Abstract

How to complete the phase-locked quickly and accurately is a basic key technology in the grid-connected inverter. Compared to the typical phase locking method with zero crossing, synchronous coordinate system software phase-locked loop (SPLL) has an advantage of easy to achieve, faster dynamic response, etc. This paper studied a strategy for applying the SPLL to the single phase grid-connected inverter. Firstly, use the virtual three-phase method to convert the single-phase voltage into three-phase balanced voltage. Then complete the software phase-locked with vector decoupling method in the synchronous coordinate system. Each simulation parameter of actual control system was calculated by tuning parameters of the regulator. The feasibility of this method is verified by experiment.

References

Software Phase-Locked Loop based on Virtual Three-Phase for Power Grid

461-465.


11. C. Hua and J. R. Lin, "DSP-Based Controller Application in Battery Storage of Photovoltaic System", in IEEE 22nd International Conference on Industrial Electronics, Control, and Instrumentation (IECON '96), 1996 , pp.1705 -1710


15. C. Albea and F. Gordillo, "Control of the Boost DC-AC Converter with RL Load by Energy Shaping", in Proceedings of the 46th IEEE Conference on Decision and Control, pp.2417 -2422


Index Terms

Computer Science

Power Systems
Keywords

Single-phase grid-connected, Virtual three-phase, Synchronous coordinate system, Software phase-locked loop (SPLL)