Croatia smart grid communication system

It is evident that the Smart Grid communication network is similar to the Internet in terms of the complexity and hierarchical structure. However, there are fundamental differences between these two complex systems in many aspects. 1. Performance metric. The basic function of the Internet is to provide data services (e.g., web surfing and music downloading, etc.) for users.

It is known that smart grids offer multiple advantages such as promotion of Renewable Energy Sources (RES) and energy savings [1].A smart grid is an electricity network that delivers electricity in a controlled way (from the generation points to the consumers) [2].The main goal is to use information and communication technologies so as to create reliable, ...

Through smart grid, the power system becomes smart by communicating, sensing, control and applying intelligence. ... Croatia . and Switzerland. ... Smart Grid communication technologies are ...

Clearly, modern communication and information technology will play an important role in managing, controlling, and optimizing different functional and smart devices and systems in a smart grid. A flexible framework is required to ensure the collection of timely and accurate information from various aspects of generation, transmission ...

Matching Performance Criteria of Grid Applications to Communication Technology . A wide variety of communication technologies support grid operations today via multiple solutions driven by the key factors above. Figure 2, below, shows a basic representation focusing on grid communications, which can be thought of as higher layer applications,

The cognitive smart grid (SG) communication paradigm aims to mitigate quality of service (QoS) issues in obsolete communication architecture associated with the conventional electrical grid. This paradigm entails the ...

A gradual shift from manual to smart digital technologies include; smart metering, distributed generation (renewable energy and microgrid), and management using Information and Communication ...

The characteristics of smart grid that will provide the benefits in six main area are discussed; reliability, economics, efficiency, environmental, security and safety, communication, power electronics and control system and issues and challenges. Conventional grid has been transformed to more efficient grid by included several technology inside, named ...

According to the National Institute of Standards and Technology (NIST) [], an SG architecture is the model

that describes different domains or entities present in the system and various interactions within the system.This architecture covers different design aspects of the system along with the protocols and standards, defined for the proper operation of the grid.

The design of a conventional power grid is such that the flow of electricity, information, and revenue is a one-way process. The power plant generates electricity, and a very high-voltage transmission of generated power is done before distributing this power across distribution lines of medium and low voltage levels (Fig. 1).The design of a modern power grid ...

Examples of the capabilities and benefits of the next generation of Smart Grids are the mass use of electric vehicles (EVs), renewable (distributed) energy sources, and dynamic electricity pricing according to real-time demand. 5G ...

In fact, smart grid can contain many system architectures developed independently or in association with other systems. Figure 1.2 shows a hierarchical overview of the smart grid landscape, its relation to ... 978-1-107-01413-8 - Smart Grid Communications and Networking Ekram Hossain, Zhu Han and H. Vincent Poor ...

Smart Grid Pilot Project, which will be implemented by HEP ODS by the end of 2022, refers to the digitalisation of a part of electricity distribution network in Croatia. The Project will increase the effectiveness of ...

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A key component of smart grid is the communication system. This paper explores the design goals and functions of the smart grid communication system, followed by an in-depth investigation on the communication requirements. Discussions on some of the recent developments related to smart grid communication systems are also introduced.

2024 Smart Grid System Report. Joe Paladino. Office of Electricity. Briefing to the EAC February 14, 2024. 2 DER Deployment DERs and the demand flexibility they provide are expected to grow 262 GW from 2023 to 2027, ... Secure communications that support distributed operations ...

The modern "smart grid" distribution systems now utilized around the world rely on state-of-the-art technologies to optimize efficiency. This article explores the definition of a smart grid and the key tech that makes them smart. ... a microcontroller for managing the technology within the smart meter, and the communication system that ...

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<P>Communication has been used in the power grid for over a century; new concepts addressed by smart grid communication need to be clearly articulated. Fundamental physics has shown the relationship between energy and information; this relationship quantifies the unique aspects of communication in the power grid and how it improves energy efficiency. This forms the core of ...

for Smart Grid Systems Dusit Niyato Nanyang Technological University (NTU), Singapore Rose Qingyang Hu ... IEEE GLOBECOM 2011, Houston, USA December 9, 2011 . Tutorial Outline 1. Introduction, Background, and Overview of Smart Grid Systems 2. Data Communication Requirements in Smart Grid 3. Communication Architectures, Area Networks, and

In smart grid communication systems, intensive research efforts in recent years have been devoted towards detecting the outsider threats, e.g. denial-of-service (DoS) attacks, man-in-the-middle attacks, and eavesdropping, but seldom on insider threats . As a result, there must exist many limitations when applying existing threats detection ...

Increasing the transfer capacities with overhead line dynamic thermal ratings (DTR) is a smart grid technology deployed within the SINCRO.GRID project. In Slovenia, ELES deployed a DTR system to allow ...

Last month, CINEA"s representatives visited the locations of SINCRO.GRID, a project of common interest in the field of smart grids aiming at increasing the security and efficiency of operations of the Slovenian and ...

Smart grid domains: markets Smart grid power market needs to develop, keeping in mind all the objectives of the smart grid. The communication infrastructure integrating the bulk generation, transmission, distribution, consumers, markets, and service providers is the key to the success of the power market in a smart grid.

The Wide Area Monitoring System (WAMS) in Croatia will be upgraded to improve the security of supply and quality of service - including new transmission system applications and Information ...

Smart Grid and Smart Cities in Croatia. SINCRO.GRID o Most inovative project among 18 other in field of electric energy, smart grids o Provide for more efficient use of existing electricity grid in ...

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