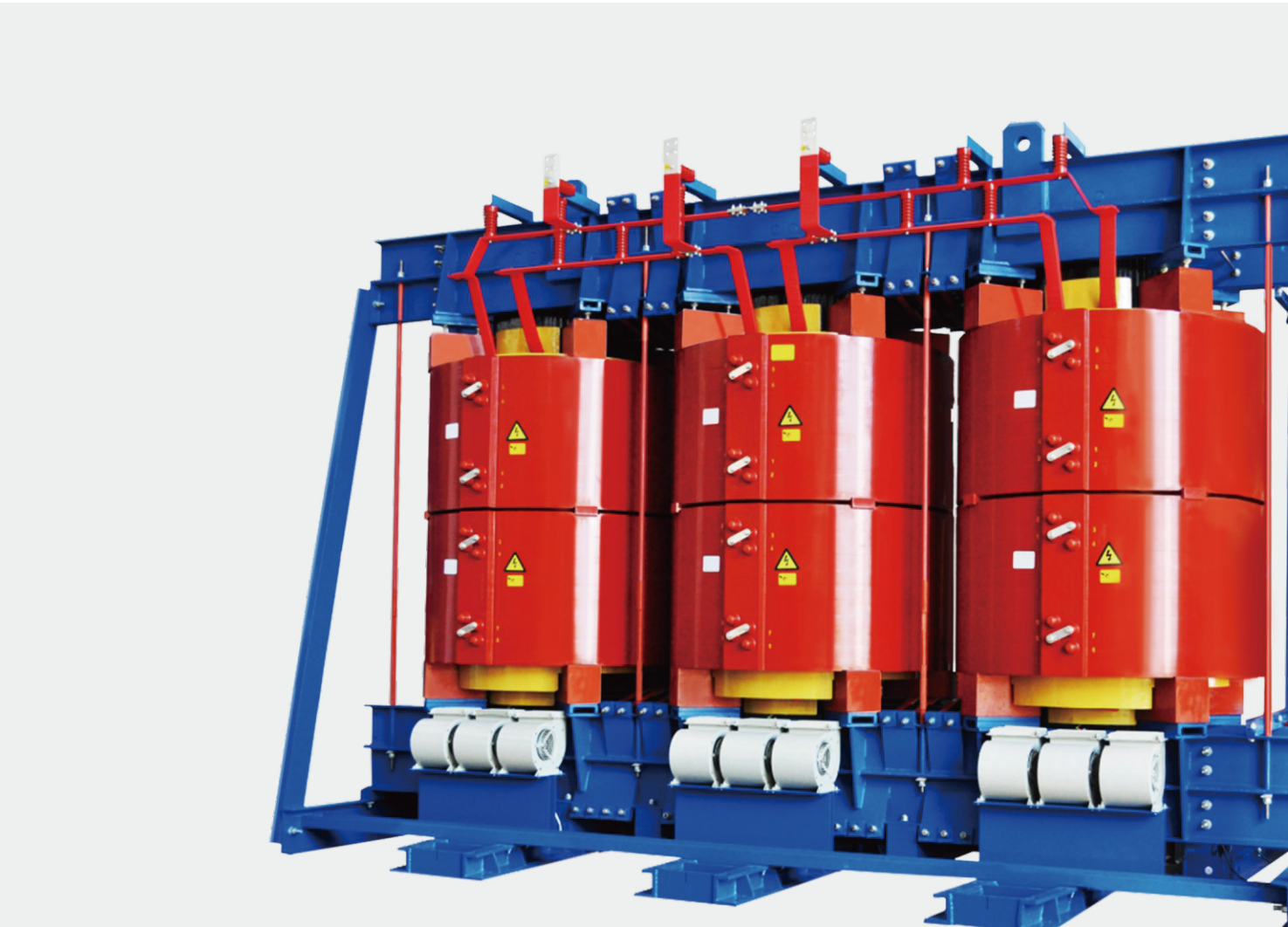


# CAST RESIN DRY-TYPE TRANSFORMER

Leistung Energie/Catalog/Cast Resin Dry-type Transformer/202203/EN



**LEISTUNG**  
e n e r g i e

United Kingdom | Australia | China | Chile | Germany |  
Hongkong | Indonesia | Malaysia | Russia | Singapore |  
South Africa | Thailand | Vietnam |

info@leistung-energie.com | www.leistung-energie.com

Leistung Energie reserves the right to modify any characteristic prior notified.  
Leistung Energie -2022 © All rights reserved.

Distributed by



A photograph of two white wind turbines standing in a field of bright yellow flowers under a clear blue sky. The turbines are positioned diagonally across the frame, with one in the foreground and another further back. The sky is a deep blue with some faint white contrails.

POWERING  
A BETTER FUTURE

# CATALOG

Series of Products	1
Product Features	5
Technology Research & Development	7
Digital Production	9
Advanced Process	11
Auxiliaries	13
Quality Management	15
Marketing & Services	16
Fields of Application	17

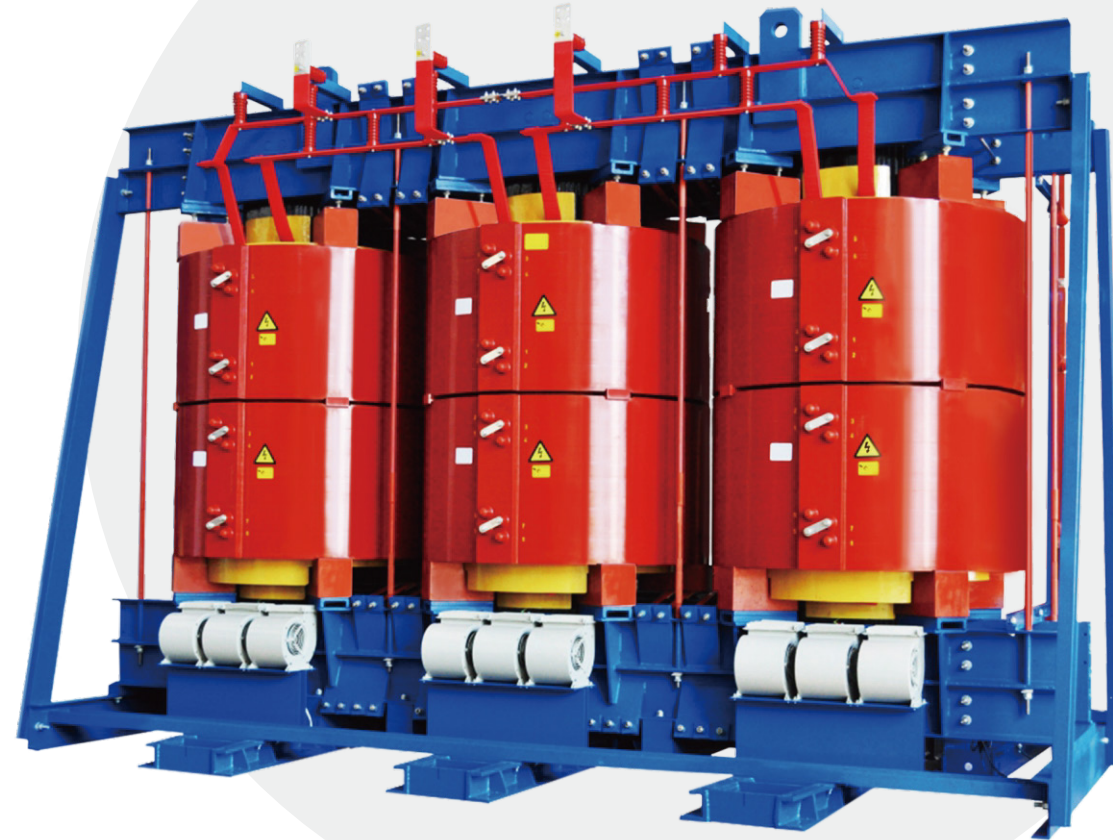


# SERIES OF PRODUCTS /1

## Power transformer

Capacity: 50~45000kVA

As urban power load increases, regional substations of urban power system have reached load centers like central urban areas, residential communities, medium and large sized mines; as a result, high-capacity regional power supply dry-type transformers have been widely applied. JST has developed dry-type transformers with voltage classes of 35kV and capacity of 45000KVA as well as voltage classes of 10kV and capacity of 35000kVA which has been put into operation.



45000kVA  
Dry Transformer  
(SC10-45000/35)

## Power distribution transformer

Capacity: 30~4000kVA

Product series of SCB12/14/18 can meet the requirement of GB/T10228 and GB20052 and has passed energy efficiency standards, meeting energy conservation demands of different users.



## Amorphous transformer

Capacity: 30~2500kVA

Product series of SC (B) H15/17/19, this series of products can significantly reduce energy consumption, No-load loss and load loss are reduced by 70% and 10% respectively on the basis of silicon steel transformer. Now, amorphous dry-type transformer with voltage level of 35kV and largest capacity of 2500kVA are served in the new energy field with favorable operation conditions.



## Transformer for wind power

Capacity: 30 ~ 12000 kVA

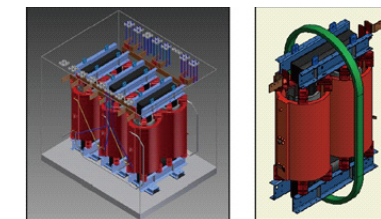
Transformer for wind power can be installed at the bottom and the top of a tower or outside a tower. The transformer has passed C2E2 of Netherlands KEMA, which proves that it is highly adaptive and can be operated in harsh conditions with oceanic humid and salt fog. The transformer is of special insulation structure and can be installed in the narrow space of a tower. Optimize the design of ventilation structure by using aerodynamics simulation, which improves the cooling performance of transformers. This series of transformers have been widely used in wind farms in the US, Europe, China offshore area and inland.



Wind transformer in nacelle



Tower-type wind transformer



Three - phase double - column double - split transformer set





# SERIES OF PRODUCTS

/2

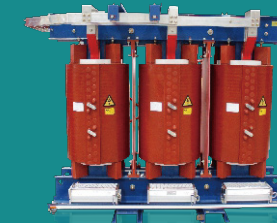
As of December 31, 2020, dry-type transformer products have been widely applied in total 56 wind farm projects in China

50<sup>+</sup>  
56 wind projects

110<sup>+</sup>  
117 solar power plants.

LEISTUNG  
energie  
Cast Resin Dry-type Transformer

120<sup>+</sup>  
126 rail transit projects in 43 cities



Dry-type transformer for nuclear power

Excitation rectifier transformer

Variable frequency starting isolation transformer

Energy feedback transformer

Traction rectifier transformer

Dry-type transformer for PV grid-connected inverter

Polycrystalline silicon reduction furnace dry type transformer

Capacity: 100 ~ 20000 kVA

Capacity: 30 ~ 16000 kVA

Capacity: 1000 ~ 40000 kVA

Capacity: 1000 ~ 4000 kVA

Capacity: 1000 ~ 4400 kVA

Capacity: 500 ~ 5000 kVA

Capacity: 500 ~ 25000 kVA

The products are mainly used for the excitation and power supply system for nuclear plants with special insulation structure, high reliability and over 60-year service life to adapt to the environment of nuclear plants.

The product adopts single phase/three-phase structure, HV with IPB and LV NSBD shield screen between HV and LV coil to meet user, demand for harmonic operation. Meanwhile, it is able to filter harmonic load to reduce power grid pollution caused by harmonic. It is suitable for static excitation system of hydropower plant, thermal power plant and gas power plant.

This type of transformer is applicable to power generator/dynamo static frequency startup system and can be used for high harmonic and intermittent load. It is a widely applied in inverter frequency startup device for gas power generation and pumped storage power station.

Cooperate with rail transit feedback system, will be produced in the process of the locomotive brake braking energy back to the grid, using renewable energy. This series of transformer by harmonic content calculation, simulation, and through the authority of the unit system full load test.

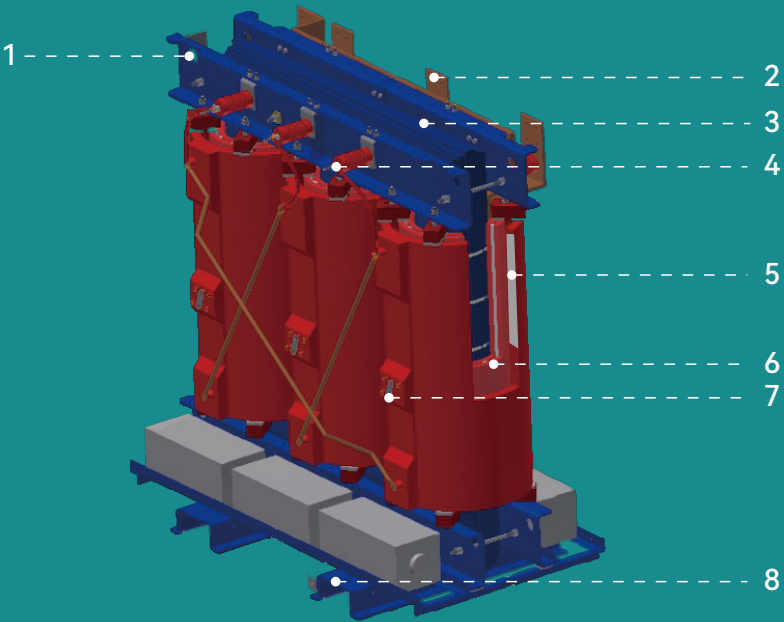
24 pulse phase rectifier circuit of the equivalent capacity can reduce harmonic pollution to the grid by 50% compared with the 12 pulse rectifier circuit. Its use in metro traction substation can reduce the harmonic content of AC network and can improve the DC voltage waveform. It can be reliably operated under the condition of the VI grade heavy traction load. The series transformer has passed harmonic content calculation, simulation verification and the full load test of the unit system of some authoritative organizations.

Special long creepage distance structure is adopted on this type of transformer to meet highest pollution level IV. By scientific electromagnetic calculations, it is ensured that its size can be as small as possible when it runs in high temperature environment in a long period. The aim is to occupy smaller space and reduce the amount of initial investment of users.

The product voltage grade 35 kV and below, used in polysilicon production, with adjustable power cabinet, power supply for polycrystalline silicon reduction furnace, it has good resistance to short circuit ability and the ability to resist the system load harmonic; And more capacity, voltage output, to provide adjustable power ark piecewise current and voltage, lack of phase, overload, etc. Various operating conditions.



# PRODUCT FEATURES



- Passed CEF(Climate, Environment, Fire) tests (climate, environment, fire) test
- Low loss, low noise
- No pollution, free maintenance
- Insulation is perfect, free partial discharge, high strength to electrical stress
- High mechanical strength, resistance to temperature shock, anti-short circuit ability
- Moisture proof, can operate at high temperature
- Transformers can be installed economically close to the load center without any special foundation.

• Voltage levels: 35 kV and below (including dual voltage)

• Capacity: 50-45000 kVA

• Tapping range:  $\pm 2 \times 2.5\%$  (or customer specify)

• Frequency: 50/60 Hz

• Connections: Dyn11; Yyn0 or other

• Cooling type: AN/AF

• Insulation class: F/H

• Insulation level:

Voltage 6kV 10 kV 20 kV 35 kV

Power frequency withstand voltage 35 kV 50kV 70kV

Lightning impulse voltage 75 kV 125kV 170kV 200kV

• Protection grade: IP00, IP20, IP23 or other

• Application conditions: less than 1000 meters above sea level, the environment temperature is lower than 40 °C. Correction should be carried out in accordance with standards if the application is beyond the above conditions.

• Applicable standards:

GB 1094 Power Transformers

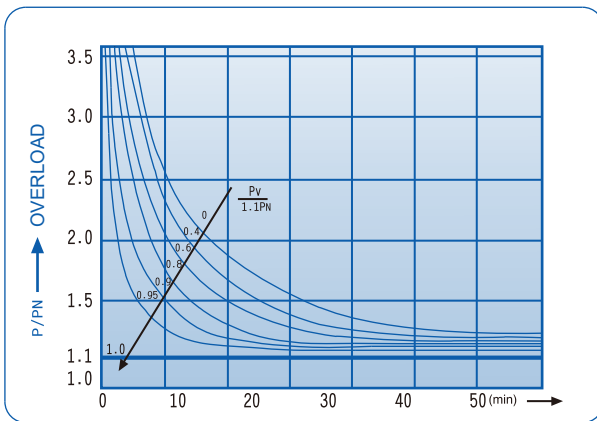
GB 20052 Minimum allowable values of energy efficiency and the energy efficiency grades for power transformers

IEC 60076 power transformer and related standards

Customized design per customers' requirement

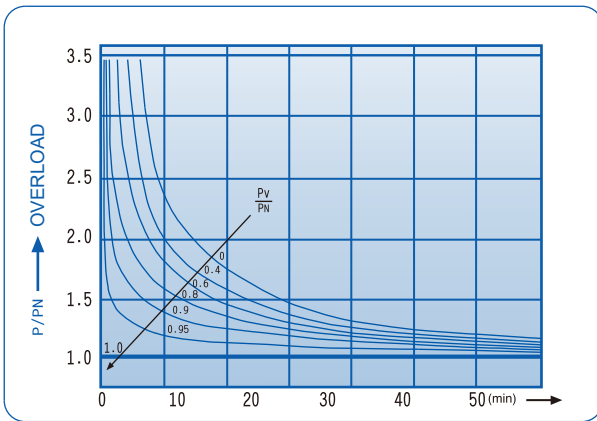
IEEE C57 series

## Overload curve



Ambient Temperature: 20°C

Max duration of overload



Ambient Temperature: 40°C

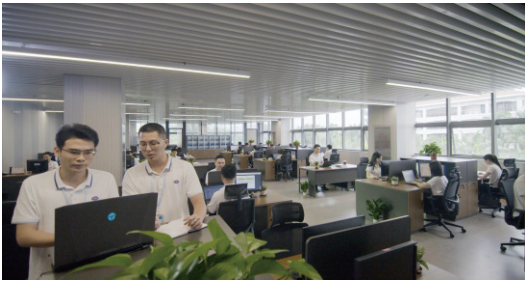
Max duration of overload

PN Rated capacity

PV Initial load

P-overload capacity





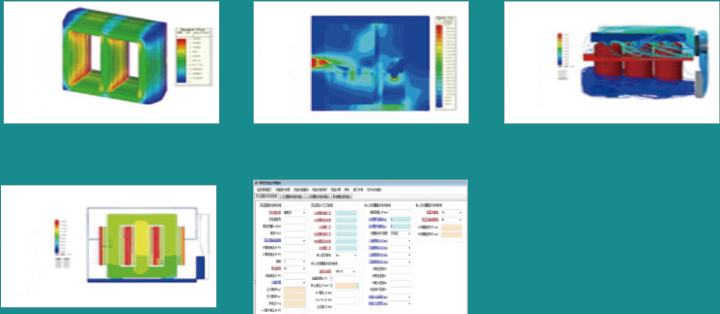
Leistung Energie has set the intelligent technology institute and electrical institute, and established a joint R&D center with Shanghai Jiao Tong University, supported by more than 300 technicians and engineers specializing in transformer R&D. Facing the high-end electrical equipment market at home and abroad, upholding independent research and development and innovation, we have developed of cast resin transformers and of cast resin reactor products with proprietary intellectual property based on our 20 years' experience and efforts, and obtained 169 patented technologies.

Leistung Energie R&D is quality-oriented and energy-saving and emission reduction-aimed. Leistung Energie provides users with overall solutions and technical services, and exclusive and customized products based on customer demand. Leistung Energie is capable of electric power system design for all kinds of projects around the world.

TECHNOLOGY RESEARCH

AND DEVELOPMENT

As for R&D and design, we adopt the model-based design concept and structured process and the corresponding virtual simulation technology, and apply the independently developed intelligent design tools for R&D and design of new products, thereby shortening the cycle of R&D and design, reducing the cost of trial production, and achieving optimal design effect.



300<sup>+</sup>

More than 300 professional engineers and technicians in transformer R&D

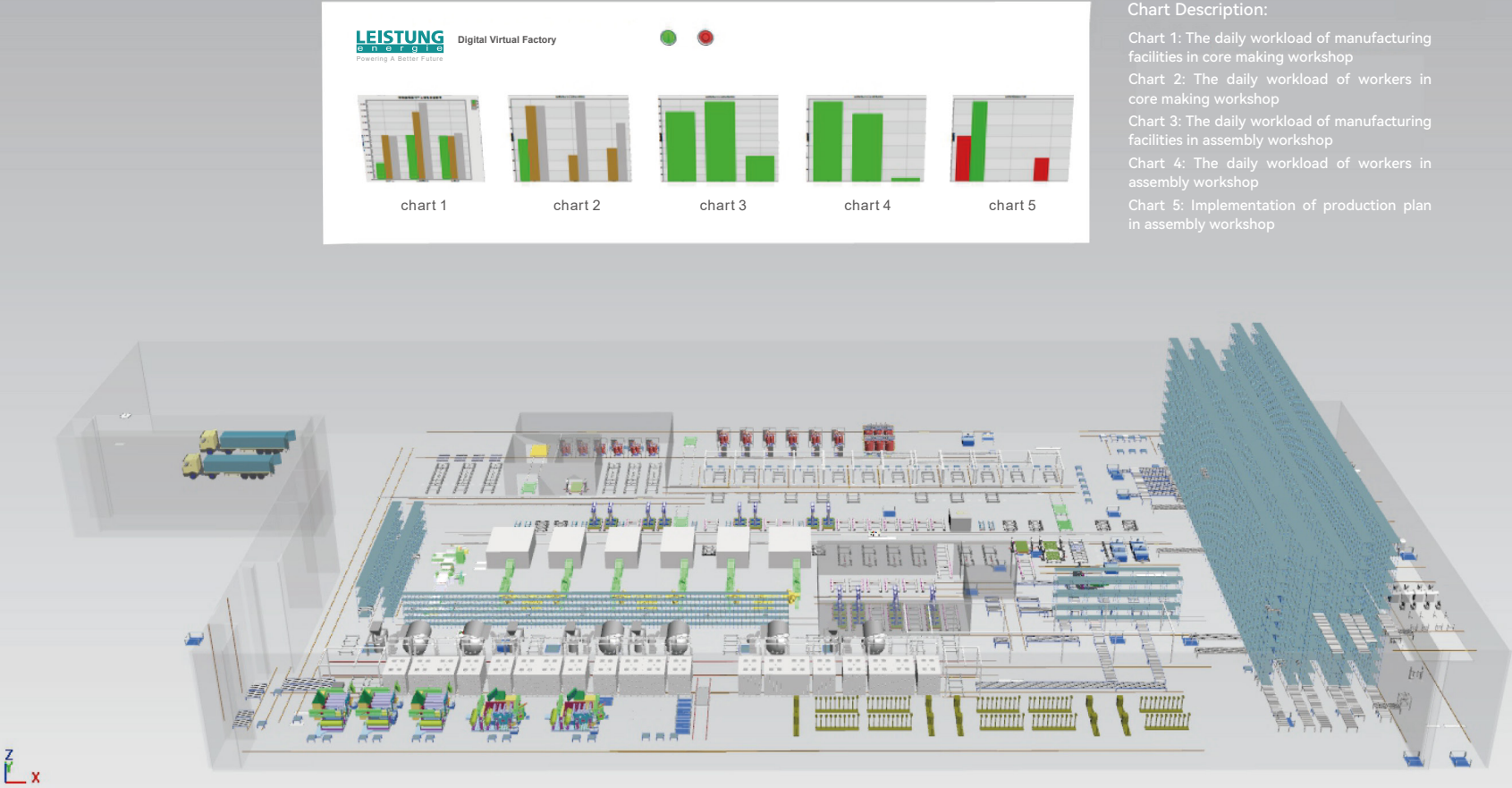


Chart Description:

Chart 1: The daily workload of manufacturing facilities in core making workshop

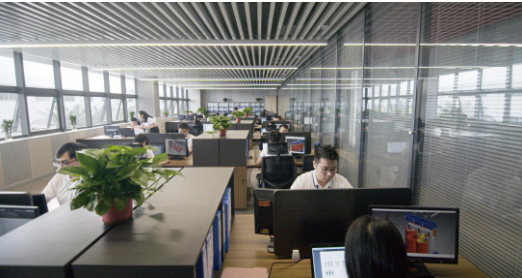
Chart 2: The daily workload of workers in core making workshop

Chart 3: The daily workload of manufacturing facilities in assembly workshop

Chart 4: The daily workload of workers in assembly workshop

Chart 5: Implementation of production plan in assembly workshop

- Introduced the advanced ElecNet, MagNet, ThermNet and FloEFD for electromagnetic thermal simulation, shortening the R&D cycle of new products, and ensuring optimal design planning for products.demand. Leistung Energie is capable of electric power system design for all kinds of projects around the world.
- Introducing PTC's PLM software to manage the life cycle data of all products developed.
- Independently developed an intelligent design system for dry-type transformers, integrated electromagnetic design software, automated software for electromagnetic thermal simulation, 3D structure design software and PLM software; adopted digital R&D process for digital product design and higher efficiency of product R&D.

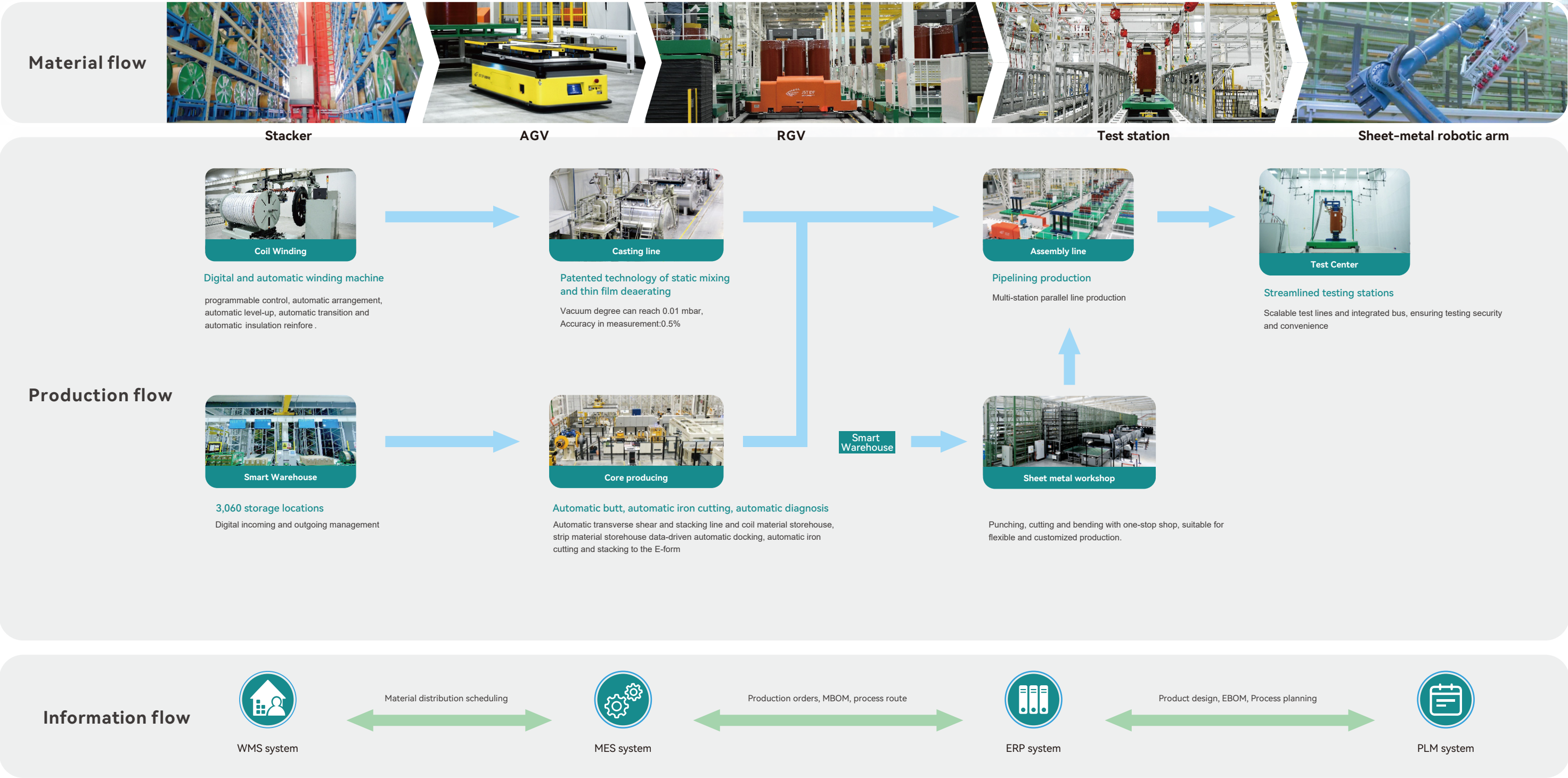


169

169 patented technologies



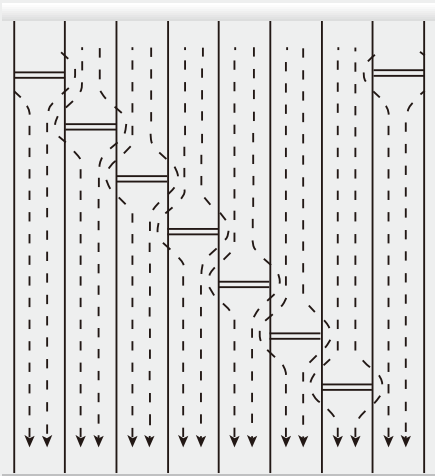
# DIGITAL PRODUCTION



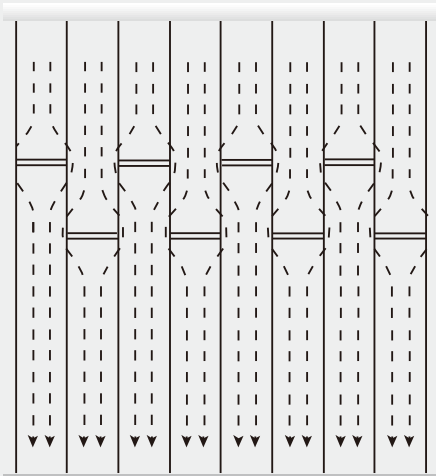


# ADVANCEDPROCESS

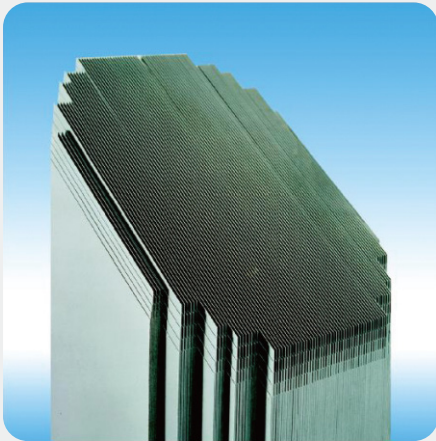
## Step laminated core technology



Magnetic flux distribution on the connections with step-lap



Magnetic flux distribution on the connections with traditional lap

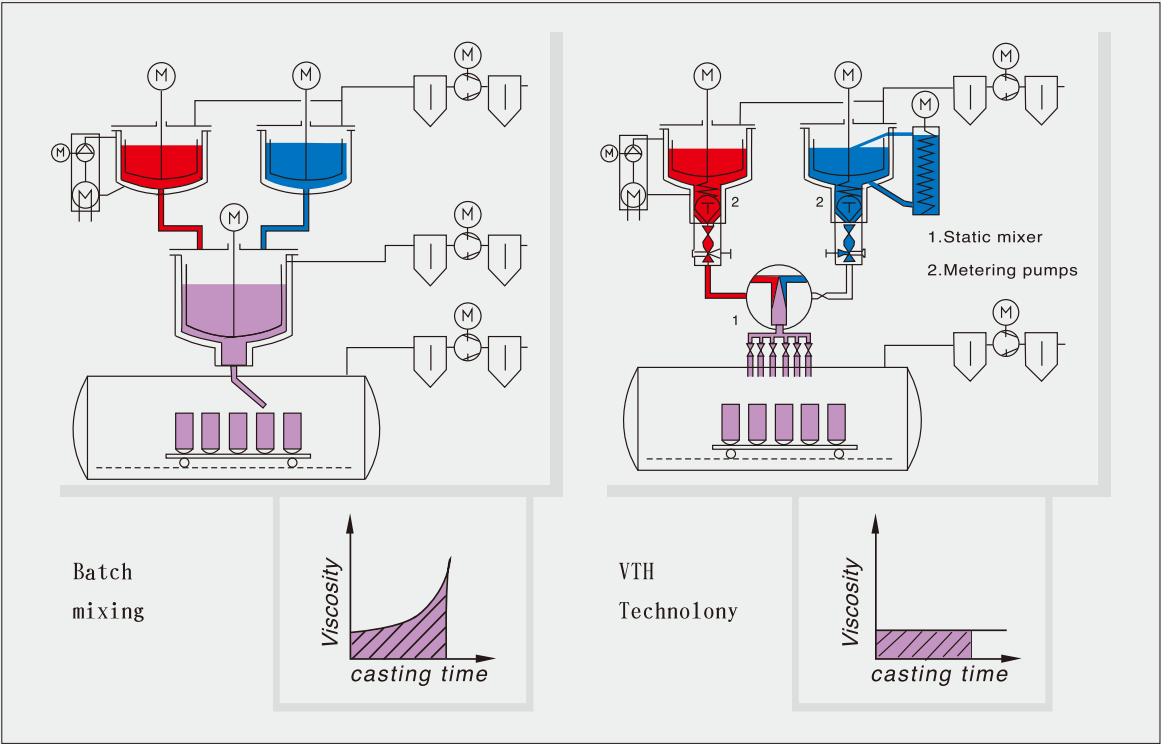


Step-lap core



"E" core finished without upper yoke

## The static mixing, film deaeration



## Difference between static mixing technology&batch mixing technology



LV foil Windings



HV Windings



# AUXILIARIES

## Air-cooling system



The transformers can be cooled by two modes: air natural cooling (AN) and air forced cooling (AF). Forced-air AF output of the transformer is up to 140% of the self-cooled rating, should be used only for emergency non-recurring loads, but is not recommended for longterm operation.

## Steel - sheet protective enclosure



The Steel - sheet enclosure is processed from high-quality cold-rolled steel by three numerical control equipment (i.e. numerical control cutter, numerical control puncher and numerical control plate bender). The surface of enclosure panel is treated through phosphorization and plastic spraying, and thus possesses a very high corrosion resistance. The steel-plate enclosure has various advantages (e.g. beautiful exquisite appearance, efficient ventilation, easy installation, and convenient transportation). Its breakdown structure has a high mechanical strength. It can be easily assembled at site, and there are access doors and ventilating openings on both front and rear panels. The color of steel-plate enclosure is RAL7032 or customizable according to customer demand.

## Temperature controller

The temperature is controlled by means of sensor provided on each transformer. The sensor (Pt100) are installed in the LV winding. The digital controller shows the operating temperature of each LV winding, sequentially. The temperature controller performs the following functions of three-phase winding during transformer operation: automatically switch the cooling fans on at 100°C and off at 80°C, it will send an over-temperature alarm at 130°C, and will send emergency shutdown trip signal at 150°C. and sensor fault alarm.



## Aluminum-alloy protective enclosure

The aluminum-alloy enclosure is processed mainly from aluminum-alloy polished plate. It has a beautiful appearance and good corrosion resistance. It can be easily assembled at site, and there are access doors in the front side and rear side.

The protective enclosure provides safety shielding for charged position at a protective class of IP20, IP23 and above. IP20 enclosure can prevent the entry of solid articles of >12mm diameter; and IP23 enclosure can additionally prevent the inflow of water droplet within the range at a 60° angle to of perpendicular line, and is applicable for outdoor use.





# QUALITY MANAGEMENT

Leistung Energie controls the quality of products and processes according to the established ISO9001 quality management system in the aspects of product design, supplier quality, incoming material control, production process, product final test, service, key customer quality representatives and customer interface, the quality engineers are assigned for all of the quality prevention and control processes. In relevant processes the strict "three inspections" of self-inspection, mutual inspection and special inspection is implemented to ensure that the products and work transferring to internal and external customers are qualified.



The TQM system, rigorous working spirit, and advanced testing tools (CNAs certificate lab.) ensures high quality of products and services.

# MARKETING AND SERVICES

- A good brand image is the key to enterprise win the market. Leistung Energie adopts differential marketing strategy, pays attention to brand marketing, constantly improves product performance, makes every effort to maximize the value of customers.

## Distribution of Global Market

- The construction of the Leistung Energie attaches great importance to the sales team, 49 sales branches in large and medium-sized cities around China. In 1997 the establishment of the American companies, open up the international marketing channel. Advocate the idea of "full service" for the customer, Leistung Energie has established the good relations with customers.



Lightning impulse test system

Our products are certificated with Dutch KEMA Certificate, American UL Certificate, EU CE Certificate, Norway-Germany DNV GL Certificate, Canada CSA Certificate, French Bureau Veritas Classification Certificate (BV Certificate), Chinese Classification Certificate and Energy-saving Product Certificate, it means Jinpan Technology is providing the products and solutions, which are fulfilling the standards of GB, IEC, IEEE, NEMA, CSA, JEC and Chinese local standards.



CNAS Certification



Transformer test system



Shielding room



The United States  
UL Certification



The Netherlands  
KEMA Test



The Canadian CSA  
Certification



The European CE  
Certification



Russian GOST-R  
Certification



DNV GL Group



China Classification  
Society



Product Certificate



Energy-saving product  
Certification



China Compulsory  
Certification

- With excellent quality and high-quality service, JST has with general electric, Siemens, Schneider and other in ternational famous electric company established long-term cooperative relations, infiltrate successfully developed countries such as high-end electrical products from European and American markets, left a good reputation in domestic and foreign customers.



# FIELDS OF APPLICATION

/1

Beijing Daxing International Airport

## Smart grid

Key technologies and demonstration projects for efficient and reliable operation of China Southern Power Grid microgrid group photovoltaic power generation system project

Roof photovoltaic power station and Microgrid pilot project in Turpan demonstration area, a national new energy demonstration city

Guangzhou Energy Storage Hydropower Plant Project

Anhui Jixi pumped storage power station

Wuhan future science and Technology City Phase I integrated smart grid project

Wuhan Zhongyuan Huadian smart grid Industrial Park

Guangdong Qingyuan Yingde microgrid project

Tonghua Wanda Plaza Project intelligent distribution network system engineering

Lixin energy Zhenjiang Industrial Park optical storage microgrid system, etc

## Nuclear power

Cernavoda nuclear power plant

K-site nuclear power plant

Fuqing nuclear power plant

Hainan Changjiang nuclear power station

Lianyungang Tianwan Nuclear Power Station

Ningde nuclear power plant

Shenzhen Lingao Nuclear Power Station

Liaoning Hongyanhe Nuclear Power Station

## New infrastructure construction

Kennedy Airport

La Guardia Airport

Beijing Daxing International Airport

Shanghai Pudong International Airport

Shenzhen Bao'an International Airport

New World Trade Center

National Olympic Sports Center

Shanghai World Expo venues

Tianjin Binhai International Airport

Wuhan Tianhe International Airport

Chengdu Tianfu International Airport

guilin liangjiang international airport

Benjamin Franklin Bridge

Binghamton General Hospital

Burnaby city hall

Office service center of China Meteorological Administration

Jiangsu Guoshui building

Haikou second office area (area B) project, etc

## Wind energy

156mw wind power project in seni, Croatia

GE 6288kVA Cypress project

GE 4779kVA Baglama project

Morocco Wind Energy Project

Sinohydro Jiangsu rudonghai upwind farm (intertidal zone)

100MW demonstration project

Guangxi Bobai mazingling 150MW wind farm phase I Project

Jiangsu Binhai 300MW offshore wind farm project

Inner Mongolia Jingneng huolingole wind power plant phase I 49.5mw project

Hubei Macheng cailiazhai wind farm project

Shanxi Jiaokou Qianshan wind farm phase I 50MW project

Huaneng Dabancheng wind farm phase I 49.5mw wind power project

Fujian Putian Shijing wind farm project

Longhai Xincuo wind farm

Fujian Jinjiang Jinjing wind farm

Jiuquan Anbei No.4 wind farm

Yandun second Tianrun phase II, Hami, Xinjiang

Gansu Minqin Hongshagang megawatt wind power base

Huaneng wujiangyuan wind farm

State power investment Guangxi Xing'an Jieyi phase I and phase II wind farm project

Datang Wendeng wind power plant phase I

Liaoning Huadian Zhangwu Dalin typhoon electric field (48MW) new construction project

Huaneng Puyang wind farm (500MW) project

GE 4300KVA Bodangora project

GE 4300KVA Silverton project

GE 4779KVA Forestalia project

New World Trade Center

## Energy conservation environmental protection

Amorphous alloy dry-type transformer procurement project of China Mobile (Luoyang) call center phase I Project

New gas-fired thermal power unit project of Huaneng Beijing Thermal Power Plant

State power investment Zhoukou gas thermal power Co., Ltd × 300MW gas steam combined cycle unit

Flue gas desulfurization project of 2 × 660MW Unit of Fuquan power plant of Guodian Duyun Power Generation Co., Ltd

Flue gas desulfurization project of Guodian Zhaoqing Dawang cogeneration 2X350MW unit

Beijing Guodian Harbin Pingnan thermal power plant 2 × Flue gas desulfurization project of 350MW new unit

Phase II project of Laohukeng waste incineration power plant in Bao'an District, Shenzhen

Jiangsu Huating power plant (660MW) flue gas desulfurization unit

Yueqing Power Plant Phase II 2 × 660MW Unit flue gas desulfurization project

Tianjin Jingu sewage treatment plant expansion and upgrading 35kV substation reconstruction project

Huanghua port bulk cargo port Ore Wharf phase I (electromechanical) project

Shanghai GM Wuling engine phase V project

Tangshan port Caofeidian Port Coal Wharf phase III project, etc

**LEISTUNG**  
energie

Cast Resin Dry-type Transformer

## Solar energy

Nikopol 200MW (AC) / 246mw (DC) photovoltaic power station project in Ukraine

Hubei Suizhou 325mw distributed photovoltaic poverty alleviation project

Inner Mongolia Yuanhai new energy ulatehouqi 100mw ecological photovoltaic power generation project

Roof photovoltaic of Hefei Xinsheng Photoelectric Technology Co., Ltd. 1#2# factory (BOE 8.5 generation line factory)

Russia Astrakhan phase III 15MW project

AEG solar (Malaysia) Samara phase II project in Russia

Photovoltaic agricultural greenhouse project of longan 60mw ecological agricultural park

CGN Shaanxi Tongchuan Yaozhou phase I 50mw agricultural greenhouse photovoltaic power generation project

Distributed photovoltaic power generation project of Nanwang energy brilliance BMW Automobile Co., Ltd

18.826mw distributed photovoltaic project of China Southern Grid Energy GAC Energy Automobile Co., Ltd

Ninghai shepantu 99mw concrete pile high elevation photovoltaic power generation project

Xiantao yanglinwei 150MW (phase I 50mw) agricultural photovoltaic complementary grid connected power generation project

30mw photovoltaic power station project in Yangyi Township, Dangxiong County, Tibet

BAYANHOT 100mw photovoltaic grid connected power generation project in Alxa Left Banner

50MW photovoltaic power generation project in Shijiazhuang circular Chemical Industry Park

Huadian Wenshang Yangcheng 100MW power generation project of photovoltaic leading technology base in Wenshang coal mining subsidence area

Hubei Huadian Taiping Zaoyang 100mw phase I

CIC Tongxin 200MW photovoltaic power generation project

200MW (phase I 100MW) concrete pile high elevation photovoltaic power generation project in Tanxi lake, Huarong County, Yueyang City

Mains/Solar Project (INDIA)

Chile Solar Project (Chile)

## Ocean engineering

Dongfang 13-2 gas field group development project

Kenli 3-2 Oilfield Group Development Project

4500kva propulsion transformer of Qinhuangdao 33-1 South oilfield phase I development project of Offshore Oil Engineering Co., Ltd

S-1 well block project of Nanpu 35-2 oilfield of Offshore Oil Engineering Co., Ltd

Lihua 16-2 project of Offshore Oil Engineering (Qingdao) Co., Ltd

Huizhou 32-5 / 33-1 project of Offshore Oil Engineering Co., Ltd

Kenli kl10-1 oilfield project of Offshore Oil Engineering (Qingdao) Co., Ltd

Technical transformation project of Dalian shipbuilding industry group Co., Ltd

Procurement project of wharf shore power transformation box transformer and high and low voltage distribution cabinet in Changzhou plant area

2019 Shengli Oilfield ocean 291520 marine transformer, etc



# FIELDS OF APPLICATION

1/2

## Rail transit

Red Line Traction Duty  
METRO NORTH RAILROAD  
Brown Line Traction Duty  
LA METRO

Beijing metro line 14 project  
Shanghai Rail Transit Line 1 project  
Guangzhou Metro Line 6 phase II project  
Shenzhen rail transit phase II line 3  
Nanchang Rail Transit Line 2 project  
Dalian Metro Project  
Chongqing rail transit loop line phase I Project  
Shenyang Metro Line 10 project  
Changsha rail transit line 5 phase I Project  
Ningbo Rail Transit Line 2 phase II project  
Tianjin Metro Line 5 and 6 project  
Chengdu Metro Line 3  
Jinan rail transit R1 and R3 projects  
Harbin rail transit line 3  
Shanghai Songjiang modern tram line T2 project  
Sanya tram  
Huai'an modern tram phase I  
Zhuhai tram line 1 phase I Project

## Hydropower generation

Teke2z hydropower station in Ethiopia  
Congo inbulu power station  
Aubrook power station in Turkey  
Nadarivatu hydropower station in Fiji  
Pakistan Malan power station  
Costa Rica Torito power plant  
Mayna hydropower station in Kazakhstan  
Buwei hydropower station in Ghana, Africa  
Laos saide power station  
Muluo (Ruo) Hydropower Station in Malaysia  
Vietnam Banwei power station  
Kariba hydropower station in Zambia

## Complete sets of electrical equipment for industrial enterprises

Beijing BOE 8th generation thin film transistor liquid crystal display device (TFT-LCD) project  
Characteristic process production line construction project of Shanghai Jita Semiconductor Co., Ltd  
ThyssenKrupp Steel Plant  
QURAYYAH CCPP Plant  
P&G Lima  
Alcoa Recycling Project  
BHP Jansen Mine Project  
Codelco El Teniente Mine Project  
Hudong Zhonghua shipbuilding (Group) Co., Ltd  
Sany Heavy Industry  
North Heavy Industry Group Co., Ltd  
China CNR Corporation Limited  
China Heavy Duty Truck Group Co., Ltd  
Shanghai Volkswagen Automobile Co., Ltd  
China Dongfang Electric Group Co., Ltd  
Shandong Jingbo petrochemical project  
Shenzhen Dajiang Innovation Technology Co., Ltd  
Zhuzhou CRRC times Electric Co., Ltd  
Taiyuan Heavy Industry Co., Ltd



### China power stations:

**Jinsha River in the Yangtze River Basin:**  
Baihetan Dam  
Xiangjiaba Hydropower Station  
Xiluodu Dam  
Ludila Hydropower Station  
Ahai Hydropower Station  
Jinping I Hydropower Station on Yalong River

**Dadu River in the Yangtze River Basin:**  
Shenxi Hydropower Station  
Pillow Dam Hydropower Station  
Luding Hydropower Station  
Longtoushi Hydropower Station  
Gongzui Hydropower Plant

**Wujiang River in the Yangtze River Basin:**  
Yinpan Hydropower Station  
Silin Hydropower Station  
Wujiang Goupitan Hydropower Station

**Yellow River Basin:**  
Longyangxia Hydropower Station  
Qinglongxia Hydropower Station  
Datengxia water control project  
Fengman station hydropower

**Lancang River in the Pearl River Basin:**  
Nuozhadu Hydropower Station  
Gongguoqiao Hydropower Station

**Pumped storage:**  
Hebei Fengning pumped storage power station  
Anhui Jixi pumped storage power station  
Jilin Dunhua pumped storage power station  
Jiangsu Guoxin Liyang pumped storage power station  
Henan Luoning pumped storage power station  
Fujian Zhouning pumped storage power station  
Yangjiang Pumped Storage Power Station  
Guangzhou Pumped Storage Hydropower Plant



# POWERING A BETTER FUTURE

