



Shandong Taikai High Voltage Switchgear Co., Ltd.

Qualification Document



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Shandong Taikai High Voltage Switchgear Co., Ltd.



Qualification Document



After-Sale Service Hotline: +86-15315280855

Shandong Taikai High Voltage Switchgear Co., Ltd.

Enterprise Spirit

Integrity Honesty Practicality Innovation

Enterprise Tenet

Pursue the Excellence and Reward the Society

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Company Profile



Shandong Taikai High Voltage Switchgear Co., Ltd. is a wholly-owned subsidiary of Taikai Group and also a large-scale professional enterprise specializing in researching, developing, manufacturing outdoor high voltage SF6 circuit breaker, gas insulated metal-enclosed switchgear, flexible DC equipment, prefabricated substation up to 1100kV. Over the years, the company's comprehensive economic indicators listed among the top of the national high voltage switchgear industry.

The company's products are widely used in the fields of electric power, petroleum, chemical industry, smelting, railway, new energy power generation and so on. The number of bid-winning projects has kept the forefront for many consecutive years, and the company provides high-quality products for a number of national key projects such as the Belt and Road Initiative, Ultra-high Voltage Project, West-east Power Transmission, High-speed Railway, Beijing Winter Olympics and so on. At present, the company has more than 100,000 sets of products and equipment operating safely in the power grid.

The company has long-term close cooperation with Tsinghua University, CEPRI, XIHARI, WHVRI and other units, and actively invested in new technology research and development, a number of product technologies are in a leading position in the industry. It has successively won the honors of "Famous Trademark of China", "Key High-tech Enterprises of China Torch Program", "National Advanced Collective of Machinery Industry", "Shandong Top Brand", "Enterprise Technology Center of Shandong Province", "Key Cultivated Enterprise of Shandong Time-honored Brand", "Individual Champion Enterprise of Manufacturing Industry of Shandong Province", "Shandong Brand of High Quality" and so on.



800kV HV SF6 Dead Tank Circuit Breaker



550kV GIS



220kV Composite Electrical Apparatus



Live Operation Equipment



Prefabricated Substation



Flexible DC Equipment

Basic Data of Manufacturer

Company Name	Shandong Taikai High Voltage Switchgear Co., Ltd.	Company Abbreviation	TK SWG
Profile	Date of Establishment	Founded in 1964 and restructured in 2004	
	Total Floorage (m²)	500,000m²	
	Plant Area (m²)	230,000m²	
	Clean Assembly Workshop Area (m²)	72,000m²	
	Planned Annual Production	4,850 sets for circuit breaker, 8,400 bays for GIS	
	Actual Production of Previous Year	3,600 sets for circuit breaker, 7,140 bays for GIS	
	Potential for Growth in Production Capacity	Yes	
	Sales of Previous Year	USD509,500,000	
	Applicable Voltage	35kV~1100kV	
	Market Share(%)	22.06% for 220kV GIS / 22.85% for 110kV GIS	
	Proportion of Product Exports	Accounting for 10% of the total output value	
Detailed Address	High-tech Development Zone, Tai'an, China	Postcode	271000
Place of Registration	Tai'an, Shandong, China	Nature of Enterprise	Limited liability company (sole legal person invested or controlled by a natural person)
Unified Social Credit Code	91370900764801246M	E-mail	info@taikaimec.com
Website	http: //www.taikaimec.com	Type of Enterprise	Large machinery industry manufacturing enterprise
Registered Capital	One billion yuan	Term of Business License	June 8, 2004 (Long Term)
Bank of Deposit	Tai'an branch of Agricultural Bank of China	Bank Account Number	15518401040024288
Credit Rating	AAA	Rating Bank (above County Level)	Tai'an branch of Agricultural Bank of China
Quality Assurance System	ISO9001-2015	Rating Institute	Vouching Technical Inspection Ltd.
Legal Representative	Liu Bo	Name of General Manager	Wang Jiancheng
Contact	Chen Chuanqing	After-sales Service Hotline	+86-15315280855
Fax	+86-538-8518288	Telephone	+86-538-8939266

Main Product Model and Designation	Model	Designation
	ZF16-1100(L)/Y8000-63	1100kV GIS(HGIS)
	ZF16-800(L)/Y5000-63	800kV GIS(HGIS)
	ZF16-550(L)/Y5000-63	550kV GIS(HGIS)
	ZF16-363(L)/Y5000-63	363kV GIS(HGIS)
	ZF 16 – 252(L) / $\begin{matrix} 3150 \\ T \\ 4000 - 50 \\ Y \\ 5000 \end{matrix}$	252kV GIS(HGIS)
	Prefabricated Substation	35kV/110kV/220kV
	ZF 10 – 126(L) / $\begin{matrix} 72.5 \\ T \\ 2000 \\ 3150 \end{matrix}$ – 40	126(145/72.5)kV GIS
	ZHW – $\begin{matrix} 126 \\ 126 \end{matrix}$ / T3150 – 40	126(72.5)kV HGIS
	ZCW – $\begin{matrix} 72.5 \\ 126 \end{matrix}$ / T3150 – 40	126(72.5)kV HGIS
	LW30A-800/Y6300-63	800kV SF6 Dead Tank Circuit Breaker
	LW30A-550/Y5000-63	550kV SF6 Dead Tank Circuit Breaker
	LW 30 – 252(T) / $\begin{matrix} T \\ Y \\ 4000 - 50 \end{matrix}$	252kV SF6 Dead Tank Circuit Breaker
	LW30-126(T)/T3150-40	126kV SF6 Dead Tank Circuit Breaker
	LW30-72.5(T)/T3150-40	72.5kV SF6 Dead Tank Circuit Breaker
	LW30-252/T4000-50(IPO) LW30-252L/Y4000-50(Gang Operated)	252kV SF6 Live Tank Circuit Breaker
	LW30-126/T3150-40	126kV SF6 Live Tank Circuit Breaker
	LW30-72.5/T3150-40	72.5kV SF6 Live Tank Circuit Breaker
	GLW30-126/T3150-40	110kV High Voltage Intelligent Disconnecting Circuit Breaker

Designation, Model and Manufacturer of the Main Processing Equipment of the Product	Designation	Model	Manufacturer
	HEDRICH Vacuum Casting Equipment	PEK 60/60	Hedrich Vacuum Equipment Manufacturing Co.,Ltd.(Germany)
	Epoxy Resin Casting Production Line	VRC-90	Shenyang Shenrui Electric Equipment Co., Ltd.
	Fronius TSP5000 Water-cooled Welder System	CFR15-A20015	Austria
	CNC Floor Milling and Boring Machine	TK6213-X8Y2.5	Wuhu Hengsheng Heavy Machine Tool Co.,Ltd.
	Enclosure Welding Robot	AWR-M10TPS5000-BWY10	Shandong Taikai Robot Co., Ltd.
	Spiral Welded Pipe Mill	φ400-φ1220	Taiyuan Huaxincheng M&E Equipment Co., Ltd.
	Automatic Silver Plating Production Line	BJNB	Beijing NPC Technology Co., Ltd.
	Five-axis Turn-milling Compound Machining Center	DMC80FDduoBLOCK	DMG (Germany)
	Lathe Automatic Line	LYNX300/LYNX300M	DOOSAN (South Korea)
	Turn-milling Compound Machining Center (MAZAK)	INTE GREXj-200	MAZAK Co., Ltd. (Japan)
	Horizontal Machining Center	NHP6300	Doosan Machine (South Korea)
	Turning Center	SKT28LM	Hyundai Wia (South Korea)
	Variable Polarity Plasma Welding System	L=3000mm	Jinan Hansheng Welding Technology Co., Ltd.
	Double Spindle Turning Center	T-8SM	Leadwell(Taiwan)
	Horizontal Machining Center	KH50-G	Hyundai Wia (South Korea)
	Vertical Machining Center	DOM650	Jinan Longsense Sci.&Trade Co., Ltd. (Busan, South Korea)
	L-type Aluminum Components Turning Center Joint Arm Automatic Line	HS-22M	Tongtai(Taiwan)
Designation, Model and Manufacturer of the Main Testing Equipment of the Product	Double Spindle Truss Automatic Line	TA-25MB	Tongtai(Taiwan)
	Painting Workshop Coating Production Line	Other Dedicated Equipment	Shaanxi Xinyu Surface Engineering Co., Ltd.
	Designation	Model	Application
	Complete Equipment for Power Frequency Withstand Voltage Test	YDTCW-1500kVA/3*500kV	Power Frequency Withstand Voltage and Partial Discharge Test
	Impulse Voltage Generator and Measuring System	G3600kV/360kJ	Lightning and Switching Impulse Withstand Voltage Test
	Partial Discharge Tester	DPD-2003/JF-2001	Partial Discharge Test
	Leakage Detector	Q200	Gas Leakage Rate
	Moisture Tester	MBW-973	Moisture Value of Gas Compartment
	Mechanical Characteristic Tester	GDKC-12B	Mechanical Characteristic Test
	Circuit Resistance Meter	ED0303	Circuit Resistance Test
	CT Accuracy Tester	DTANLYZER	CT Accuracy
	Current Generator	SDDL-200/0.5	Temperature Rise Test of 10000A and below
	Interference Field Strength Measuring Instrument	ZN30900A	Radio Interference Test
	X-ray Real-time Imaging Detection System	XYD-22507/3	Internal Non-destructive Inspection of Insulation Components
	DSC Thermal Analyzer	DSC823e	Thermal Performance (Tg) Test of Insulation Components
	Ultrasonic Flaw Detector	HS620	Weld Flaw Detection
	X-ray Real-time Imaging Detection System	UNC-160	Weld Flaw Detection

Strong Testing and Production Capacity

Through continuous technological transformation, the company has built a 1,100kV purified assembly workshop, equipped with 1,500kV test transformers and other high-voltage testing and inspection equipment. The company adopts an advanced MIS information system for enterprise management. CAD and CAM technologies are widely used in product design and manufacturing, which makes the structural arrangement of products more rationalized and scientific. With advanced technology, sophisticated tooling equipment and perfect quality management, Taikai provides its users with high-quality products.



3600kV/360kJ Impulse Voltage Generator 1500kV/6000kVA Frequency Voltage Withstand Test Device Coordinate Measuring System



X-ray Real-time Imaging Testing System for Insulation Parts Handheld X-ray Fluorescence Spectrometer Partial Discharge Tester



Germany Five-axis Turning and Milling Complex Machining Center



Germany HEDRICH Vacuum Casting Equipment



Enclosure Welding Robot



Spray Painting Production Line



CNC Compound Machining Center



GIS Assembly Workshop

Technical Transformation of Electroplating



At present, SWG is expected to invest 90 million yuan in electroplating technical upgrading in accordance with the concept of environmental protection and automation, and constantly improve the process quality through design and technical improvement.

1. Improve the company's environmental protection level and escort the company's compliance development

All production lines adopt the fully closed mode, and the channel side and the closed room are double pumped by frequency conversion fans to collect polluted gas, and truly achieve all waste gas treatment. The company invested more than 26 million yuan to replace and upgrade the sewage treatment system, and used the treated wastewater to create a landscape fish pond, and advanced to a higher level of environmental protection.

2. Improve the level of equipment automation, and strive to achieve comprehensive automatic control

The automatic control system is introduced into the production line to realize the automatic plating of the workpiece while combining the personnel system control. The production line has developed from the original personnel management to computer system management, and has moved closer to the comprehensive automatic control of management

3. Refining production process and improving quality through process control

Automatic potentiometric titrator is introduced, and manual detection is replaced by automatic detection to improve the detection level. The design of special plating bath and equipment workpiece classification electroplating is more clear, and the development of electroplating process level is refined. The powerful sewage treatment system ensures that all the production lines are washed with pure water, further improving the quality of silver plating. After processing, the cleaning and packaging line is introduced to promote the appearance quality of the workpiece.

Product Introduction



ZF16-1100 Gas Insulated Metal-enclosed Switchgear

ZF16-1100 GIS is an UHV gas insulated metal-enclosed switchgear developed to meet the needs of the development of UHV power grid. In January 2013, our company carried out technical cooperation with Mitsubishi Corporation of Japan, completed all the drawing design work in October 2014, and completed the prototype manufacturing of all the components of the GIS in May 2015. At present, the main breaking test and insulation test have been completed in the XIHARI, and all type tests have been completed in March 2017. The test reports was obtained in early May 2017. At present, the company has the manufacturing capacity of 1100kV UHV GIS bushing, circuit breaker and its operating mechanism, disconnecter, earthing switch, busbar and other all components.

Gas Insulated Metal-enclosed Switchgear (GIS)



ZF16-550(L) SF6 Gas Insulated Metal-enclosed Switchgear

ZF16-550 (L) SF6 gas insulated metal-enclosed switchgear (hereinafter referred to as ZF16-550 GIS) is a kind of high voltage and large capacity of sulfur hexafluoride gas insulated metal-closed switchgear developed on the basis of absorbing and assimilating ultra-high voltage GIS product technology at home and abroad, combined with years of research and development production experience and latest research results of Shandong Taikai High Voltage Switchgear Co., Ltd. The product has a structure of three-phase in separate enclosures, the circuit breaker, disconnecter, earthing switch, current transformer, voltage transformer, lightning arrester, busbar, incoming and outgoing bushing or cable termination and other components are closed in a grounded aluminum alloy enclosure. The product is filled with SF6 gas as the insulating medium and arc extinguishing medium, which has the advantages of small space occupation, little environmental impact, small noise and radio interference, safe and reliable operation and less maintenance work.



ZF16-252(L) Gas Insulated Metal-enclosed Switchgear

ZF16-252 (L) gas insulated metal-enclosed switchgear is a new generation GIS developed by Shandong Taikai High Voltage Switchgear Co., Ltd. on the basis of production accumulation of 126kV GIS, based on the summary of more than a thousand GIS operating experience, through the extensive investigation of domestic and foreign markets, combined with the development direction of GIS and summarizing domestic and foreign GIS advanced design ideas. ZF16-252 gas insulated metal-enclosed switchgear is our company's representative product with accumulated sales of 5,800 bays, and exported to Russia, Egypt, Iran, Pakistan, India and other countries.



ZF10-72.5/145(L) Gas Insulated Metal-enclosed Switchgear

ZF10-72.5/145(L) gas insulated metal-enclosed switchgear is a new generation GIS developed by Shandong Taikai High Voltage Switchgear Co., Ltd. on the basis of production accumulation of 72.5/145kV circuit breaker, based on the summary of more than a thousand GIS operating experience, through the extensive investigation of domestic and foreign markets, combined with the development direction of GIS and summarizing domestic and foreign GIS advanced design ideas. ZF10-72.5/145 gas insulated metal-enclosed switchgear is our company's representative products with accumulated sales of 12,600 bays, the current domestic market share is the second in the country, and exported to Russia, Egypt, Iran, Pakistan, India and other more than a dozen countries.

High Voltage Sulfur Hexafluoride Circuit Breaker



LW30A-800/Y6300-63 SF6 Dead Tank Circuit Breaker

LW30A-800/Y6300-63 SF6 dead tank circuit breaker is a new product researched and developed by our company in order to meet the needs of extra-high-voltage power grid, and it has 8 patents which play an important role in product quality enhancement (e.g. ZL200920020113.2 new elastic static arc contacts). The product is characterized by high technical parameters (rated current 6300A, 16 times continuous breaking for 63kA short-circuit current without maintenance, mechanical life of 10000 times, which has reached the highest level in the world), compact structure, strong seismic capacity, etc. This is significantly better than similar products in China. In addition, it can be equipped with intelligent components according to the need to realize the intelligent monitoring of the power station, which is the preferred equipment for 800kV power system. In accordance with the strict standards and parameter requirements, the product has successfully passed the type test of the National Quality Supervision & Inspection Center for High Voltage Apparatus, KEMA and other authoritative testing institutions and the test reports have been obtained.



LW30A-550/Y5000-63 SF6 Dead Tank Circuit Breaker

LW30A-550/Y5000-63 SF6 dead tank circuit breaker is a new product developed by our company in order to meet the requirements of high reliability, miniaturization and convenient maintenance of ultra-high-voltage power transmission and transformation equipment in power systems. It is the preferred equipment for 550kV power systems with reasonable structure, reliable electrical and mechanical performance, and significantly better than similar products in China.



LW550(P) High-voltage AC Live Tank Circuit Breaker

LW-550(P) high voltage AC live tank circuit breaker is developed on the basis of GB1984 High Voltage Alternating-current Circuit-breakers and IEC62271-100 High-voltage Switchgear and Controlgear Part 100. It is an outdoor three-phase AC high-voltage electrical equipment used for the control and protection of the power systems, and it can be used as the contact circuit breaker. This product adopts the principle of "compressed air + thermal expansion" to extinguish the arc, with strong breaking capacity, long mechanical life, easy maintenance and high reliability.



LW30-252(T)/ T_Y 4000-50 High-voltage AC SF6 Dead Tank Circuit Breaker

LW30-252(T)/ T_Y 4000-50 high-voltage AC SF6 dead tank circuit breaker contains current transformer. Its arc extinguishing chamber is horizontally mounted in the earthing aluminum alloy enclosure, and the current transformer is arranged under the outgoing line chambers on both sides. The circuit breakers of three phases in different enclosures (can be electrically linked) are equipped with CT26 type spring mechanism or CTY-5 type hydraulic spring mechanism, and circuit breakers of three phases in the same enclosure are equipped with CTY-10 type hydraulic spring mechanism. The product has the characteristics of compact layout, excellent mechanical properties and high reliability, which guarantees the reliable operation of the mechanism for 30 years, the mechanical life of up to 10,000 times. The product is suitable for use in three-phase AC 50Hz, 220kV power systems. It can be used not only for system control, protection and measurement, but also as a contact circuit breaker.



LW30-252 High-voltage SF6 AC Live Tank Circuit Breaker

LW30-252 high-voltage AC SF6 live tank circuit breaker is a three-phase AC 50Hz outdoor high-voltage switchgear, suitable for control and protection of 252kV power transmission and transformation system, and can also be used as a contact circuit breaker. LW30-252 circuit breaker is equipped with CT26 spring-operated mechanism. The circuit breakers meet the requirements of GB1984-2003 High Voltage Alternating-current Circuit-breakers and IEC62271-100:2001 High-voltage switchgear and controigear - Part 100: High-voltage alternating-current circuit-breakers. The product adopts the principle of self-energy arc extinguishing, which has the advantages of excellent breaking performance, short arc-burning time, long electrical life and low operating noise. It adopts SF6 gas with excellent insulation and arc extinguishing performance as the insulation and arc extinguishing medium, with no danger of combustion and explosion. The circuit breaker is equipped with a spring-operated mechanism, which is characterized by simple and compact structure, safety and reliability.



LW30-72.5(126)T/T3150-40 High-voltage AC SF6 Dead Tank Circuit Breaker

LW30-72.5(126)T/T3150-40 high-voltage AC SF6 dead tank circuit breaker developed by our company is an outdoor high-voltage switchgear based on our experience and strong technical strength in high voltage switchgear. This product has a broad application prospect and is a good choice for the reconstruction of new power stations and old ones.

LW30-72.5(126)T high-voltage AC SF6 dead tank circuit breaker contains current transformer, and its arc extinguishing chamber is horizontally mounted in the earthing aluminum alloy enclosure. The product conforms to the requirements of the oil-free has the characteristics of compact layout, excellent mechanical characteristics and high reliability. All important parts are processed by numerical control and machining center equipment, and the bearings are imported international brand bearings (e.g. IKO, INA, SKF, etc.), with a mechanical life of up to 10,000 cycles. The product is suitable for three-phase AC 50Hz outdoor high-voltage switchgear. It can be used not only for control and protection of 72.5(126) kV power transmission and transformation system, but also for contact circuit breakers and opening and closing capacitor banks.



LW30-72.5/126 Outdoor High Voltage Self-energy SF6 Circuit Breaker

LW30-72.5/126 Outdoor high voltage sulfur hexafluoride circuit breaker is a three-phase AC 50Hz outdoor high voltage equipment, suitable for 72.5/126kV power transmission system control and protection; It can also be used in the occasion of connecting break and opening and closing the capacitor bank.

LW30-72.5/126 circuit breaker adopts the self-energy extinguishing chamber of “thermal expansion + auto-puff-er”, and is equipped with a CT26 type spring operating mechanism. The circuit breaker has obtained the national utility model patent (patent number: ZL01 2 62031.9).

Main features of circuit breaker: the circuit breaker adopts the principle of extinguishing chamber and has excellent breaking performance with short arc time, long electrical life and low noise. SF6 gas with excellent insulation and arc extinguishing performance is used as the insulating arc extinguishing medium, without burning and explosion danger, and can be used in densely populated areas. Circuit breaker with spring operating mechanism is featured with simple and compact structure, which is safe and reliable.

Company Qualification





华信技术检验有限公司
VOUCHING TECHNICAL INSPECTION LTD
质量管理体系认证证书
QMS CERTIFICATE OF REGISTRATION
VTI certifies herewith that

Shandong Taikai High Voltage Switchgear Co., Ltd.

Unified social credit identifier 91370900764801246M

Reg. address: High-tech Development Zone, Tai'an, Shandong Province, P.R. China; Produce
address: No. 11526, South Longtan Road, High-tech Development Zone, Tai'an, Shandong
province, P.R. China

demonstrated a Quality Management Systems
that complies with the requirements of

GB/T19001-2016 idt ISO9001:2015

The scope of certification:

**The design, manufacture and service of metal-enclosed gas insulated
switchgear and rigid gas-insulated transmission line and circuit
breaker**

Registration Number: 0421Q10518R8L-R Valid from: 2022-01-14 Valid until: 2025-01-13
Issue Date: 2022-12-09



总经理 President



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本证书有效性须由每年例行监督审核维持
The effectiveness of this certificate is maintained by annual regular surveillance audit.



华信技术检验有限公司
VOUCHING TECHNICAL INSPECTION LTD
环境管理体系认证证书
EMS CERTIFICATE OF REGISTRATION
VTI certifies herewith that

Shandong Taikai High Voltage Switchgear Co., Ltd.

Unified social credit identifier 91370900764801246M

Reg. address: High-tech Development Zone, Tai'an, Shandong Province, P.R. China; Produce
address: No. 11526, South Longtan Road, High-tech Development Zone, Tai'an, Shandong
province, P.R. China

has demonstrated an Environmental Management System
that complies with the requirements of

GB/T24001-2016 idt ISO14001:2015

The scope of certification:

**The design, manufacture and service of metal-enclosed gas insulated
switchgear and rigid gas-insulated transmission line and circuit
breaker**

Registration Number: 0422E10025R4L Valid from: 2022-01-14 Valid until: 2025-01-13
Issue Date: 2022-12-09



中国认可
国际互认
管理体系
MANAGEMENT SYSTEM
CNAS C004-M

总经理 President



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2B, Building 2, Floor 2, No. 48 Beisanhuan Xilu, Haidian District, Beijing, China

邮编(Zip Code): 100086
www.vti-china.org

本证书有效性须由每年例行监督审核维持
The effectiveness of this certificate is maintained by annual regular surveillance audit.



Type Test Report



KEMA INSPECTION REPORT

3023-16

Object A single phase SF₆ gas insulated switchgear assembly, incorporating disconnect-switching switch subassembly, test switching switch, circuit breaker, bus bars and bushings.

Type ZF16-3630/3Y1000-63 **Serial No.** 16001X

363 kV – 5000 A – 50Hz

Client Shandong Taikai High-Volt Switchgear Co., Ltd.
Taian, Shandong, China

Manufacturer Shandong Taikai High-Volt Switchgear Co., Ltd.
Taian, Shandong, China

Inspected by KEMA Nederland B.V.,
Arnhem, The Netherlands

Test location Shandong Taikai High-Volt Switchgear Co., Ltd.
Taian, Shandong, China

Date of tests 7 to 11 March 2016

Test specification The tests have been carried out in accordance with client's instruction. Test procedure and test parameters were based on IEC 62271-203:2011.

Remarks The object passed the tests.

This report applies only to the object tested. The responsibility for conformity of any object having the same type reference as that tested rests with the Manufacturer.

This report consists of 32 pages in total.

KEMA Nederland B.V.
J.M. Kortbeek
Executive Vice President
KEMA Laboratories
Arnhem, 29 March 2016





REPORT OF PERFORMANCE

2076-15

OBJECT One pole of a three-pole dead-tank SF₆ circuit breaker, incorporating test interrupters per pole with a capacitance of 500 pF across each interrupter. Single-pole enclosure, single-pole-operated.

TYPE LW-550 / Y5000 - 63 **SERIAL No.** 001

550 kV – 5000 A – 52 kA – 50/60 Hz

CLIENT Shandong Taikai High-voltage Switchgear Co., Ltd.
Taian City, Shandong Province, China

MANUFACTURER Shandong Taikai High-voltage Switchgear Co., Ltd.
Taian City, Shandong Province, China

TESTED BY KEMA Nederland B.V.,
Arnhem, The Netherlands

DATE OF TESTS 19 and 20 March 2015

TEST SPECIFICATION The tests have been carried out strictly in accordance with IEC 62271-110 (2012), subclause 6.114 (Shunt reactor current switching).

REMARKS The apparatus has complied with the relevant requirements.

This report applies only to the object tested. The responsibility for conformity of any object having the same type reference as that tested rests with the Manufacturer.

This report consists of 106 pages in total.

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KEMA Nederland B.V.
S.A.M. Vandenboom
Director Testing, Inspections & Certification The Netherlands
Arnhem, 29 July 2015



KEMA INSPECTION REPORT

3162-17

Object A three-phase gas insulated dead tank circuit breaker

Type TWD1-14SM-31.5 **Serial No.** 170001

145 kV – 3150 A – 40 kA – 40 Hz

Client Shandong Taikai High Voltage Switchgear Co., Ltd.,
Taian, Shandong, China

Manufacturer Shandong Taikai High Voltage Switchgear Co., Ltd.,
Taian, Shandong, China

Inspected by DNV GL Netherlands B.V.,
Arnhem, the Netherlands

Test location Xian High Voltage Apparatus Research Institute Co., Ltd.,
Xi'an, China

Date of tests 6 to 24 July 2017

Test specification The tests were in accordance with the client's instructions. Test procedure and test parameters were based on IEC 62271-100:2012.

Regarding Type Tests

Summary on conclusion The object passed the tests.

This report applies only to the object tested. The responsibility for conformity of any object having the same type reference as that tested rests with the Manufacturer.

This report consists of 19 pages in total.

DNV GL Netherlands B.V.
J.M. Kortbeek
Executive Vice President
KEMA Laboratories
Arnhem, 12 March 2018





KEMA TYPE TEST CERTIFICATE OF SWITCHING PERFORMANCE

2104-18

Object One pole of a three-pole SF₆ line tank circuit-breaker, incorporating bus interrupters per pole. Parallel capacitance: 2300 pF per interrupter.

Type LW-5500/Y5000-63 **Serial No.** 20160410

Rated voltage 550 kV **Rated normal current** 5000 A

Rated short-circuit current 63 kA **Rated frequency** 50/60 Hz

Manufacturer Shandong Taikai High Voltage Switchgear Co., Ltd.,
Taian City, China

Client Shandong Taikai High Voltage Switchgear Co., Ltd.,
Taian City, China

Tested by DNV GL Netherlands B.V.,
Arnhem, the Netherlands

Date of tests 17, 18 and 19 April 2018

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with IEC 62271-100:2006, subclause 6.102 and 6.111 (Capacitive current), 4A1 (2012), 4A2 (2017).

This Certificate has been issued by DNV GL, following exclusively the STI Guides.

The results are shown in the record of proving tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above standard and to justify the ratings assigned by the manufacturer as listed on page 4.

This Certificate applies only to the object tested. The responsibility for conformity of any object having the same type reference as that tested rests with the Manufacturer.

This Certificate consists of 179 pages in total.

DNV GL Netherlands B.V.
J.M. Kortbeek
Executive Vice President
KEMA Laboratories
Arnhem, 17 July 2018



Quality and Service Commitment

Shandong Taikai High Voltage Switchgear Co., Ltd. carefully designed and manufactured equipment, adhere to the “to provide users with zero defect products” quality policy. The company adopts new equipment, new technology, new materials, new technology and superior testing means, passed the ISO9001:1994 quality system certification of Huaxin Technology Inspection Co., Ltd. in August 1997, passed the ISO9001:2000 certification in 2003, passed the quality, environment, occupational health and safety “three-in-one” management system certification ISO9001: 2008, ISO14001:2004 and OHSAS18001:2007 in January 2010.



Lifelong Maintenance System

GIS and circuit breaker are implemented lifelong maintenance system. When the contract comes into effect, the company will timely organize technical personnel to decompose the technical agreement for review, carefully check and confirm the technical differences one by one.

Quality System

In strict accordance with the requirements of the quality system, the company inspected the incoming raw materials, and filled in the “physical and chemical test report” after a comprehensive analysis of high-quality alloy steel and other steels with hardness or strength requirements by metrology personnel; The raw materials, components and products inspected and tested at various stages in the production process shall be traceable marked in accordance with the prescribed methods to ensure that only the products that have passed the inspection and test can be reordered and delivered; The product is assembled in a highly purified workshop.



International Advanced Level

The performance indicators and technical parameters of GIS and circuit breaker are fully in line with and superior to the requirements of national standards. In particular, the GIS successfully passed all type tests at the world-class KEMA test station in the Netherlands. This fully shows that Taikai products have reached the international advanced level.

Quality After-sales Service

Guide users to install and debug for free. After the product is put into operation, when the customer puts forward service requirements, our service personnel will provide opinions within the shortest time (12 hours). If the customer needs on-site solution, we guarantee that the service personnel will arrive at the scene within 24 hours (only in China). Our company has a mature telephone follow-up system to evaluate the quality of the after-sales service personnel.

