

What is a combined reactive power compensation device?

In this paper, a combined reactive power compensation device was installed, which is composed of a static var generator (SVG) and a parallel capacitor bank. The SVG has the characteristics of fast and smooth adjustment, and the application of the capacitor bank reduces the overall investment cost and has a great economy.

Can capacitive reactive power be used to regulate voltage?

This article presents an efficient voltage regulation method using capacitive reactive power. Simultaneous operation of photovoltaic power systems with the local grids induces voltage instabilities in the distribution lines. These voltage fluctuations cross the allowable limits on several occasions and cause economic losses.

How does reactive power compensation affect voltage support?

In summary, the voltage support ability of the above six reactive power compensation configuration programs is enhanced in turn. The minimum is when the active power of program 1 is about 385 MW, and the bus voltage drops rapidly. The maximum is when the active power output of program 6 reaches 610 MW, and the voltage instability finally occurs.

How to optimize the performance of reactive power compensation devices?

The modal analysis method was used to find the optimal installation position for the reactive power compensation device. The improved particle swarm algorithm was used to optimize the capacity of the optimal reactive power compensation device to ensure the best performance of the compensation device.

What happens if there is no reactive power compensation device?

Program 1: In the case that there is no reactive power compensation device in either wind farm when the active power is about 385 MW, the busbar voltage drops rapidly and quickly reaches the limit instability point.

Program 2: When the SC-type capacitor bank is put in, it leads to a large oscillation of the wind turbine terminal voltage.

Should a reactive power compensation device be added to a weak point?

Related scholars proposed that in the process of voltage static stability research, the corresponding reactive power compensation device should be added to the weak point of voltage, which can basically meet the requirements of wind power delivery in the Hami area to a certain extent.

In isolated hybrid electrical system, reactive power compensation plays a key role in controlling the system voltage. The reactive power support, essential to maintain the voltage profile and stability of the system, is one of the six ancillary services specified in the FERC order no. 888 [1]. Reference [2] explains two types requirement of reactive power for system operation; ...

Static VAR compensator Shunt reactor SOURCE OF REACTIVE POWER compensating devices Dynamic source of reactive power have a reactive power capability dictated /dependent on system conditions and as such can be changed instantaneously but static source of reactive power have fixed reactive power capability [54, 58, 60] Series compensator Synchronous ...

representation of the control scheme. The compensation is achieved by the control of direct axis and quadrature axis currents and . Using the definition of the instantaneous reactive power theory for a balanced three phase three wire system, the quadrature component of the voltage is always zero, the real (P) and the reactive power (Q) injected

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At, in spite of accurate active power sharing in Fig. 21a, the reactive power is not shared correctly with the conventional control scheme as shown in Fig. 21b. However, ...

The independent compensation means all reactive power demand of the local loads are completely fulfilled by the inverter only. In other means, the inverter itself can meet the reactive power demand, Which was being fulfilled earlier by the grid. Thus, by applying this scheme the reactive power compensation through the grid has been reduced to zero.

The traditional harmonic suppression and reactive compensation scheme is passive power filter (PPF). Although the PPF has the advantages of mature technology, simple structure, low cost, large capacity, etc. ... When the reactive compensation capacitor is parallel with the nonlinear load, from the load side, there is a risk of parallel ...

In the presented work, reactive power compensation study in distribution circuits of the Cienfuegos Municipal Basic Electrical Unit was carried out, taking Circuit # 20 as a case study.

The output power capability of the parallel hybrid excitation generator (PHEG), consisting of permanent magnet machine part and reluctance machine part, is rest

The primary components of the STATCOM's main circuit consist of a voltage source inverter and a parallel DC capacitor comprised of high-power power electronic devices. This reactive power compensation scheme deviates ...

serious problem due to possible series and parallel resonance of shunt passive filter with source impedances. To overcome this deficiency, a combined system of a shunt passive filter in series with an active power filter along with reactive power compensation scheme [32-36] have proposed to solve power quality problem.

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