

When should a power supply shut down?

The power supply should shut down only when the voltage of C in drops to 2.9 V. The experimental results underscore that the EM strategy proposed here accomplishes the function of energy storage and output regulation, presenting significant practical value for self-powered system based on harvesting irregular mechanical energies.

When should the RF-Teng switch synchronously be closed?

According to the theoretical energy conversion process 16,42,43, when the output voltage of RF-TENG reaches its peak value (as the slider completes moving over a basic unit), the switch should synchronously be closed, as illustrated in Supplementary Fig. 9a. This condition is essential for achieving maximum energy release from the RF-TENG.

Can long-duration energy storage technologies solve the intermittency problem?

Long-duration energy storage technologies can be a solution to the intermittency problem of wind and solar power but estimating technology costs remains a challenge. New research identifies cost targets for long-duration storage technologies to make them competitive against different firm low-carbon generation technologies.

Is a real-time power supply suitable for tengs?

However, the real-time nature of this power supply form renders it impractical for TENGs reliant on harvesting irregular mechanical energy from the environment to stably power electronic devices, which presents a significant impediment to the broader practical application of TENGs.

Can a soft-switching converter be used in residential battery energy storage?

The prototype converter with a rated power of 300 W was assembled and tested considering future application to residential battery energy storages. The experimental test results prove feasibility of the soft-switching method in the proposed converter.

Is Teng energy management based on a constant voltage power supply?

Above all, this work not only provides an in-depth energy transfer mechanism between TENGs and energy management circuits but also establishes a TENG-based constant voltage power supply system with energy storage capabilities. This holds significant guiding implications for the subsequent development of TENG energy management.