



Grid-connected performance test of dynamic reactive power compensation devices in the wind farm



Background

As the renewable resources has become more and more popular, the wind farm construction has been increasing in recent years. However, the electricity generated by wind power is usually unstable. Here, a reactive power compensation device plays an important role on regulating voltage, power factor, harmonics and stabilizing the power system.

The dynamic reactive power compensation device of wind farm is usually connected to the wind farm in parallel. Within a certain voltage range, its output capacitive or inductive reactive current is continuously adjustable, so as to realize reactive power compensation or controlling of regulation point voltage. It has two typical devices- SVG (static VAR generator) and SVC (static VAR compensator).

A static VAR Generator (SVG) also known as an active power factor compensator (APFC) or instantaneous stepless reactive power compensator is the ultimate answer to power quality problems caused by low power factor and reactive power demand.

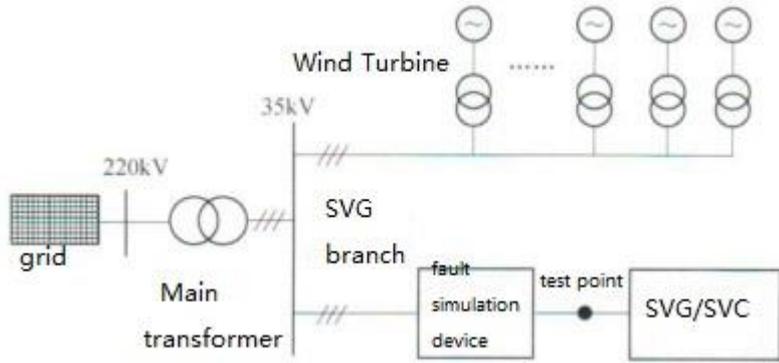
A static VAR compensator (SVC) is a set of electrical devices for providing fast-acting reactive power on high-voltage electricity transmission networks. SVCs are part of the Flexible AC transmission system device family, regulating voltage, power factor, harmonics and stabilizing the system.

Application

Test items and measurements of dynamic reactive power compensation devices include control strategy simulation, steady state characteristic test, test and evaluation of fault ride-through capability

Among them, the fault ride-through capability test is one of the most important items. The principle is to connect the fault simulation device in series with the dedicated branch of the dynamic reactive power compensation device. Use a simulation device to generate a voltage drop or rise at the test point, while ensuring that the voltage of the wind farm's

collection line and bus voltage are within the normal range, and then test the dynamic response characteristics of the dynamic reactive power compensation device during voltage drop and rise.



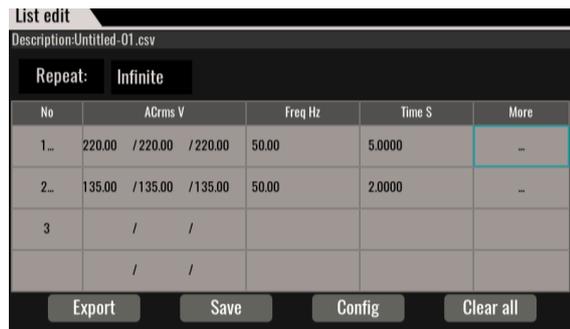
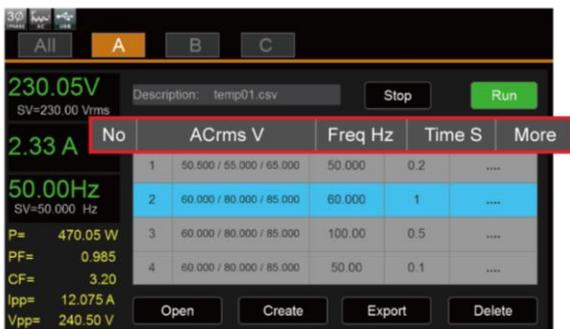
Voltage drop	Voltage drop duration ms	waveform
0.90-0.05	2 000±20	
0.50±0.05	1 214±20	
0.20±0.05	625±20	

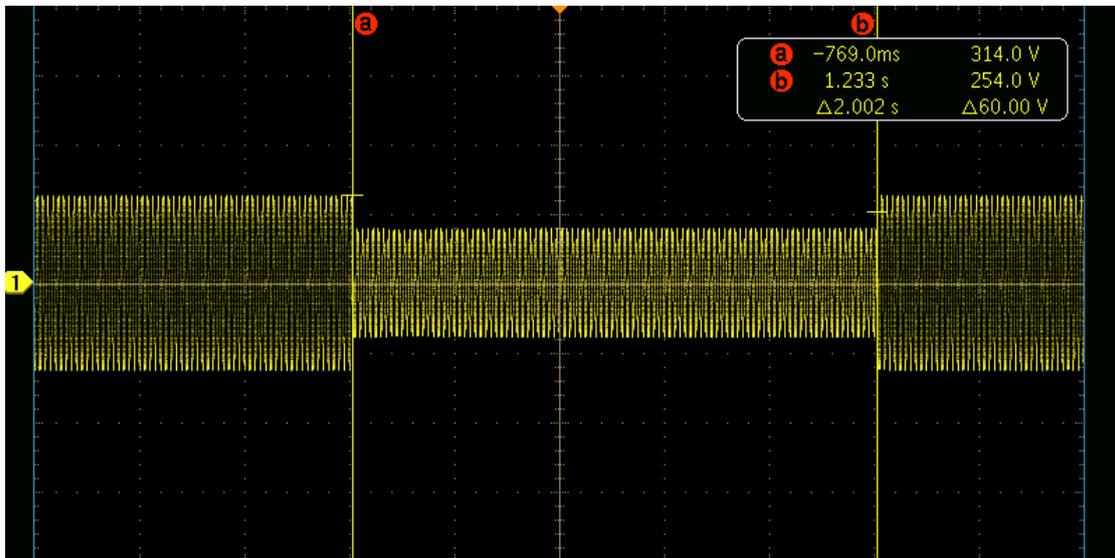
Measurement value

Test solution

ITECH IT7800 series high power programmable AC/DC power supply is a new generation of high-power programmable AC/DC power supply that integrates powerful programming functions, touch screen and rich data waveform analysis. Its power density is very high, a 3U unit can output 15kVA. Through master-slave parallel, it can be extended up to 960kVA. It perfectly meet the high-power test requirements of the dynamic reactive power compensation devices.

At the same time, for different test items, the IT7800 series provides different test modes of STEP, LIST and PULSE, which can easily realize the step by step or continuous change of the output parameters. The output voltage amplitude, frequency, phase, waveform and other parameters can also be output by controlling the internal trigger or external trigger in the instrument. Therefore, IT7800 can simulate the instantaneous power off, surge, and slow rise of various power supplies.





IT7800 simulates fault ride-through voltage drop test

The IT7800 series has a built-in power meter and arbitrary waveform generator, which can simulate harmonic/inter harmonic and various complex arbitrary waveform output. Therefore, in addition to the testing of dynamic compensation devices for wind farms, it is also widely used in the research and development, production, and quality inspection stages of many industries such as renewable energy, rail transport, semiconductors, academic research and so on.

Related information

- [IT7800 high power programmable AC/DC power supply](#)
- [Youtube-How to Operate IT7800 High Power AC/DC Power Supply? Learn it Now!](#)
- [Youtube-New Product! Learn about IT7800 High Power AC /DC Power Supply](#)



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