0.90		
Exc. Voltage MM (130 °C)	V	90		
Exc. Current MM	A	1160		
Aux. Exc. Voltage (130 °C)	V	145		
Aux. Exc. Current EM	A	165		
Cooling Temperature sec./prim.	°C	35 / 45	/	/
Stator Winding Temperature	°C	<= 125 (R)	<=	<=
Field Winding Temperature	°C	<= 130 (R)	<=	<=
Duty Type		S1		
Remarks				

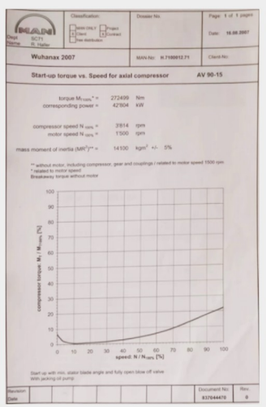
Efficiency		Losses at Rated Load		
Load	PF= 0.90	x Bearing Friction		kW
		x Windage		kW
1.00	98.55 % +	x Core		kW
0.75	98.5 % +	x PR_{SC} Stator	95 °C	kW
0.50	98.1 % +	x PR_{SC} Rotor	95 °C	kW
		x Additional		kW
		x Excitation		kW
		Separated Fan Power		kW

x Marked Losses are included in the Efficiency

Resistances, Reactances		unsaturated		saturated		Time Constants				
Ref. Impedance ZN=1.93 Ω		xdu	0.31 p.u.	xdi	1.75 p.u.	Ref. Temperature 95 °C				
Ref. Temperature 95 °C		xdü	0.31 p.u.	xdi'g	0.22 p.u.	T'd0'	8.1 s	TG	0.37 s	
xs1 0.138 p.u.	r1 4.90 ‰	xd'	0.21 p.u.	xd''g	0.175 p.u.	T'd'	1.11 s			
xs2 0.160 p.u.	r2 0.80 ‰	xdü	0.99 p.u.	xdü		T''d0'	0.012 s	TQ0'	0.04 s	
		xd''u	0.25 p.u.	xd''g	0.19 p.u.	T''d'	0.008 s	TQ'	0.007 s	
xsb 0.31 p.u.	xp p.u.	xd	0.084 p.u.	xdü	0.084 p.u.					
		xd2	0.23 p.u.	xd2i	0.19 p.u.	T(3K) 0.17 s	T(2K) 0.28 s			

Magnetic Forces		Short Circuit, Over Load		Thermal Time Constants	
Pull per pole FMP	591 kN	Short circuit ratio	IK0/IN	Running	0.57 p.u.	20 min
		Sudden sc torque	0~(zK)	Standstill	6.9 p.u.	300 min
Excentric	CMN=0 33 kNm		0~(zK)		5.1 p.u.	
	CMN=-MN kNmm	Pull–out torque	MK/MN		1.55 p.u.	
				Converter Starting		
		Ref. Values		MA/MN (N=0)	0.35 p.u.	
		Rated current	IN	2994 A	IA/IN (N=0)	0.25 p.u.	
		Rated torque	MN	292.8 kNm	IPA/IPN (N=0)	0.52 p.u.	

Motor Parameters



Blower Starting Resistance Curve

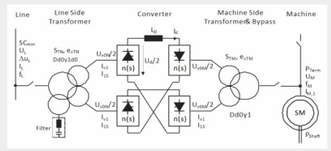
Description of Electrical Scheme

This project featured a Siemens main motor, MAN blower, Siemens GL150 series current-source motor drive, and a matched Siemens excitation system. The original Siemens VFD and its associated excitation cabinet employed DP communication control. Switching to domestic equipment would require protocol conversion.

The solution was ultimately implemented through an interface expansion scheme using the excitation system's PLC. The original Siemens communication commands were decoded and transmitted to the PLC's extended interface, then integrated with the VFD's control system. This approach fully maintained the original Siemens central control system's complete functionality for blower startup and operational control.

VFD Parameters

Schematic Diagram of VFD System



Main Faults of VFD

Grid voltage	10.0kV
Voltage fluctuation range	±7%
Grid frequency	50Hz
Grid frequency fluctuation	±1%
Model	GBT-LCI.SO A1212-211N465
Thyristor model & qty.	24x3BHB012159R2500
Qty. of thyristor of each bridge arm	1
Ambient humidity	40
Altitude	1000m
Motor shaft power	46000kW
LCI VFD output power	11730kW
Operating voltage	10000V
Operating current	773.1A
Operating frequency	50Hz
Fundamental power factor	−0.896
Auxiliary power supply	380Vac/50Hz
Voltage fluctuation	±7%
Operating environmental temperature range	5~40℃
Noise level	≤85dB（A）

Field Application



Conclusion

In China's industrial sector, ultra-high-power VFDs were once predominantly imported. Following the national strategy of "equipment localization", Dayu Electric independently developed ultra-high-power VFDs, reducing equipment costs by approximately 70%. These products directly compete with imported brands such as ABB and Siemens. In applications such as water conservancy, defense technology, rolling mills, and blast furnace main exhaust fans, we provide customers with superior domestic products and cost-effective solutions. This will break the market dominance of foreign brands in high-power frequency conversion applications.

Application of LCI in Gansu Jiuquan Yumen 300MW Compressed Air Energy Storage Power Station Project

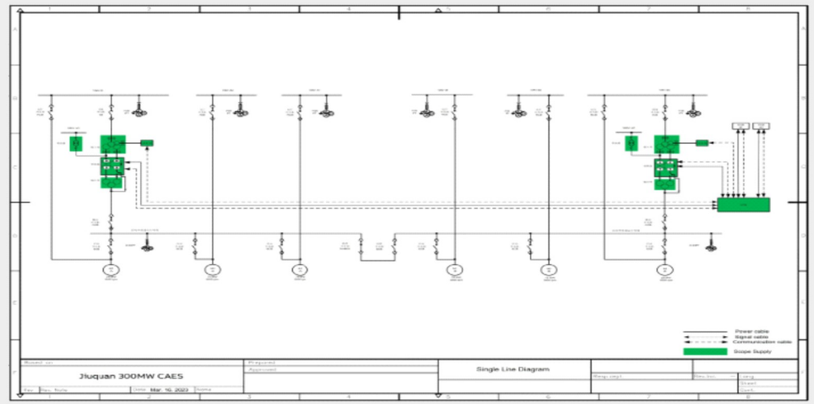
Project Overview



Gansu Jiuquan Yumen 300MW Compressed Air Energy Storage Power Station Demonstration Project is the world's first 300MW-level level artificial chamber compressed air energy storage facility. Leveraging the region's favorable geological conditions and superior renewable energy resources, the project involves construction of a 300MW/1800MWh demonstration facility using artificial chambers as compressed air storage reservoirs, with a total underground volume of approximately 210,000m^3, designed for 8 hours of energy storage/compression and 6 hours of energy release/generation. Recognized as a national pilot demonstration project for new energy storage and a major construction project in Gansu Province, the project's "300MW-level Compressed Air Energy Storage System Based on Hard-Rock Artificial Chamber" has been included in the fourth batch of the Catalogue of National First-of-its-Kind Major Technologies and Equipment in the Energy Sector of the National Energy Administration.

This breakthrough project eliminates geographical constraints associated with salt caverns for large-scale compressed air energy storage, enabling localized integration of high-capacity storage with wind and solar resources. It incorporates the world's first low-melting-point molten salt high-temperature adiabatic compression technology, establishing a new green, zero-carbon, efficient, economical and flexible application approach for large-scale compressed air energy storage.

Design Scheme



Primary Electrical Scheme Diagram

First-stage compression section

型　号		TWS 81000-2	电枢绕组电阻	R1	0.00206	Ω
额定功率	Pn	81000	kW	Rf	0.17382	Ω
额定电压	Un	10000	V	直轴同步电抗	Xd	2.4837	p.u.
额定电流	In	5264	A	直轴瞬态电抗	X'd	0.2869	p.u.
功率因数	cos Φ	0.9		直轴超瞬态电抗	X''d	0.1919	p.u.
额定频率	fn	50	Hz	负序电抗	X2	0.2341	p.u.
额定转速	Nn	3000	r/min	零序电抗	X0	0.0988	p.u.
极　数		2		励磁绕组时间常数	Tdo	8.6	s
相　数		3		额定转矩	Mn	257.8	kN.m
定子接法		Y		转动惯量	J	2254	kg.m2

Motor parameters

Second-stage compression section

型　号		TWS 72000-2	电枢绕组电阻	R1	0.00206	Ω
额定功率	Pn	72000	kW	Rf	0.17382	Ω
额定电压	Un	10000	V	直轴同步电抗	Xd	2.2870	p.u.
额定电流	In	4678	A	直轴瞬态电抗	X'd	0.2549	p.u.
功率因数	cos Φ	0.9		直轴超瞬态电抗	X''d	0.1705	p.u.
额定频率	fn	50	Hz	负序电抗	X2	0.208	p.u.
额定转速	Nn	3000	r/min	零序电抗	X0	0.0878	p.u.
极　数		2		励磁绕组时间常数	Tdo	9.19	s
相　数		3		额定转矩	Mn	229.2	kN.m
定子接法		Y		转动惯量	J	2254	kg.m2

Motor parameters

Third-stage compression section

型　号		TWS 30000-2	电枢绕组电阻(95° C)	R1	0.0076	Ω
额定功率	Pn	30000	kW	励磁绕组电阻(95° C)	Rf	0.38669	Ω
额定电压	Un	10000	V	直轴同步电抗	Xd	2.4769	p.u.
额定电流	In	1956	A	直轴瞬态电抗	X'd	0.2719	p.u.
功率因数	cos Φ	0.9		直轴超瞬态电抗	X''d	0.1508	p.u.
额定频率	fn	50	Hz	负序电抗	X2	0.1840	p.u.
额定转速	Nn	3000	r/min	零序电抗	X0	0.0813	p.u.
极　数		2		励磁绕组时间常数	Tdo	8.45	s
相　数		3		额定转矩	Mn	163.5	kN.m
定子接法		Y		转动惯量	J	1205	kg.m2

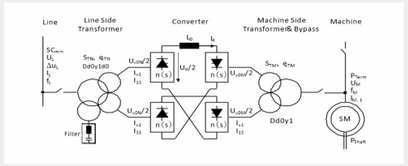
Motor parameters

Description of Electrical Scheme

In this project, the compression section contains two lines. Each line has three compression units, respectively with a motor power of 81000kW/72000kW/30000kW. All of these motors are synchronous motors. Each line is equipped with a variable frequency speed control starting device, totaling two sets of variable frequency speed control units. The variable frequency speed control starting system must meet the "two-drive-six" technical requirement, meaning each VFD can start six units and regulate the speed of the third compressor unit on each line. The variable frequency speed control system must fulfill the demands of daily multiple, continuous, sequential, rapid, reliable, and safe starts. The total starting time for all three stages must be controlled within 180s. With a maximum single-unit power of 81MW per line, the final VFD is selected with a rated capacity of 34MW based on calculations.

VFD Parameters

Schematic Diagram of VFD System



Main Parameters of VFD

Grid voltage	10.0kV
Voltage fluctuation range	±5%
Grid frequency	50Hz
Grid frequency fluctuation	±2%
Model	GBT-LCI.SO/DR A1212-574R465
Thyristor model & Qty.	96x3BHB010088
Qty. of thyristor of each bridge arm	3（+1）
Ambient temperature	40
Altitude	2000m
Max. motor power	81000kW
LCI VFD output power	34300kW
Operating voltage	10000V
Operating current	1978A
Operating frequency	50Hz
Fundamental power factor	−0.880
Auxiliary power supplies	380Vac/50Hz
Voltage fluctuation	±10%
Range of operating environmental temperature	5~40℃
Noise level	≤85dB（A）

Field Application





Conclusion

Developed through an integrated "Research-Investment-Construction-Operation-Digitalization" model, this project combines underground artificial chamber storage technology with non-supplementary-fired high-temperature adiabatic compression. This breakthrough solution overcomes challenging geographical constraints in compressed air energy storage, achieving international leadership in both technical solutions and industrial ecosystem development.

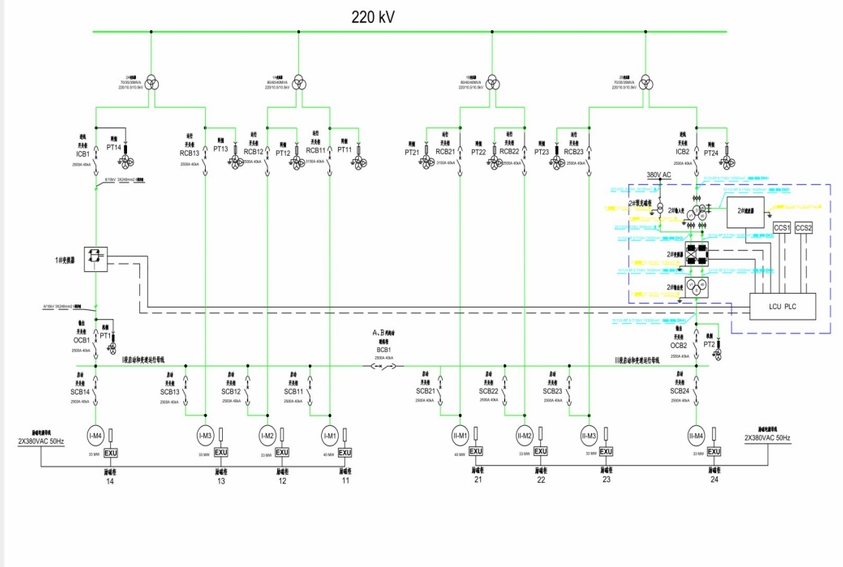
Application of LCI in Shangdong Tai'an 350MW Compressed Air Energy Storage (CAES) Innovation Demonstration Project

Project Overview



Shangdong Tai'an 350MW Salt-cavern Compressed Air Energy Storage (CAES) Project is the world's largest-scale demonstration project, jointly invested by China Energy Engineering Corporation Limited (CEEC) and Tai'an Taishan New Energy Co., Ltd. This project sets multiple new benchmarks in energy storage technology, featuring the world's first high-temperature adiabatic compression technology of low-melting-point molten salt. Upon completion, it will achieve three global records in the CAES field: single-unit capacity, conversion efficiency, and energy storage scale. It will advance the high-end development of new energy storage technologies, and promote the large-scale integration and utilization of renewable energy and the reutilization of abandoned salt cavern resources, to represent "CEEC Scheme" for building a new-type power system and supporting the "dual carbon" goals.

Design Scheme



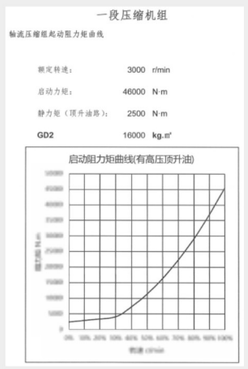
Motor parameters for first-stage compression section

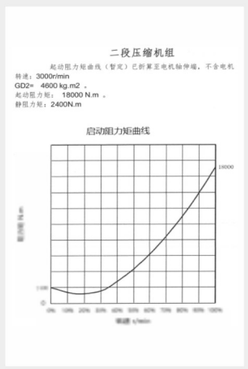
基本规格				电抗和时间常数			
型号		TWS 40000－2		直轴电枢反应电抗	Xad	2.1269	p.u.
功率	Pn	40000	kW	直轴同步电抗	Xd	2.277	p.u.
电压	Un	10000	V	直轴瞬态电抗	X′d	0.2574	p.u.
电流	In	2602	A	直轴超瞬态电抗	X″d	0.1578	p.u.
功率因数	cosφ	0.9		定子端部漏抗	Xs	0.0835	p.u.
频率	fn	50	Hz	定子槽漏抗	Xn	0.0665	p.u.
转速	Nn	3000	r/min	定子漏抗	Xe	0.15	p.u.
极数		2		励磁绕组电抗	X	2.24	p.u.
相数		3		励磁绕组漏抗	Xf	0.1131	p.u.
接法		Y		阻尼绕组漏抗	Xds	0.0084	p.u.
绝缘等级（定子/转子）		F/F		负序电抗	X2	0.1925	p.u.
技术条件		0A512.3952		零序电抗	X0	0.0867	p.u.
企业标准		GB/T 755		励磁绕组时间常数	Td0	8.55	s
主要参数				单相短路电流瞬变时间常数T′d1		1.79	s
空载励磁电流	If0	259	A	两相短路电流瞬变时间常数T′d2		1.56	s
空载励磁电压	Uf0	55	V	三相短路电流瞬变时间常数T′d3		0.97	s
额定励磁电流	Ifn	682	A	超瞬变电流时间常数	T″d	0.12	s
额定励磁电压	Ufn	208	V	非周期分量时间常数	Ta1	0.2	s
满载效率	η	98.6	%	三、两相短路非周期时间常数	Ta2	0.24	s
电枢绕组电阻	R1	0.00558	±15%0.95℃	三、两相短路非周期饱和时间常数	Ta2H	0.19	s
励磁绕组电阻	Rf	0.27267	±15%0.95℃	额定转矩	Mn	127	kN.m
				转动惯量	J	1099	kg.m2

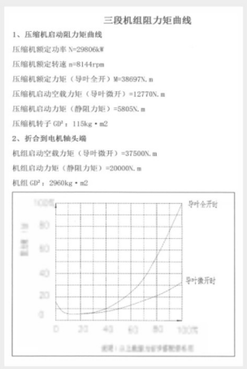
Motor parameters for second-stage, third-stage and fourth-stage compression sections

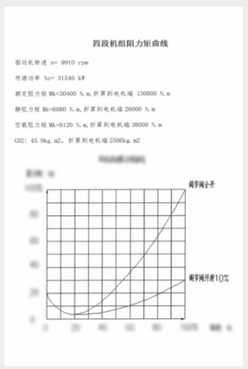
基本规格				电抗和时间常数			
型号		TWS 33000－2		直轴电枢反应电抗	Xad	2.0508	p.u.
功率	Pn	33000	kW	直轴同步电抗	Xd	2.203	p.u.
电压	Un	10000	V	直轴瞬态电抗	X′d	0.2526	p.u.
电流	In	2149	A	直轴超瞬态电抗	X″d	0.1594	p.u.
功率因数	cosφ	0.9		定子端部漏抗	Xs	0.0836	p.u.
频率	fn	50	Hz	定子槽漏抗	Xn	0.0686	p.u.
转速	Nn	3000	r/min	定子漏抗	Xe	0.1523	p.u.
极数		2		励磁绕组电抗	X	2.1563	p.u.
相数		3		励磁绕组漏抗	Xf	0.1055	p.u.
接法		Y		阻尼绕组漏抗	Xds	0.0077	p.u.
绝缘等级（定子/转子）		F/F		负序电抗	X2	0.1944	p.u.
技术条件		0A512.2594		零序电抗	X0	0.0778	p.u.
企业标准		GB/T 755		励磁绕组时间常数	Td0	8.72	s
主要参数				单相短路电流瞬变时间常数T′d1		1.85	s
空载励磁电流	If0	246	A	两相短路电流瞬变时间常数T′d2		1.63	s
空载励磁电压	Uf0	50	V	三相短路电流瞬变时间常数T′d3		1	s
额定励磁电流	Ifn	634	A	超瞬变电流时间常数	T″d	0.13	s
额定励磁电压	Ufn	181	V	非周期分量时间常数	Ta1	0.16	s
满载效率	η	98.5	%	三、两相短路非周期时间常数	Ta2	0.2	s
电枢绕组电阻	R1	0.0081	±15%0.95℃	二、两相短路非周期饱和时间常数	Ta2H	0.16	s
励磁绕组电阻	Rf	0.25576	±15%0.95℃	额定转矩	Mn	105	kN.m
				转动惯量	J	957	kg.m2
励磁机选择按如下励磁数据：							
励磁机定子电流	Ifn	283	A				
励磁机定子电压	Ufn	175	V				

Starting resistance curves for first-stage, second-stage, third-stage and fourth-stage compression sections







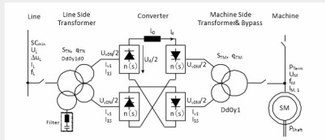


Description of Electrical Scheme

In this project, the compression section contains two lines, each of which has four compression units, respectively with a motor power of 40,000kW/33,000kW/33,000kW/33,000kW. All are synchronous motors. Each line is equipped with a set of variable frequency speed control starting device. A total of 2 sets of variable frequency speed control devices are set up. One is of current source type and the other one is of voltage source type. The variable frequency speed control starting system must meet the "two-drive-eight" technical requirement, meaning each VFD can start eight units and regulate the speed of the fourth compressor unit on each line. The variable frequency speed control system must fulfill the demands of daily multiple, continuous, sequential, rapid, reliable, and safe starts. The total starting time for all four stages must be controlled within 180s. With a maximum single-unit power of 40MW per line, the final VFD is selected with a rated capacity of 37MW based on calculations.

Variable Frequency Parameters

Schematic Diagram of VFD System



Main Data of VFD

Grid voltage	10.0kV
Voltage fluctuation range	±5%
Grid frequency	50Hz
Grid frequency fluctuation	±2%
Model	GBT-LCI.SO/DR A1212-574R465
Thyristor model & Qty.	96x3BHB010088
Qty. of thyristor of each bridge arm	3（+1）
Ambient temperature	40
Altitude	2000m
Max. motor power	40000kW
LCI VFD output power	37680kW
Operating voltage	10000V
Operating current	2176A
Operating frequency	50Hz
Fundamental power factor	~0.880
Auxiliary power supplies	380Vac/50Hz
Voltage fluctuation	±10%
Range of operating environmental temperature	5~40℃
Noise level	≤85dB（A）

Field Application



Conclusion

The CEEC compressed air energy storage (CAES) system solution used in this project is an innovative, practical, and cost-effective CAES technology, featuring independent intellectual property rights. Upon completion, it will become the world's largest CAES power station in terms of single-unit capacity, accelerating the commercialization, scaling, and industrialization of large-scale CAES technology. As a demonstration project for the salt-cavern energy storage industry chain, this project will effectively drive advancements in energy storage, gas storage, and hydrogen storage sectors, further extending the full industrial chain of salt-cavern energy storage - energy storage equipment manufacturing → energy support services.

Innovative Design Solutions

Test process

Safety test
Insulation and withstand voltage

EMC test
Lightning, power supply noise Electrical fast transient Static, voltage drop

Environmental test
Alternating temperature and humidity,high/low temperature shock Salt mist, high temperature, full load libration, drop

Performance test
Rated Parameters
Protection function
Basic function

Application Field



Mining

Ventilator　Belt conveyor
Elevator　Gas pump



Petroleum & petrochemical

Pipelinepump　Waterinjectionpump
Electricsubmersiblepump　Brinepump
Descalingpump　Exhaust fan



Water supply

Lift pump　Sewage pump
Purificationpump　Cleanwaterpump



Electric power

Induced draft fan　Blower
Booster fan　Condensate pump
Feed pump　Circulating water pump



Metallurgy

Blast furnace blower　Dust removal fan
High temperature fan　Circulating water pump



Light industry & textile clothing

Internal mixer　Refiner
Air compressor　Turbine fan

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Regional Performance Overview of VFD

- 内蒙古聚实能源有限公司焦化升级改造年产20万吨合成蜡配套清洁化学品项目
- 乌海包钢万腾钢铁有限责任公司AV71（BPRT）机组变频软启动装置
- 三峡能源空气压缩机组配套高压变频装置

- 宁夏滨泽新能源科技有限公司6万吨/年冶金工业尾气生物发酵法制燃料乙醇项目离心煤气压缩机组配套变频调速装置
- 宁夏申银特钢股份有限公司80MW煤气综合利用发电项目工程

- 西北电力设计院甘肃酒泉玉门300MW压缩空气储能电站示范工程EPC总承包项目

- 新疆八一钢铁股份有限公司炼钢120t转炉增设三次除尘项目变频器设备
- 新疆伊犁钢铁风机电机高效节能变频改造项目（EMC）
- 中国恩菲新疆火烧云铅锌矿60万吨/年铅锌冶炼工程
- 克拉玛依区南郊污水处理厂再生水利用工程

- 青海格尔木中科储能项目
- 西宁特殊钢股份有限公司65MW亚临界发电机组
- 青海亚洲硅业半导体有限公司40000t/a电子级多晶硅项目

- 山西高义钢铁有限公司AV80-16 BCRT机组变频软启动装置
- 山西建龙实业有限公司烧结系统项目
- 山西燃气产业集团有限公司原平煤层气液化项目

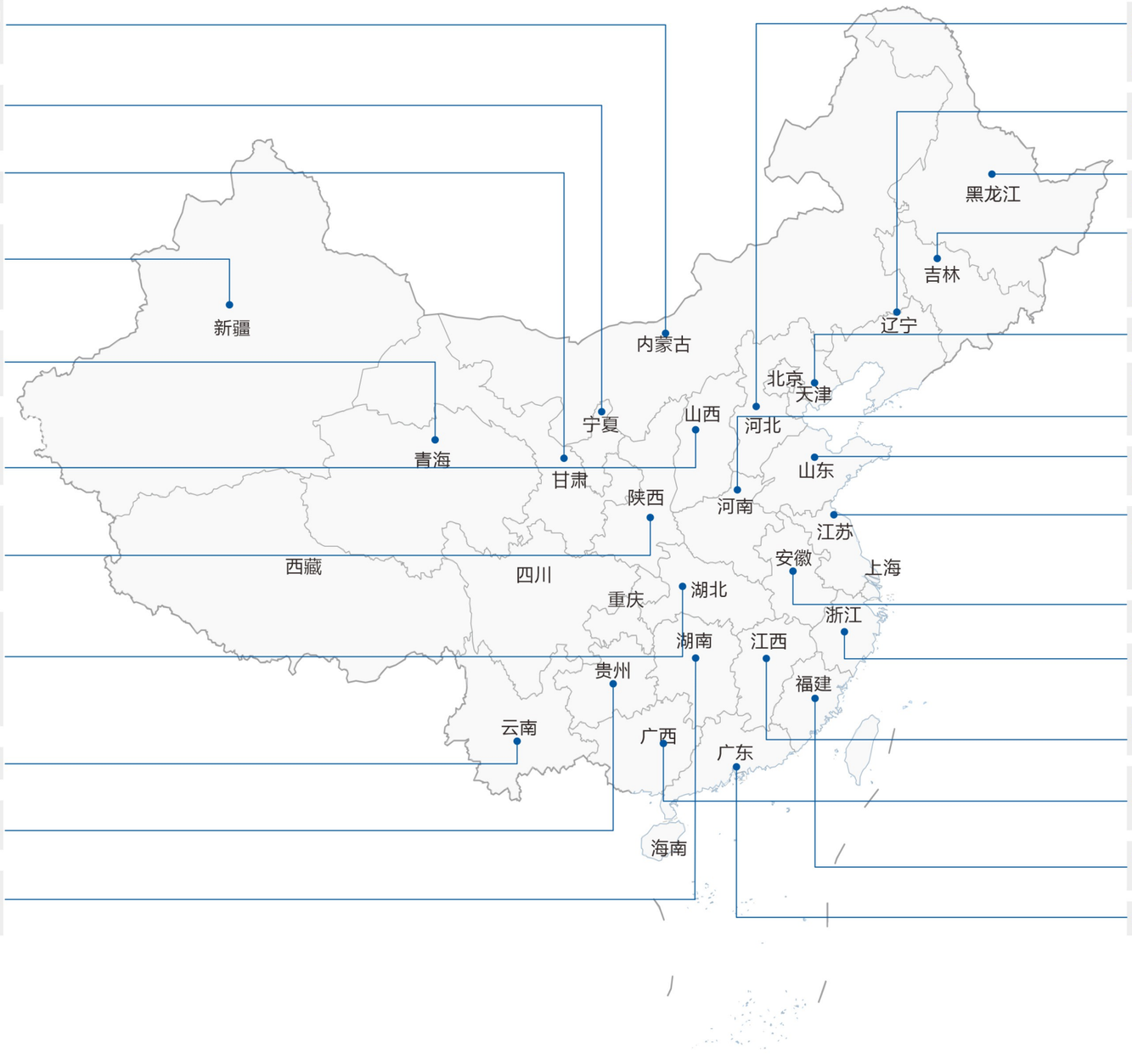
- 陕西龙门钢铁有限责任公司AV71机组配套高压变频器
- 中机国能延安煤油气资源综合利用热动力站工程
- 中国电建陕西澄城秦尧电厂4×29MW热源项目
- 中盐榆林盐化有限公司鱼河制盐厂锅炉风机变频节能改造

- 湖北应城300MW级压缩空气储能电站示范工程项目
- 武钢有限能环部热控单元五鼓风机变频器升级改造维修工程
- 中国电建大悟抽蓄机电设备成套项目静止变频起动装置设备采购项目
- 武汉钢铁有限公司六号高炉大修改造LCI变频器项目
- 中韩（武汉）石油化工有限公司炼油四部2#焦化压缩机K-2201项目
- 湖北大峪口化工有限责任公司磷酸车间循环水高压变频调速项目

- 昆明东山水泥生产有限公司2#水泥磨系统技改工程

- 贵州安达科技能源股份有限公司高压变频器项目
- 贵州紫金矿业股份有限公司高压变频器项目

- 衡阳市城市生活垃圾焚烧发电厂扩建工程（二期）项目
- 常德市生活垃圾焚烧发电项目技改续建工程
- 三峡后续规划华容县城关二水厂工程



- 唐山瑞丰钢铁（集团）有限公司引风机高压变频项目
- 河钢乐亭钢铁有限公司AV90-15机组
- 河北中翔能源有限公司120000Nm3/h焦炉气制LNG及富氢尾气制液氨装置
- 某研究所169MW测试系统高压变频器项目

- 辽宁澎辉铸业有限公司AV71 BPRT变频软起动装置
- 本溪北营钢铁（集团）股份有限公司1x135MW 余气资源综合利用发电EPC总承包工程

- 建龙西林钢铁有限公司AV71(BPRT)机组变频软启动装置
- 建龙北满特钢有限责任公司265㎡烧结机升级改造项目

- 吉林杭氧气体有限公司2*25000Nm3/h O2空分装置空压机、氧压机变频一拖四启动装置
- 长春大成生物科技开发有限公司高压变频器项目
- 吉林恒联精密铸造科技有限公司煤气加压机高压变频装置

- 天津铁厂有限公司

- 河南闽源特钢有限公司产能置换炼钢系统
- 灵宝宝鑫电子科技有限公司年产4万吨动力锂电池铜箔项目冷冻机离线压缩机变频装置

- 山东泰安350MW压缩空气储能创新示范项目
- 山东临沂钢铁投资集团特钢公司高炉鼓风机电机及变频软起动

- 江苏省镔鑫钢铁集团有限公司AV63-15机组变频软启动装置
- 扬州恒润海洋重工有限公司炼铁大修改造高炉风机主电机变频软起动装置
- 徐州陕鼓工业气体有限公司6万+3万空分装置项目
- 江苏徐钢钢铁集团有限公司1280立方米高炉配套烧结机技改项目

- 安徽首矿大昌金属材料有限公司新建3500mm中厚板轧机工程项目

- 北大先锋浙江聚泰制氧项目
- 杭州福斯达深冷装备股份有限公司GOX40000配套

- 新余钢铁股份有限公司AV80-15轴流压缩机
- 江西齐劲材料有限公司制氧站项目

- 广西柳州钢铁集团有限公司镍铁冶炼项目高炉系统供配电系统总承包工程
- 广西钢铁集团有限公司防城港钢铁基地项目（一期）长材系统扎线主体及附属设施工程

- 正新（漳州）橡胶工业有限公司211A车间12#流程以及21#流程HF串联式密炼机工程

- 广东新兴铸管有限公司高炉冲渣泵高压变频调速装置