

# Battery voltage and current double closed loop

Does voltage current double closed-loop control improve transient behavior of DC bus voltage?

Therefore, the proposed control strategy effectively improves the transient behavior of the DC bus voltage and battery storage output current. Simulation results of case 1 comparing the control strategy proposed in this paper with voltage current double closed-loop control: a DC bus voltage; b PV unit current; c load current; d BESS current

How fast does a closed-loop control system stabilize a DC voltage?

Fig 12 illustrates the transient response of the DC voltage across the system, highlighting the system's rapid stabilization to a steady state of 700V within 0.15 seconds. This swift stabilization is a testament to the effectiveness of our dual closed-loop control strategy in achieving rapid dynamic response.

What is battery closed-loop feedback control?

Under the battery closed-loop feedback control, the change in battery power will follow the predetermined trajectory. Meanwhile, with the help of the coupling relationship among components, the motor coordinated control strategy will enable the system to rapidly supply electric power and keep it stable.

Can a dual closed-loop DC control system improve EV charging infrastructure?

7. Conclusion This study presents an innovative dual closed-loop DC control system for intelligent electric vehicle (EV) charging infrastructure, designed to address the challenges of high power factor, low harmonic pollution, and high efficiency in EV charging applications.

What is a double closed-loop linear active disturbance rejection control (ladrc) scheme?

In order to stabilize the output voltage and realize automatic switching of constant voltage and current, this paper proposes a double closed-loop linear active disturbance rejection control (LADRC) scheme. Firstly, the transfer functions of the system are obtained by extended description function (EDF) method and simulation method respectively.

What is a dual closed-loop Pi regulator?

The dual closed-loop strategy, integrating a current inner loop and a voltage outer loop, ensures rapid response and high steady-state accuracy, with the PI regulator effectively managing phase coupling for balanced power flow. The voltage outer loop's stability is critical for the system's reliable operation.

In this paper, the voltage closed-loop feedback PI controller and the current closed-loop feedback PI controller are built using Simulink platform in MATLAB environment, and they are combined into a closed-loop control system with double-loop competitive control mode, which is applied to the specific PSFB converter simulation model, and two comparative tests ...

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Model of Voltage and Current Closed Loops Figure 5 shows the control structure of the voltage outer loop and the current inner loop. In Figure 5,  $K_{pv}$ ,  $K_{iv}$ ,  $K_{pc}$ , and  $K_{ic}$  are the PI ...

Aiming at the dual closed-loop control of dual-active bridge (DAB) charging and discharging circuits in energy storage devices, which is difficult to allocate discharging current reasonably based on battery performance, a fuzzy weighted controller with battery pack voltage and its variation as input is proposed.

The inverter circuit adopts double closed-loop control of voltage and current, and is merged into the analog power grid after being filtered by inductance. Simulation experiments on...

The voltage-closed loop is the largest and outermost control loop, which encloses the current-closed loop. Thus, it is called the outer-voltage loop, while the current ...

The dual-mode electro-mechanical transmission (EMT) system is a crucial part of power-split hybrid electric vehicles (HEVs), especially for the heavy HEVs. To improve the precision of the system power distribution and ...

To ensure the steady and dynamic performance of the battery discharge regulator (BDR), a double closed-loop control strategy is proposed for the BDR, which based on the topology of ...

The voltage and a current double closed-loop control are adopted for the resistive load, a single-current closed-loop control is used for the voltage source load, and the PI ...

The structure of the control loops are shown in Figure 9, where  $G_i(s)$  and  $G_v(s)$  represent the transfer function of the regulator for the current inner loop and the voltage outer loop ...

In terms of the features of distributed generation such as intermittent, random, and highly affected by weather conditions, this paper designs the voltage and current double closed-loop feedback ...

The presented dual closed loop control technique is implemented under soft-switching conditions with constant current and constant voltage control methods. The designed DC/DC resonant converter, fed by Power Factor Corrector (PFC) outputs 200-300 V, provides 60 V/20 A at 1.2 kW. ... a battery is charged using Constant Current (CC) and Constant ...

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