Smart distribution system Laos

What is distribution automation & smart grid technology?
Distribution automation and smart grid technologies enhance the ability of a distribution system to withstand extreme events and restore power supply to interrupted customers efficiently after major outages.

How to estimate a distribution system using smart meters?
State estimationof distribution systems: numerous data from smart meters can be used for state estimation of distribution systems . Different methods,such as weighted least square (WLS) ,Bayesian network ,graph theory ,and machine learning ,are proposed for state estimation.

Do smart grid techniques contribute to resilient distribution systems?
Smart grid techniques play an essential rolein resilient distribution systems. In this section,a smart grid application,that is,distribution service restoration,and its contributions to the enhancement of resilience will be discussed.

How do distribution system operators know the status of DGS?
Distribution system operators can be aware of status of DGs in the distribution system by collecting information from the DG IPSs and send control commands to DG IPSs via the communication infrastructure. Consequently, a distribution system operator can remotely disconnect DGs in the network when an abnormal condition occurs.

To achieve a distribution system self-healing against power outages, emerging technologies and devices, such as remote-controlled switches (RCSs) and smart meters, are being deployed. The higher level of automation is transforming traditional distribution systems into the smart distribution systems (SDSs) of the future. The availability of

Smart Power Distribution Systems: Control, Communication, and Optimization explains how diverse technologies work to build and maintain smart grids around the globe. Yang, Yang and Li present the most recent advances in the control, communication and optimization of smart grids and provide unique insight into power system control, sensing and communication, and ...

distribution system reliability and service quality in terms of the distribution reliability indices of CAIDI, SAIFI SAIDI, etc. In addition to FDIR and IVVC, the topology processing function of TP plays an important role in supporting the two key applications in real time operation. TP is a background processor that traces the

guideline to install the PV for grid-connected with medium voltage system in Lao People"s Democratic Republic (Lao PDR) for planning the future policy. Keywords: PV generation, ...

The proposed methodology is tested on the standard IEEE 15-bus distribution system over a 24-h period. The

data of this test system are shown in Fig. 4 [42]. A wind turbine and a PV system are installed on bus 12 with a rated power of 200 kW. For the wind turbine, the cut-in, nominal, and cut-out speeds were 4, 14, and 25 m/s.

Distribution Management System (DMS) ... (AMI) is an integrated system of smart meters, communications networks, and data management systems that enables two-way communication between utilities and customers. Customer systems include in-home displays, home area networks, energy management systems, and other customer-side-of-the-meter ...

This paper presents a review of the literature on state estimation (SE) in power systems. While covering works related to SE in transmission systems, the main focus of this paper is distribution system SE (DSSE). The critical topics of DSSE, including mathematical problem formulation, application of pseudo-measurements, metering instrument placement, network topology ...

In this paper, the method for selecting the optimal location of auto reclosers in distribution system considering system reliability is proposed. The Monte Carlo simulation (MCS) technique was utilized for evaluating the reliability of the distribution system. The MATLAB program is used to create the MCS model. In the MCS model, the exponential distribution ...

The main challenges are inefficient transmission and distribution networks - on average, 13 percent of the supply is lost during distribution - and the lack of a nationally connected power ...

distribution system such as voltage deviations, surplus power flow reversible, energy losses variation, etc [11-12]. The . 22. kV of the electric power system in Lao PDR is the long distance. Consequently, there are the power substation and the load demand distribute in the rural area. Savannakhet Province locates in the

Lao PDR"s ambitious electric power development strategy focused on developing its enormous hydropower potential (estimated at over 25 GW, compared to a peak domestic load of under 1 ...

The main idea in smart-grid concept is the integration of active communication in the power system. Traditionally, the communication in the power system is more toward the one-way approach. All the instructions of operations are given by the utility and will be operated by the controller at the load side, either by using supervisory control and data acquisition or by other ...

The evolution of the conventional power systems to smart grids has changed the way to conceive and operate them. The part of the grid evolving the most is the distribution grid where the ...

For showing the difference between the current paper and previous related studies, Table 1 is presented. In [32], a mixed-integer second-order cone programming (MISOCP) model is proposed for solving the optimal operation problem of radial distribution networks with energy storage.For accuracy of the proposed MISOCP model, a Mixed-Integer Linear ...

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Smart grids (SGs), as an emerging grid modernization concept, is spreading across diverse research areas for revolutionizing power systems. SGs realize new key concepts with intelligent technologies, maximizing achieved ...

Electrical power distribution systems have gone through some significant evolutions in capability over the last few decades. The traditional distribution system is the interconnection of various power system components such as transformers, conductors, synchronous machines, motor control centers, switchgear, and panels all functioning to deliver ...

The new strategy facilitates robust infrastructure for smart distribution systems operational control functions, such as self-healing, by using virtual microgrids as building blocks in future distribution systems. The problem formulation and solution algorithms are presented in this paper. The well-known PG& E 69-bus distribution system is ...

This paper develops a model-free volt-VAR optimization (VVO) algorithm via multi-agent deep reinforcement learning (DRL) in unbalanced distribution systems. This method is novel since we cast the VVO problem in distribution networks to an intelligent deep Q-network (DQN) framework, which avoids solving a specific optimization model directly when facing time ...

Course Description: The second module focuses on distribution: visibility and data for a self-Healing grid and addresses the standards and communication protocols that support a strong grid in which intelligent electronic devices, or IEDs, are integrated with the ICT foundation for visibility into distribution system functions. This section delves into the principles and practices of ...

This paper discusses the simultaneous management of active and reactive power of a flexible renewable energy-based virtual power plant placed in a smart distribution system, based on the economic ...

It is observed that the LDC controlled load model results in a more uniform system load profile, and that with a reduction in the peak demand cap, the energy drawn decreases, consequently reducing feeder losses and LDC"s and customers" costs. This paper presents a new modeling framework for analysis of impact and scheduling of price-responsive ...

Through long-term communication internally and with EDL, Huawei analyzes EDL"s requirements and pain points, binds the domestic electric power design institute to in-depth survey, and ...

The project aims to help improve efficiency and reliability of power distribution in the selected load areas served by Electricité du Laos (EDL). This is achieved through the following components: ...

SMART-DS users can test distributed automation algorithms, advanced distribution management system capabilities, and other emerging distribution technologies on standardized, full-scale, synthetic distribution networks. SMART-DS includes numerous scenarios that augment the distribution network models.

With emergence of Flexible Renewable Virtual Power Plants (FRVPPs) as the aggregator of renewable energy systems and flexibility resources such as demand response programs and electric vehicles (EVs) in the Smart Distribution Network (SDN), FRVPPs are expected to have significant capability resiliency enhancement against natural disasters.

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