

Geographical distribution map of Nanji Island microgrid

Do Island microgrids work in the East China Sea?

Three representative island microgrids in the East China Sea are demonstrated. Key technologies such as control technology and energy management for island microgrids are studied. Renewable energy penetration is discussed for the design and operation of island microgrids.

What power sources are in the Nanji Island microgrid?

The Nanji Island microgrid contains four types of power sources: wind power, solar power, DE, and energy storage. The lithium batteries have three operating modes: P/Q, constant V/F, and droop control. DEs have P-F and Q-V droop control modes. WTs, PV units, and super capacitors have P/Q operating mode only.

What is the control system for the Nanji Island microgrid?

The control system for the Nanji Island microgrid is based on the IEC61850 standard, which coordinates the three control layers using an MMS protocol for between-layer communication and a GOOSE protocol for within-layer communication.

What is the EMS for the microgrid on Nanji Island?

The EMS for the microgrid on Nanji Island is relatively complex due to the large rated capacity and aggregate load. The load on this island is classified into important load, shiftable load, and adjustable load by the controllability of load.

What control architecture does Nanji Island use?

All three island microgrids use a three-layer control architecture that consists of a monitoring and scheduling layer, a coordinated control and protection layer, and a local equipment layer. The control architecture of the microgrid on Nanji Island is the most complex among the three microgrids.

What is Beiji Island microgrid?

Beiji island microgrid Beiji Island is a natural harbor for the petroleum transportation. It had isolated grids with DE generators for a long time. The newly developed microgrid at Beiji is more dependent on PV generation.

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Web: <https://www.publishers-right.eu/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

