Combined Transformer (American-style Prefabricated Substation)

The combined transformer is a new type of power distribution equipment (also known as the American-style prefabricated substation), which is especially suitable for the load centers of urban power grids, residential centers, hospitals, schools, airports, railway stations, etc. It can reduce losses and improve the power supply quality.

1. Product overview

Combined transformer (hereinafter referred to as combined transformer), that is, the American-style prefabricated substation, is a complete set of power transformation and distribution device integrating power reception, power feeding, transformers and other devices. The transformer core, high-voltage load switch, protection fuse and other equipment are placed in the same oil tank (i.e., common tank type), or the transformer core, high-voltage load switch, protection fuse and other equipment are placed in two isolated oil tanks (i.e., separate tank type). Therefore, it has a small volume and a compact structure.

The external high-voltage leads of the combined transformer are of a fully insulated structure, and there is no need for an insulation distance, which ensures personal safety during operation. The 200A cable joint can be plugged and unplugged under load. Accessories such as lightning arresters, live indicators, and fault indicators can be added. The connection group adopts DYN11, and its outstanding advantages are high voltage quality, no neutral point drift, and reduction of the interference of the third harmonic. The combined transformer has strong overload capacity, small losses, strong short-circuit resistance, strong lightning protection performance and low noise. It can be used for both ring networks and terminals, with convenient conversion, which improves the reliability of power supply. At the same time, it has a variety of low-voltage schemes and the function of automatic switching of reactive power compensation, and has measures to prevent condensation.

The combined transformer has the characteristics of small volume, full enclosure, convenient installation, flexible operation, and low operation cost, enabling the 10KV (35KV) power grid to penetrate deep into the load center, reducing line losses and beautifying the urban environment. It has good performance and reliable stability, with an exquisite appearance, and is safe and environmentally friendly. It can be widely used in various public places.

Our company has specially developed combined transformers dedicated to wind power generation for the step-up power grid of wind farms, and they have been successively put into operation in the Huitengliang Wind Farm in Inner Mongolia, the Liaoning Seaside Wind Farm, the Liutaizi Wind Farm, the Jilin Da'an Wind Farm of China General Nuclear Power Group, etc., and have received unanimous praise from users.

2. Product structure

It has a beautiful appearance, a compact structure, a small volume, and is flexible and convenient for disassembly and assembly. It is fully sealed. The high-voltage and low-voltage components are separated and placed together in the box body, and its volume is only 1/5 to 1/3 of that of the same kind of box-type transformers. There is space left in the low-voltage chamber inside the box, which can be used by users to install low-voltage switches, instrument transformers, metering devices and remote control devices.

Safe and Reliable: With a unique anti-corrosion design for the box body and special painting treatment, it can be widely used in various harsh environmental conditions, such as areas with frequent storms and high pollution. The box body adopts a sealed design and is maintenance-free. The high-voltage and low-voltage components are reasonably arranged and separated for installation. Insulation protective sleeves for high-voltage terminal blocks or special-shaped cable plugs are used to ensure operation safety. The transformer adopts double protection of plug-in fuses and backup fuses. The fuse wire of the plug-in fuse is a dual-sensitive fuse wire for temperature and current, which plays the role of overload protection; the fuse wire of the backup fuse provides short-circuit protection for the transformer. The high-voltage load switch is installed in the transformer oil tank. The switch has a small volume and can be switched arbitrarily in any direction of 360° . It can safely and reliably interrupt the load current, is easy to use, and has a high power supply reliability.

Low Investment in Substation: Due to the small volume and compact structure of the combined transformer, which integrates the transformer, low-voltage equipment, metering and measurement, there is no need for a distribution room. The incoming line is led in from the cable trench and it is directly installed at the load center. The cable plug can be plugged and unplugged under live conditions when necessary, and the connection is convenient. It reduces the investment cost of the substation, so the initial investment is small and the installation cost is low.

3. Main performance parameters

型号No.	名 称	单 位	技术参数
1	额定容量	kVA	100、125、 160、200、250、315、400、500、630、800、 1000、 1250、 1600
2	额定电压	kV	6、10、35
3	高压分接范围		±5%、±2x2 .5%
4	联接组别		Dyn11 Yyn0
5	工作耐压	kV	25kV/min、35kV/min、85kV/min
6	雷电冲击电压截波(峰值)	kV	65kV、85kV
7	后备式熔断器	A	制造厂家按容量确定
8	插入式熔断器	A	制造厂家按容量确定
9	负荷开关额定电流	A	300、630
10	油顶层温升	K	<65
11	噪声水平	dB	≤52

Advanced Production Equipment

GNEE Steel Group owns a full set of shearing, packaging, vacuum casting, vacuum impregnation, and testing stations that represent the high level of the industry. These top-notch production and testing equipment guarantee the creation of first-class products. The company continuously improves its design methods, achieving the most advanced computer-aided design to meticulously craft perfect products.

Production Environment

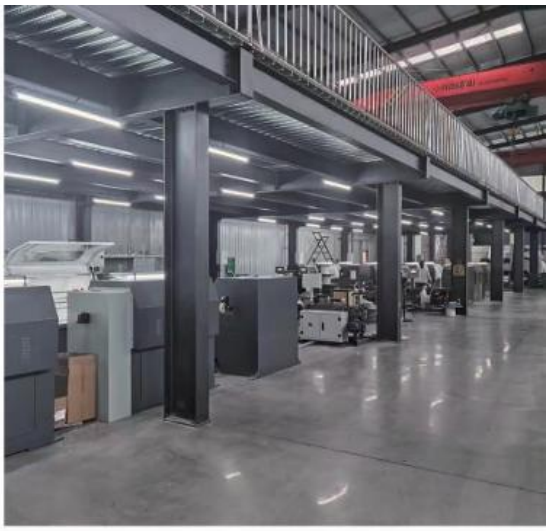
The workshop of GNEE Steel Group has strict process management and a closed management system. Regular purification and dust removal tests are conducted to meet the necessary requirements for producing high and low voltage transmission products. It has also passed ISO9001 quality certification and third-party inspection certification for international bidding.

Autonomous Raw Material Supply

The iron cores and electromagnetic wires used in our company's products are all produced independently, which allows better control over the quality and delivery time of raw materials while reducing product costs.




Raw Material Production Environment

INTIMATE COMMUNICATION

Pre-sale, during-sale, and after-sale, we are with you every step of the way.

As long as you get in touch with us, we will communicate with you sincerely. Pre-sale, we will provide you with relevant product information; if you have special requirements, we can develop according to your needs and propose solutions under mutual recognition; during-sale, we will keep in touch with you throughout the process and inform you of the production progress, strictly following all the requirements in the contract; after-sale, our comprehensive "three guarantees" service system will ensure that you use our products with comfort, confidence, and satisfaction.

Inspection, Training, Guidance - All Free Of Charge.

As long as you are interested in our products and get in touch with us, we will take the initiative to contact you and arrange free inspections and factory experiences. We can also dispatch technical personnel to provide you with a free customized overall solution. Before the implementation of the solution, we will offer free training for your technical staff to inform them of the relevant knowledge about installation, commissioning, and maintenance of the product. During the equipment installation process, we will also provide you with free installation guidance. As long as it is your requirement, it is our mission; we will provide you with perfect services throughout the entire process.

Power Supply System Solutions Equipment Provider

Real Estate Development

In real estate development, container substations are widely used. In addition to short construction periods, low investment, small land occupation, and a new and beautiful appearance, the greatest advantage of this transformer is that it is installed in a moisture-proof, anti-corrosion, dust-proof, fire-proof, theft-proof, heat-insulating, fully enclosed, and mobile steel structure box. It integrates electromechanical equipment and runs fully enclosed, ensuring safety and long-term usability.

Industrial Enterprises

The fully sealed oil-immersed power transformer has the advantages of low loss, low noise, and high efficiency, which can achieve good energy-saving effects and reduce pollution. Compared with ordinary oil-immersed transformers, fully sealed transformers eliminate the need for an oil reservoir, and the changes in oil volume are automatically compensated by the elasticity of the corrugated oil tank's corrugated plates. The transformer is isolated from the air, preventing and slowing down the aging of oil and insulation, enhancing operational reliability, and requiring no maintenance during normal operation. Epoxy resin cast dry-type transformers can be used as updated replacement products for oil-immersed distribution transformers and are the best-performing products among various two-type transformers. They are particularly suitable for urban grids, high-rise buildings, business centers, theaters, hospitals, hotels, tunnels, subways, underground stations, laboratories, stations, docks, airports, combined substations, and other important places.

Oil Fields and Mines

High-efficiency energy-saving adjustable capacity transformers are designed based on the working characteristics of oil field pumping units. When the pumping unit starts, the transformer's output voltage is the rated input voltage of the motor, ensuring that the pumping unit has sufficient starting torque. After the pumping unit starts and enters the normal state, the control system will detect the size of the effective power consumed by the motor through sensors and feed it back to the microcomputer intelligent control system. Through calculations, it automatically adjusts the output voltage and capacity of the transformer, then detects, records, and compares the effective power consumed by the motor on the pumping unit, eventually finding the operating point where the consumption of effective power is minimal, achieving the purpose of energy saving. In terms of structural design, strong anti-theft measures have been taken, effectively preventing the theft of high-efficiency energy-saving transformers. At the same time, during the

energy-saving operation of the pumping unit, according to the set anti-electricity theft time method, the output voltage fluctuates, making it impossible for home appliances to function even if the electricity is stolen back. Therefore, the transformer has high-performance anti-theft functions.