Dual-loop control of three-phase inverter

How is a three-phase PV Grid-connected inverter designed?
The three-phase PV grid-connected inverter was designed based on the LQR method,where the tracking error was adjusted to zero through integration (Al-Abri et al.,2024). The disturbance rejection ability of the PV GCI was improved by designing the linear state inaccuracy feedback control policy (Zhou et al.,2021).

What is a grid-connected inverter?
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. Rega

What is voltage-current dual-loop control (VDC)?
Firstly,the voltage-current dual-loop control (VDC) structure is adopted,where the model of the current loop is restructured benefitting from the current tracking principle.

What is a current loop optimal controller?
Therefore,the proposed current loop optimal controller,based on the off-policy IRL method,effectively controls the voltage and current of the grid connection in the semi-physical simulation experiment. It minimizes the THD of the grid connection,satisfying the requirements for grid connection. Fig. 11.

Symmetry of three-phase output voltage is one of the essential requirements for three-phase inverter. Conventional double-loop control strategy has a good control effect on ...

The research incorporates an LCL filter to mitigate high-frequency harmonics in the output voltage of the inverter and implements a dual closed-loop control strategy comprising ...

Abstract 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 ...

A double loop control method is developed in this paper for a grid connected three phase inverter. The SVPWM strategy is developed to reduce the THD of inverter output voltage.

In this paper, a novel dual closed-loop repetitive control strategy based on grid current feedback is proposed for single-phase grid-connected inverters with LCL filters. The ...

The three-phase inverter is a crucial component for integrating photovoltaic power generation into the grid. Its performance directly impacts the stability and power quality of grid ...

A dual-loop (inner current loop and outer voltage loop) control scheme for micro electric source inverters in microgrid is improved in this paper. In order to make dual-loop control analysis ...

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In order to make dual-loop control analysis more accurate, LC filter, SVPWM module equivalent are included in the inverter supplied system model.

In the control scheme, a dual-loop PI controller is proposed in which the coupling components in the model of three-phase inverters are analyzed and handled by feed-forward ...

According to the defects of traditional PI control, the paper presents a new method which is Proportional Complex Integral (PCI) control to implement the control of three-phase grid ...

This paper has analyzed in detail the implementation principles and process of the three-phase LCL grid-tied inverter, and has adopted the dual closed-loop feedforward control ...

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