Dual-loop grid-connected inverter

Is there a dual closed-loop repetitive control strategy for single-phase grid-connected inverters?
In this paper,a novel dual closed-loop repetitive control strategy based on grid current feedback is proposedfor single-phase grid-connected inverters with LCL filters. The proportional-integral inner loop is stabilized by using an inherent one-beat delay achieved by digital controller.

What is a grid connected inverter?
The grid-connected inverter,which is essentially a voltage-source inverter(VSI) with voltage input and current output,is the core of grid-connected power systems. The most important indexes for measuring the grid-connected inverter are total harmonic distortion (THD) of the grid current and the grid power factor (PF) [5,6].

What is the circuit topology of a single-phase grid-connected inverter?
The main circuit topology is a single-phase grid-connected inverter with LCL filter. The repetitive dual-loop control method is adopted. The outer loop is controlled by the RC,which makes the grid-connected current ig track the sinusoidal reference iref without a steady-state error.

What is a dual loop control method?
The repetitivedual-loop control method is adopted. The outer loop is controlled by the RC,which makes the grid-connected current ig track the sinusoidal reference iref without a steady-state error. The PI control method is applied in the inner loop,which can increase the damping of the system to suppress the resonance peak.

As to the concrete topology of three-phase LCL type grid-connected inverter with damping resistance, mathematical model was deduced in detail, using method of equivalent ...

A novel repetitive dual-loop control scheme of a grid-connected inverter with an LCL filter is proposed in this paper to realize precise control of grid-connected inverters.

Grid connected inverter can attenuate high frequency harmonics effectively through an LCL filter which has potential benefits for the inverter to get higher harmonic performance with lower ...

A dual closed-loop feedforward control strategy is proposed for the current inner loop and voltage outer loop in the rotating coordinate system. The correctness of the inverter ...

The dual-loop control strategy for grid-connected in-verter with LCL filter in this paper can be used to control the currents of three phase grid-connected inverter, and it will let ...

For the grid-connected inverter, the small-signal analysis and impedance method are used to analyze the stability of the system, including the influence of the PLL and the ...

As the core device of the new energy production system, the grid-connected inverter plays a crucial role in transforming new energy into electrical energy. Regarding the ...

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3.2 The Typical Dual-loop Decoupling Control for Three-phase PV Grid-connected Inverter Fig. 5 gives a typical dual-loop control topology of three-phase grid-connected processes can be ...

A nested grid forming inverter is proposed in this paper. The dual loop structure consists of proportional integral (PI) controlled outer voltage loop and finite control set model ...

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