

SGVF Series

PD FREE ELECTRONIC POWER SOURCE



- ✓ No Load/Load Loss Measurement for Transformer
- ✓ Induced Voltage Test & Partial Discharge Test for Transformer
- ✓ Temperature Rising Test for Transformer
- ✓ Reactor Loss Measurement
- ✓ Reactor Induced Voltage Test & Partial Discharge Test
- ✓ Reactor Temperature Rising Test
- ✓ Induced Voltage Test & PD Test for Instrument Transformer
- ✓ AC Resonant System
- ✓ AC Test Transformer System (Include Transient Protection Unit)

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Brief:

SGVF series PD free electronic power source is a set of AC power source which can adjust the output voltage and output frequency. It is mainly designed for the power requirement of the routine test and on-site test upon the transformer, reactor, instrument transformer etc. It is an ideal product to replace the traditional motor generator sets in those tests. Moreover, this unit can be used as power source with transient protection function for the AC test transformer and AC resonant system, so as to replace those voltage regulator and linear frequency converter.

SGVF series could provide the capacity of 500kVA ~6000kVA, with output voltage of 0.69kV~10kV and its output frequency of 50Hz ~200Hz (0.1Hz~250Hz can be special requirement). The unit is single/three phase output, with good partial discharge (<10pC, special requirement can be <5pC), and its THD <3%.

The various test objects and different test items have different requirement upon the power source. Therefore, the traditional motor generator or the linear frequency converter must pay attention to the power factor in order to match the requirement of linear load or variable load. Even so, some load requirement is unable to be matched by the MG set or frequency converter in such case. On the other side, SGVF series can provide a large range of power factor with frequency resolution of 0.01Hz, which definitely takes over the weakness of traditional MG set.

Advantages:

- ✓ Low cost & high stability, indoor and outdoor location, without special workshop;
- ✓ Simple maintenance, only daily clean dirt, without special service worker;
- ✓ Container module with maximum 6MVA power for one container;
- ✓ More than 20 years' life cycle;
- ✓ Accurate frequency adjustment with 0.01Hz resolution

Moreover, SGVF series has the capability of full output current at full output range, which covers the shortage of the linear frequency converter.

SGVF series structure is designed on the container which can be located in both indoor and outdoor area. There is no need of the improvement on the floor for the unit. It is very suitable for the updating project of those old test station. The whole unit features simple structure, easy maintenance with air cooling system.

SGVF series has a strong capability of transient feedback and protection, which is 1000 times faster than that of traditional circuit breaker. It can help to avoid the explosion and fire in case that the system fault occurs. The advantage also can help the system to implement some load quick change test, e.g. the load test upon the load tap changer. The SGVF series electronic power source is able to quick switch the output voltage and its related current in the test, so as to ensure the stability of the output.



- ✓ Quick feedback upon over-load, (the feedback time adjusted by the software);
- ✓ PD level <10pC (special requirement <5pC) at output measurement as per IEC 60270
- ✓ Input voltage range 0.38~10kV, output voltage range 0.69~10kV
- ✓ Accurate frequency adjustment with 0.01Hz resolution
- ✓ Future extension capacity: max 3 units in parallel;

Principle:

SGVF series electronic power source is adopting the advanced IGBT inverter technology, digital control program, SPWM modulation technology, and high-effective radiation system. It features high durability, high efficiency and easy maintenance. Its performance is at the top level in the world market.

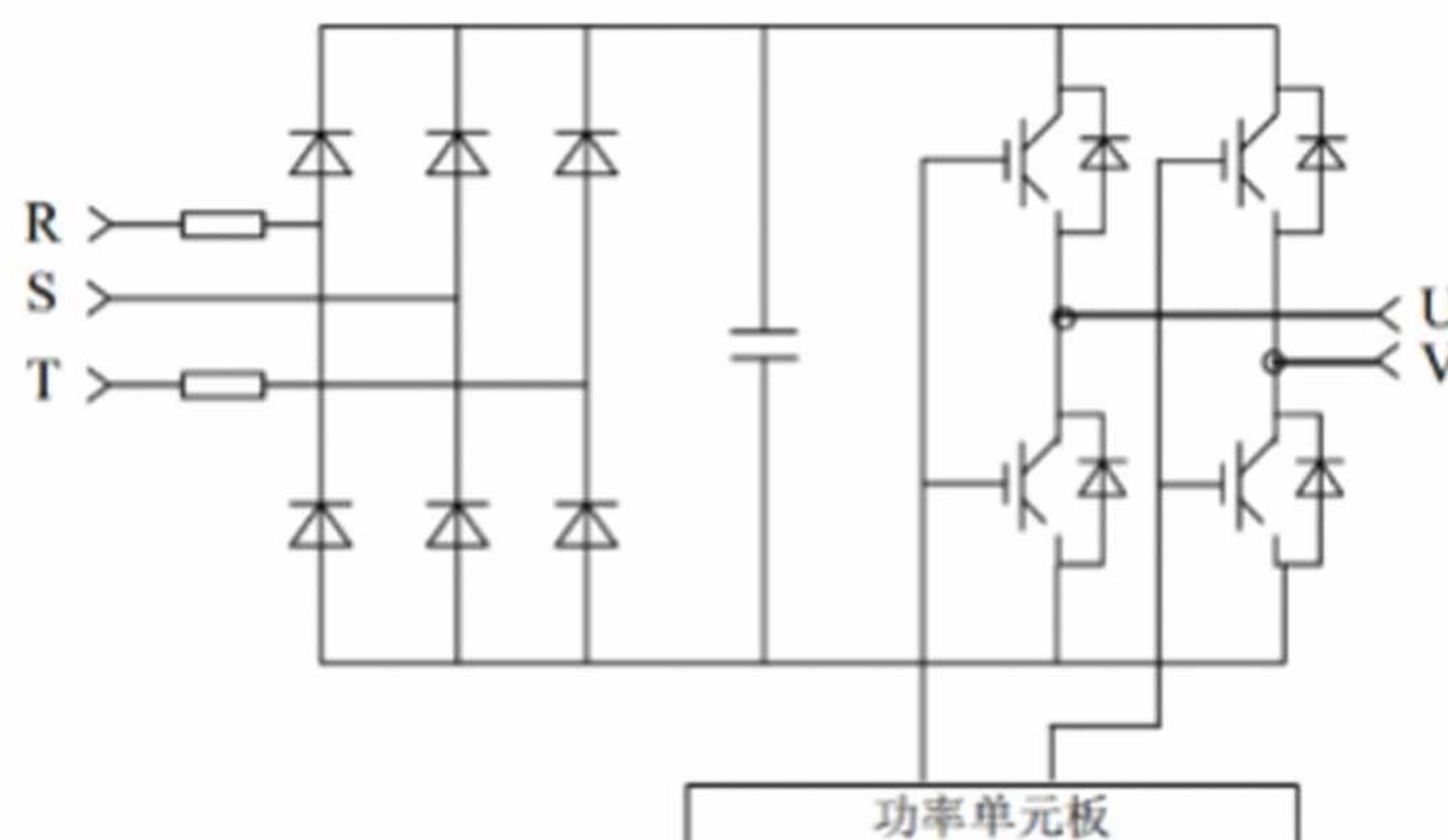
The power changing section is the key part in the whole system, which consists of many power units. The change of voltage and current is through these power units. The input of power unit is connected to those DC capacitor to get the energy. Many power units are connected together in three phase or single phase, and the control section will implement the instruction to change the frequency and voltage.

The output power from the power unit will go through the isolation transformer and different filtering devices to generate a target output voltage with very low partial discharge value finally.



Power unit structure:

The power unit consists of rectifier, converter, control section, driving loop, fault inspection loop, communication loop, indication loop etc..



The basic structure of power unit is AC-DC-AC , three-phase full bridge rectifying input , and single-phase H bridge converting output. DC charging section make AC three-phase power to change to DC power and it is stored in the capacitor module to be a stable DC source. The converting bridge by the IGBT module can generate the sine waveform single phase AC power by PWM control.

Main Specification:

Description:

SGVF series electronic power source use the AC-DC-AC structure. The input energy will be through isolation transformer and then be rectified, which effectively decreases the harmonic wave and partial discharge noise. The input side is equipped with the inrush current suppression unit so as to delete the magnetizing inrush current. The whole unit consists of a series of power IGBT modules, with the sine waveform filter. It can adjust the output frequency from 50Hz~ 200Hz(special designed from 0.1Hz~250Hz). The unit also has three single phase isolation transformer to control the partial discharge noise below 10pC (special design < 5pC).

The system is assembled in a 40' container, with protection of IP 54. The container can be located in outdoor for operation and it has the industrial air condition for temperature and humidity control.

Function:

- ◆ Output frequency: 50Hz~200Hz(special design 0.1Hz~250Hz), the data setting is through touch screen;
- ◆ Output voltage : 0~0.69kV/0~3kV/0~6kV/0~10kV;
- ◆ Output capacity:500kVA~6000kVA;
- ◆ Partial discharge level: <10pC (special design <5pC);
- ◆ Power factor at input side > 0.95 in the condition that there is no any compensation for power factor;
- ◆ Efficiency of power $\geq 98\%$, efficiency of the system $\geq 94\%$;
- ◆ The whole unit is designed at 115% rated voltage , the rated waveform unstability $\pm 10\%$, max short-time overvoltage 15%;
- ◆ The frequency resolution 0.01Hz;
- ◆ The control unit use the colorful touch screen for engineer to operate, the function buttons include start, stop, voltage adjusting, frequency adjusting, function setting, and data setting. Both English and Chinese version are available;
- ◆ The system has remote control and local control by switch button, and the emergency signal is at the top priority in both control status;
- ◆ The system has the capability of low voltage ride-through, so that the grid voltage drop or flash will not affect the system;
- ◆ The protection in the system includes over-voltage, over-current, under-voltage, phase lacking, short-circuited protection , over-frequency, overload, overheat of the transistors. communication faults protection etc.
- ◆ The system program can specify the fault position and record the related data including frequency, output voltage, output current etc.;
- ◆ The optic fiber connection is applied in the communication loop to ensure the communication speed and anti-interference;
- ◆ The dust screen is able to used repeatedly after simple washing and drying. It can be replaced during operation;
- ◆ The system can be output in single phase or three phase by switching;
- ◆ There are three single phase isolation transformers and filter inductance to provide more impedance. It can limit the current change speed in sudden moment when the load tap changer is activated. In such way, it can defend the short- time voltage and current fluctuation when the current is switched from no-load to load position. Therefore, the system will not operate beyond the current limitation and keep running without any other fault.

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