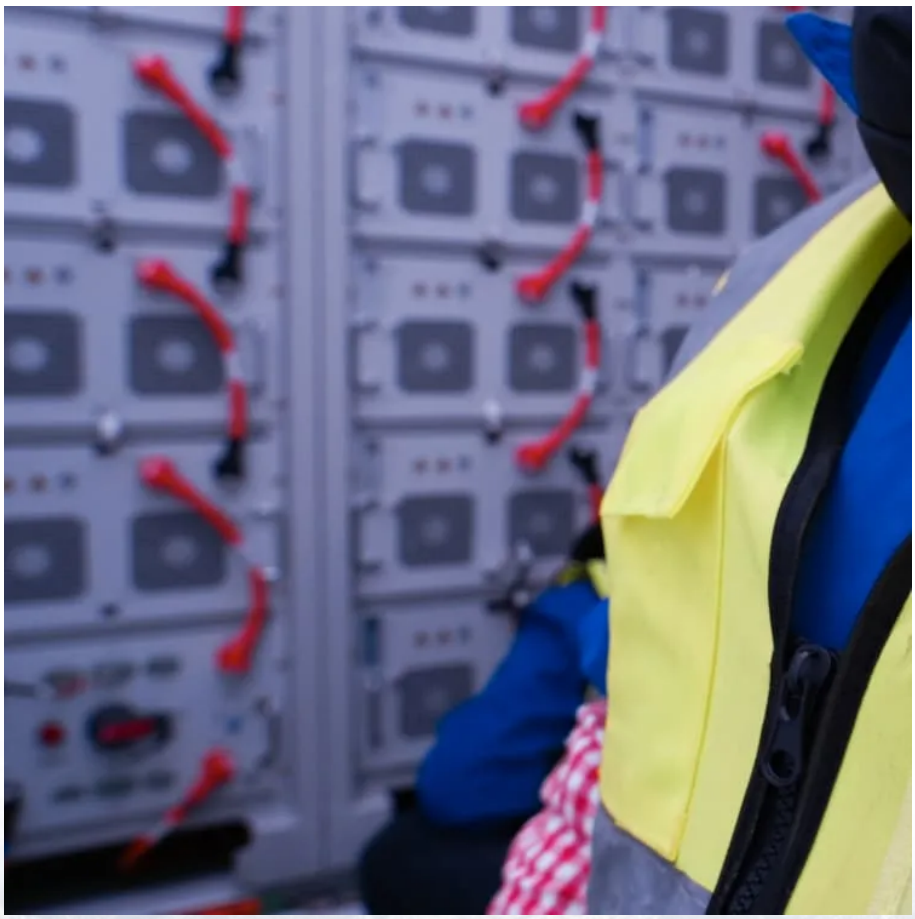
ŁOTWA SYSTEM

Mobile energy storage distribution network resilience improvement



Overview

This paper outlines the interacting factors of power supply demand, traffic operation efficiency, communication coverage, electric vehicle (EV) deployment capability, and PDN controllability among PTIN and further develops a PTIN-interacting model to reflect the ‘chained recovery effect’ of the MESR-based restoration process.Can a mobile energy storage resource (MESR) based power distribution network be restored?

Existing mobile energy storage resource (MESR)-based power distribution network (PDN) restoration schemes often neglect the interdependencies among PTIN, thus, efficient PDN restoration cannot be achieved.

What are mobile energy storage resources (MESRS)?

With the proliferation of electric mobility , mobile energy storage resources (MESRs), including electric vehicles (EVs) and mobile energy storage systems (MESSs) are rapidly developing in urban areas and are proposed as a valuable backup in the event of major power outages .

How can mobile emergency resources improve load restoration efficiency?

Integrate mobile emergency resources within PTINs to enhance control over PDN topology and power supply, improving load restoration efficiency. Propose a novel rolling optimization method utilizing EVs, MESSs, and UAVs for dynamic and adaptive load restoration.

How smart city technology is affecting power distribution network restoration?

The advancement of smart city technologies has deepened the interactions among power, transportation, and information networks (PTINs). Current mobile energy storage resource (MESR) based power distribution network (PDN) restoration schemes often overlook the interdependencies among PTINs, thus hindering efficient load restoration.

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