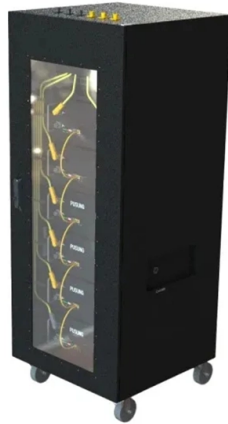


Communication interruption in integrated power system



Article Overview

Communication interruptions in integrated power systems can significantly disrupt monitoring, control, and restoration processes, but resilient strategies such as microgrid formation, predictive state inference, and distributed control can mitigate their impact.

Causes and Impacts

Communication interruptions in integrated power systems often arise from equipment failures, link disconnections, congestion, or cyberattacks such as Denial-of-Service (DoS) attacks targeting the communication network of smart grids . These interruptions can degrade the monitoring and control functions of distribution systems (DS), preventing the acquisition of complete state information for buses and branches, which is critical for post-disaster restoration . In high-voltage applications like Modular Multilevel Converters (MMCs), communication failures can distort output currents, cause over-voltage in sub-modules, and potentially lead to system shutdowns .

Mitigation Strategies

- Resilient Microgrid Formation: When communication is interrupted, the operating states of unobservable DS components can be inferred using known system information. Automated switches can then reconfigure the DS topology to form microgrids powered by distributed generators, allowing partial restoration of power before full communication recovery

Article Content

The Intrinsic Communication in Power Systems: A New Perspective to ...

In this paper, we present the intrinsic analogy of a power system to a communication system, which is here called power

Resilient microgrid formation considering communication interruptions ...

Abstract Distribution system (DS) communication failures following extreme events often degrade monitoring and

Interruption flows for reliability evaluation of power distribution ...

The likelihood of consumers being disconnected from their power supply because of outages can be reduced by investing in many

Communication and Control in Electric Power Systems: Applications of ...

Agent Theory and Power Systems Management e-Commerce of Electricity A ready resource for both students and practitioners,

CURRENT COMMUNICATION MEDIA IN POWER SYSTEM

Communication is the enabling technology which plays a significant role in the modernization and atomization of the electric power

Resilient Operation of an MMC With Communication Interruption in a ...

Modular multilevel converters (MMCs) in high-voltage dc applications usually adopt a distributed control architecture to

Communication network robust routing optimization in an integrated ...

The study highlights the importance of considering security and economic factors in optimizing routing modes to

Communications in power system protection (medias, protocols and

It is capable of establishing network communications not only for power system applications, but also for factory

Impact assessment of communication service disruptions in power

Both reliability and vulnerability are discussed that can be used as indices to evaluate the weakness of the integrated power

The Intrinsic Communication in Power Systems: A New Perspective to ...

The power-communication isomorphism theory reveals the intrinsic analogy of power systems and communication sys-tems. This

Blackout prediction in interconnected electric energy systems ...

The main undesired consequences of a power outage include traffic paralysis, communication interruption, social

VOLTAGE SAGS AND INTERRUPTIONS

Voltage sags and interruptions are related power quality problems. Both are usually the result of faults in the power system and

Control and management of distribution system with integrated DERs

Distributed Energy Resources (DERs) are being increasingly integrated in the distribution systems and resulting in

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TATA Power Mumbai- Automation of interruption communication to Consumers & computation of reliability indices Manish Thool (BE

A Power Control Method for Interlinking Converters Considering ...

A Power Control Method for Interlinking Converters Considering Impedance Compensation and Communication Interruption

Impacts of communication failure on power system operations

Communication technology serves important functions in the power system energy management system (EMS). Recent studies

Integrated Electric Power and Communications Infrastructure

Although today's power grids have their own sensing and control communications infrastructure in dedicated networks

Impact of Power Interruption on Buildings and Neighborhoods and

Based on this literature survey, the paper highlights that, depending on their duration, power outages can have a

A Method to estimate the economy-wide consequences of ...

Rose, A., Oladosu, G. & Liao, S. Business interruption impacts of a terrorist attack on the electric power system of Los

Limiting the Failure Impact of Interdependent Power-Communication ...

Abstract: The mutual dependency between the power grid and communication network increases the risk of large-scale

Resilient Operation of an MMC with Communication Interruption in a ...

In this paper, a resilient operation strategy is proposed and studied to ride through the CI fault, in order to prevent frequent fault SM

Enter Title for Paper

After getting feedback from Field Duty Engineer or LT Team for the concerned Zone, call center team issue communication to

Impact of Power Interruption on Buildings and Neighborhoods and ...

Longer-term power outages affect multiple aspects of daily life, such as communication, thermal comfort, life quality,

Resilient microgrid formation considering communication interruptions ...

Nevertheless, global observability of DSs in communication interruption events is an ideal situation that is difficult to

Resilient Operation of an MMC With Communication Interruption in a ...

The communication congestion and network disconnection might lead to communication interruption (CI) and eventually cause the

Communications in the Electric Grid

This allowed the electric grid to be monitored and controlled with limited communications, predominantly with analog communication

(PDF) Impact of communication failures on power system security and ...

Two case studies are performed to demonstrate the impact of communication latency on power system transient angle

Impact of communication system interruption on power system wide

Abstract The power system wide area protection and control system uses wide area information to effectively deal

Risk analysis and optimization for communication transmission link ...

Since the communication network of the cyber-physical power system is responsible for communicating information,

Risk analysis and optimization for communication transmission link ...

This article analyzes the risk of the communication transmission link interruption based on the network structure and

A distributed and integrated control strategy for an ...

Request PDF | A distributed and integrated control strategy for an islanded microgrid considering line loss and

Communication network robust routing optimization in an integrated ...

Abstract The integration of power grids and communication networks in smart grids enhances system safety and

Framework for vulnerability assessment of communication systems for ...

A case study of integrated power and communication systems is used to demonstrate the usefulness of the proposed

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