

What is smart grid communication?

3. Smart Grid Communication From the previous section we can see that SGs are highly dependent on information flow and communication between different entities in different networks. Communication is one of enabling technologies of SG. As the number of sensors increase, the amount of data coming to and from the utility increases. 3.1.

What is a smart grid?

There is no single definition of what a Smart Grid is, however common in the definitions is the emphasis on communication for measurements, monitoring, management, and control. Communication plays an essential role in providing reliable, efficient and secure power generation, transmission, and distribution.

What communication technologies are used in smart grid?

Smart Grid Communication Technologies Communication technologies utilized in SG can as mentioned be wired or wireless. Most power systems use a combination of different wired and wireless technologies, depending on the infrastructure.

How a smart grid will improve the reliability and robustness?

It will greatly improve the system robustness and reliability by harnessing the modern and secure communication protocols, the communication technologies, faster and more robust control devices and Intelligent Electronic Devices (IEDs) for the entire grid from substation and feeder to customer resources .

How a smart grid is dependent on information flow & communication?

From the previous section we can see that SGs are highly dependent on information flow and communication between different entities in different networks. Communication is one of enabling technologies of SG. As the number of sensors increase, the amount of data coming to and from the utility increases. 3.1. QoS Requirements for Smart Grids

What are the enabling technologies of smart grids?

Communication is one of enabling technologies of SG. As the number of sensors increase, the amount of data coming to and from the utility increases. 3.1. QoS Requirements for Smart Grids SG applications result in increased data, these applications have different QoS requirements.

This paper presents an overview of existing communication technologies such as ZigBee, WLAN, cellular communication, WiMAX, Power Line Communication (PLC), their implementation in ...

The Smart Grid is a modern electricity grid allowing for distributed, renewable intermittent generation, partly owned by consumers. This requires advanced control and communication technologies in order to provide

high quality power supply and secure generation, transmission and distribution.

In the smart grid operation and management, reliable and real-time information and communication networks play a very critical role. By integrating the appropriate information and communication ...

The initial Smart Grid objective of improving power quality indices will evolve. The longer-term objective is to improve operational efficiency and service delivery through automation. While ...

The traditional power grid is considered no longer viable because it is old, overstretched, unreliable hence the reason for the transformation into the smart grid (SG). The Future SG will have monitoring, automation and communication capabilities which is the main focus of this paper. The SG can also provide two-way communication, real-time pricing and demand-side ...

The communication layer serves as the key enabler of various smart grid applications. Different communication networks in a smart grid environment can be classified, as shown in Fig. 2.2, by their coverage range and data rate. Customer premises area networks can be classified into home area network (HAN), building area network (BAN), and industrial area ...

In this paper, a comprehensive but brief review on smart grid communications technologies is presented. Section II describes smart grid communications technologies and their advantages and ...

The IoT technology aids smart grid by supplying advanced IoT-devices towards monitoring, analyzing and controlling the entire system. This refers to the Internet of Things-assisted smart grid system, which supports and develops several network utilities in the power sector. ... Smart grid technologies: Communication technologies and standards ...

The Organizing Committee is pleased to invite your participation in the IEEE International Conference on Smart Grid Communications (SmartGridComm 2025). This conference aims to provide a forum for researchers and practitioners from academia, industry, government institutions, and regulators with background in communications, energy, control ...

Baimel D, Tapuchi S, and Baimel N. Smart Grid Communication Technologies. Journal of Power and Energy Engineering. 2016;04(08):1-8. Google Scholar. 3. Pagani GA and Aiello M. From the grid to the smart grid, topologically; 2016. ...

This paper addresses critical issues on smart grid technologies primarily in terms of information and communication technology (ICT) issues and opportunities.

The book presents a broad overview of emerging smart grid technologies and communication systems, offering a helpful guide for future research in the field of electrical engineering and communication

engineering. It explores recent advances in several computing technologies and their performance evaluation, and addresses a wide range of topics ...

The IoT technology aids smart grid by supplying advanced IoT-devices towards monitoring, analyzing and controlling the entire system. This refers to the Internet of Things ...

A smart grid is an advanced technology-enabled electrical grid system with the incorporation of information and communication technology. The smart grid also enables two-way power flow, and enhanced metering infrastructure capable of self-healing, resilient to attacks, and can forecast future uncertainties. This paper surveys various smart grid ...

Information and communication technologies (ICT) represent a fundamental element in the growth and performance of smart grids. A sophisticated, reliable and fast communication infrastructure is ...

The communication requirements and suitable techniques differ depending on the specific environment and scenario. In this paper, we provide a comprehensive and up-to-date survey on the communication technologies used in the SG, including the communication requirements, physical layer technologies, network architectures, and research challenges.

Sensors 2021, 21, 8087 4 of 24 Table 2. Smart Grid domains, electrical and communication interface [23].
Domain Communication Interface Electrical Interface Market Service provider, Operations ...

This book aims to present a comprehensive introduction to the basic principles involved in the use of power line communications (PLCs) in the ICT infrastructure of smart grids (SGs) and show how they can benefit from these technologies to improve energy monitoring, control, security and management, especially when renewable energies sources are employed.

Smart Grid Communications 1. Bi-directional flow of information (along with electricity) -for effective control of generation and consumption 2. Real-time information: Paves way for active consumer participation 3. Technologies used at each level of ...

PDF | On Aug 30, 2018, Muhammad Faheem and others published Smart grid communication and information technologies in the perspective of Industry 4.0: Opportunities and challenges | Find, read and ...

The communication infrastructure is critical for the successful operation of the modern smart grids. The use of communication technologies ensures the reduction of energy consumption, optimal ...

This research presented an overview of the application of communication technologies in the digitalization of the power systems network. It reviews smart grid ...

on the communication technologies used in the smart grid, including the communication requirements, physical layer technologies, network architectures, and research challenges. This survey aims to help the readers identify the potential research problems in the continued research on the topic of smart grid communications.

The main focus of this survey article is to explore critical smart grid components, communication technologies, applications, challenges and requirements in the context of SGI 4.0. In Section 2, we provide a detailed overview of SG in the context of Industry 4.0. In Section 3, we provide QoS requirements for SG.

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In this paper, we provide a comprehensive and up-to-date survey on the communication technologies used in the SG, including the communication requirements, physical layer technologies, network ...

Then, the National Institute of Standards and Technology (NIST) carried out public endeavors to foster the cutting edge smart grids framework, ordinarily alluded to as the Smart Grid (Office of the National Coordinator for Smart Grid Interoperability, 2010). Contrasted and inheritance electrical frameworks, the Smart Grid is imagined coordinating fast, entirely.

In smart grid, efficient and reliable communication is incorporated to improve the efficiency, sustainability, and stability of the whole system. This paper presents a review on the ...

The existing power grid has undergone drastic changes within a decade, in order to deal with the increase in energy demand. With the integration of different distributed energy resources (DERs) for a set of different loads, which are interconnected to each other within a well-defined electrical area, Microgrid came into existence. However, with the increased use of ...

Hence, effective communication technologies play a very crucial role in collecting data and transferring control centre decisions for desired operation from the grid management view. Figure 1 shows several wireless technologies used in ...

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Myanmar communication technologies in smart grid