

Parallel compensation capacitor voltage regulation

How does a compensating capacitor affect power transfer?

When multiplied by the voltage across the load this leads to the same increased level of power, given by Eq. (22.6), as with parallel compensation. As shown by Eq. (22.6), compensating capacitors on the secondary side of an IPT circuit allow for an increase in power transfer by the Q of the secondary circuit.

What are the disadvantages of a parallel active compensator?

Voltage mode parallel active compensators have one significant disadvantage: the power factor depends on the load's active power and line voltage. This causes PF deterioration, especially in the case of line voltage dips and swells (although the load voltage in PCC still is stable).

What is a compensating capacitor in an IPT circuit?

As shown by Eq. (22.6), compensating capacitors on the secondary side of an IPT circuit allow for an increase in power transfer by the Q of the secondary circuit. As for the secondary side of the circuit, primary side compensation is also beneficial, and reduces the reactive power drawn from the supply for a given power transfer level.

What are series-parallel (Sp) compensation topologies in capacitive power transfer (CPT)?

This paper analyzed the four series-parallel (SP) compensation topologies to achieve constant current (CC) and voltage (CV) output characteristics and zero phase angle (ZPA) input conditions with fewer compensation components in the capacitive power transfer (CPT) system. There are three main contributions.

What is a parallel active power compensator (APC)?

Parallel Active Power Compensators (APC) seem to have been a very widely discussed matter of many publications in the last 20 years [1 - 7]. The features of these devices can be considered in respect to a few aspects, such as power stage structure, reference current calculation and control method, overall cost of application, number of functions.

Can parallel capacitors cause super synchronous resonances?

This solution is not feasible, since the amount of the grid impedance, thus its resonance frequency, varies depending on the operating conditions of the power system. The application of parallel compensation instead of series compensation is possible as well. But the parallel capacitors may cause super-synchronous resonances.

Aiming at the problem that the virtual synchronous generator (VSG) has power coupling in the medium and low voltage microgrids, a power decoupling method based on adaptive voltage compensation is proposed. The voltage is compensated to stabilize the reactive power at the rated value. The reliability of the improved method is verified by small-signal ...

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in output voltage Parallel connection using a diode Figure 3 shows a parallel connection using diodes. Since there are diodes in the output circuit, the output voltage only drops as far as the forward direction voltage (hereafter indicated as V_F). Predicting this behavior, it is necessary to take countermeasures, for instance by ensuring that the LDO's set voltage only rises as much ...

Abstract: This article proposes an improved hybrid parallel compensator (IHPC) for enhancing the power transfer capability of a photovoltaic (PV) grid-connected inverter. A thyristor switched capacitor (TSC) module is used in series with a conventional inductive-coupling voltage source inverter to reduce the dc-link voltage. Under a low dc-link ...

For parallel compensation, a resistor R_P is connected in parallel with the piezoresistor R_2 as shown in Fig. 6.6.2 (a). The condition for compensation is. Fig. 6.6.2. Compensation for offset voltage (a) parallel compensation; (b) series compensation. For small ϵ , the resistance of R_P is.

This paper analyzed the four series-parallel (SP) compensation topologies to achieve constant current (CC) and voltage (CV) output characteristics and zero phase angle (ZPA) input conditions with fewer compensation components in the capacitive power transfer (CPT) system. There are three main contributions. Firstly, the universal methodology of SP ...

The isolated bidirectional DC/DC converter used as the parallel compensator compensates load current harmonics while regulating the series-parallel compensator common DC-link voltage as a voltage source. Indeed, during the microgrid voltage sag compensation, this parallel branch provides and absorbs the required power for the series ...

Compensating and reducing these voltage and current distortions requires efficient and cost-effective solutions. This article proposes two new topologies of DC series ...

Experiments validate the voltage step-down property with a voltage gain of 0.4 and a peak dc-dc efficiency of 87.3%. This article proposes a current-fed capacitive power ...

For proper operation compensators based on voltage source converters (VSC) require DC link voltage stabilization. In the case where a conditioner does not have an external energy source connected to the DC terminals, a voltage stabilization loop is ...

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An output-capacitorless low-dropout regulator (OCL-LDO) using split-length current mirror compensation and overshoot/undershoot reduction circuit are presented in this paper. At a supply of 1.5 V and a quiescent current of 8.2 μ A, the proposed scheme can support a maximum load current of 50 mA. The proposed OCL-LDO has a range of output voltage from ...

To compensate for the voltage drop over the reactance, different methods can be used. If an active rectifier is used it could provide reactive power to compensate for the voltage drop. Another method is to use capacitors connected to the generator either in parallel or in series with the generator coils.

In this article, an alternative parallel feedforward compensation method is proposed to synthesize an almost strictly positive real plant and achieved damping with ...

transistor can maintain output regulation with very little voltage drop across it: $V_{DROP} = V_{SAT}$ (LDO REGULATOR) Full-load dropout voltages ≤ 500 mV are typical. At light loads, dropout voltages can fall as low as 10 to 20 mV. A USER'S GUIDE TO COMPENSATING LOW-DROPOUT REGULATORS V_{IN} V_{OUT} GND VOLTAGE CONTROL FIGURE 1. NPN ...

The phase difference of compensation voltage phasor V_C and drop voltage phasor V_L are 0° ; that provides generating lower equivalent voltage drop V_Z comparing to capacitive compensation seen in Fig. 8.10b in this case. This process causes to generating lower current to flow on the transmission line where the delivered power level is decreased. In any ...

Shunt capacitors are used more frequently in power distribution systems than any other electrical compensation device. They are used mostly for voltage regulation and power factor correction; hence, these two specific applications will be briefly discussed. 6.1 Voltage regulation. Voltage drop can be reduced by the application of a shunt ...

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