

Slovakia smart grid communications and networking

What is a smart grid reference?

This one-stop reference covers the state-of-the-art theory, key strategies, protocols, applications, deployment aspects and experimental studies of communication and networking technologies for the smart grid.

Are cellular M2M communications suitable for smart grid applications?

The authors argue that the cellular M2M communications technologies are suitable for smart grid applications such as wide-area situational awareness, interconnection of distributed energy resources, and distribution automation in the transmission and distribution networks.

What is the role of data communication and networking in smart grid?

Advanced data communication and networking techniques will play a key role in the successful development of the emerging smart grid system. The communication network in the smart grid must be able to support all aspects of generation, transmission, distribution, as well as the requirements of users and utility service providers.

What is the relevance of smart grid?

The relevance of smart grid is reflected by the increasing number of national and international projects on this topic as well as new initiatives by standardization bodies and organizations such as NIST, EPRI, ECR, and the IEEE. There have been several smart grid field trials in the last few years.

What are the 3 layers of a smart grid?

From an architectural perspective, a smart grid is comprised of three high-level layers: the physical power layer (transmission and distribution), the data transport and control layer (communication and control), and the application layer (applications and services).

How many smart grid field trials are there?

There have been several smart grid field trials in the last few years. In Chapter 20, Hu and Qian provide an overview of several smart grid field trials which are divided into three categories: smart power grids, smart electricity systems, and smart customers.

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 deployment of smart technologies will allow the development of additional modern power infrastructure necessary for fast-growing cities. The ever-increasing construction activities also mean increased stress on the

grid and require the strengthening of its nodal points.

The smart grid will transform the way power is delivered, consumed and accounted for. Adding intelligence through the newly networked grid will increase reliability and power quality, improve responsiveness, increase efficiency and provide a platform for new applications. This one-stop reference covers the state-of-the-art theory, key strategies, ...

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The process is assumed to be assisted by smart grid solution. The Slovak Republic is obliged to increase the total share of renewable energy to 14 and 24 % (international system of units and ISO 31-0) in electricity generation in 2020 ...

One essential feature of the smart grid is the information flow over the high-speed, reliable and secure data communication network in order to manage the complex power systems effectively and ...

The role of communication systems in smart grids: Architectures, technical solutions and research challenges. Emilio Ancillotti, ... Marco Conti, in Computer Communications, 2013. Abstract. The purpose of this survey is to present a critical overview of smart grid concepts, with a special focus on the role that communication, networking and middleware technologies will have in the ...

Potential methods for sensor and actuator networking for smart grid Victor O. K. Li and Guang-Hua Yang 14. Implementation and performance evaluation of wireless sensor networks for smart grid Nicola Bui, Angelo P. Castellani, Paolo Casari, Michele Rossi, Lorenzo Vangelista and Michele Zorzi Part V. Security in Smart Grid Communications and ...

Grid operations in smart grid have proven to be more efficient and more secure because of the communication infrastructures and modern control. Smart Grid Communication Infrastructures examines and summarizes the recent advances in smart grid communications, big data analytics and network security. The authors - noted experts in the field ...

3. INTRODUCTION o Many countries and electricity markets are looking at Smart Grid as advanced

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solutions in delivering mix of enhanced values ranging from higher security, reliability and power quality, lower cost of delivery, demand optimization and energy efficiency. o Its advanced capabilities - demand optimization, delivery efficiency and renewable ...

Communications and Networking Technologies. There is high demand in Slovakia for information and communications technology (ICT) products and services due to continuing investment from the central government, municipalities, banks, private companies, and financial service institutions.

The smart grid is an innovative energy network that will improve the conventional electrical grid network to be more reliable, cooperative, responsive, and economical. Within the context of the new capabilities, advanced data sensing, communication, and networking technology will play a significant role in shaping the future of the smart grid.

sensing, communication, and networking technologies for the smart grid, a detailed exposition on the issues such as distributed energy resource (DER) management, demand-side management (DSM), architecture and protocol for power management in the smart grid are out of the scope of this article. 2. APPLICATIONS OF DATA SENSING IN THE SMART GRID

Neighborhood area networks (NANs), which connect all communication devices between substations and smart meters, constitute the fundamental last-mile infrastructure for controlling electricity distribution networks. In the absence of a mature NAN infrastructure, selecting communication technologies to meet scaling smart grid application requirements ...

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