Power line communication in smart grid DR Congo

What is power line communication?
Advanced Smart Grid Applications: Power line communication plays a vital role in enabling smart grid functionalities such as demand response, grid monitoring, and distributed energy resource management.

How can power line communication help a smart grid?
This paper aims to design a module for solving the issues like global warming,unreliable power supply,and automated control on power lines by enabling power line communication (PLC) for the integration of information and communication technology(ICT) in electrical grids thus makes it smarter and becomes smart grid.

What is plc based smart grid technology?
PLC based smart grid technologies/solutions are propelling for renewable energy applications in for DC-DC conversion based distributed power system. Fig. 46. The solar energy grid integration system integrated with advanced distribution-power system (DPS) . Active and reactive power management to ensure power quality.

How smart grid technology is transforming the energy management system?
The smart grid (SG) technologies are attracting growing attention owing to their inherent capacity to realize sustainable energy management system by using intelligent grids for future prospective.

How can a wind generator operate in a smart grid?
In order to operate in a smart grid (SG) environment, the proposed system employs PLC technology for transmitting the power references from the control center (CC) to the wind generator through power cables.

How is data transmission analyzed in smart distribution grids (SDGs)?
In this chapter, data transmission in smart distribution grids (SDGs) is analyzed by means of multiple-input multiple-output (MIMO) narrowband (NB) power-line communication (PLC) systems, by applying orthogonal frequency-division multiplexing (OFDM) encoding.

Dr. Kabalci also serves as an Associate Editor for several international indexed journals and as a reviewer for more than 25 international journals on power electronics and renewable energy sources. ... power line communication, and smart grid applications. He has been a member of the IEEE since 2009. He has published more than 80 research ...

Abstract: Power line communications (PLC) have been an active research area for many years and it is still the case, mainly because they present economic and technical natural advantages for a wide range of applications using the existing electrical grid as transmission medium. In this paper, the authors provide an update on PLC technologies and their applications in Smart ...

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Topic 3: Smart Grid Communications Dr. Hamed Mohsenian-Rad Communications and Control in Smart Grid Texas Tech University 18 o Two-way Digital Communications Paradigm o IP-based and Power Line Communications Architectures o Smart Meters NIST Smart Grid Framework

Advanced Smart Grid Applications: Power line communication plays a vital role in enabling smart grid functionalities such as demand response, grid monitoring, and distributed energy resource management. ... Narrow Band Power Line Communications for Smart Grid Applications," in IEEE P1901.2/D0.08.00, May, 2013, vol., no., pp.1-336, 13 June 2013.

Abstract--Is Power Line Communication (PLC) a good can-didate for Smart Grid applications? The objective of this paper is to address this important question. To do so we provide an ...

This paper surveys power line communications (PLCs) in the context of Smart Grid and the specifications G3-PLC, PRIME, HomePlug Green PHY, and HomePlug AV2, and the standards IEEE 1901/1901.hn/G.hnem are discussed. Power line communication, that is, using the electricity infrastructure for data transmission, is experiencing a renaissance in the context of ...

This paper investigates the use of Power Line Communication (PLC) for Smart Grid (SG) realization. Smart Grid allows for a two-way communication of data, which helps in real time data collection ...

Power-line communications (PLC) have proven to be susceptible to the next-generation power transmission/distribution systems with end-to-end communication capability, ...

Power Line Communication (PLC) is an example of a versatile and cost-effective means of communication for smart grid monitoring because it allows the power line to be used for both power and ...

power line communications with emphasis to PHY and MAC layers. The main research areas include Next generation wireless systems, Next Generation wireless systems, Power Line Communications, and Smart Grids. Theo G. Swart, University of Johannesburg, South Africa. Dr Swart received the D. Ing. degree in 2006 from the University of

Power line communication utilizes the power transmission lines to transmit data. High frequency signals from a few kHz to tens of MHz are transferred over the power line [62].

Power grid topological studies are very important for PLC networking as the power grid is not only the information source but also the information delivery system-a unique feature when PLC is used for the Smart

Grid. Index Terms ...

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 ...

Based on both communication and system models, we classify these schemes that are published between 2013 and 2017, in five categories, including, (1) smart grid with advanced metering infrastructure, (2) data aggregation, (3) smart grid marketing architecture, (4) smart community of home gateways, and (5) vehicle-to grid architecture.

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This paper discusses the use of distribution transformers as a power line communication channel and seeks the possible usage in smart - grid applications. Traditionally, PLC is achieved over ...

PDF | Power Line Communication (PLC) is an emerging technology that utilizes existing electrical power infrastructure for data transmission. ... instance, in smart grid implementations, PLC can be ...

Modeling and Analysis of Power Line Communications for Application in Smart Grid Moegamat Peck, BSc1, Genesis Alvarez, BSc1, Benjamin Coleman, BSc student1 Hadis Moradi, PhD candidate1, Mark Forest, Mentor2 and Valentine Aalo, Faculty mentor1 1 Florida Atlantic University, Boca Raton, FL, 33431, USA {mpeck2014, genesisalvar2013, bcoleman2012, ...

With the ongoing trends in the energy sector such as vehicular electrification and renewable energy, the Smart Grid (SG) is clearly playing a more and more important role in the electric power system industry. One essential feature of the SG is the information flow over high-speed, reliable, and secure data communication networks in order to manage the ...

2. Introduction: Smart Grid Communication Needs : High - speed Full integration two - way communication technologies to allow the smart grid to be a dynamic, interactive mega - infrastructure for real - time information and power exchange. Possible wired and wireless communication technologies can include: Multiprotocol Label Switching (MPLS): High - ...

- a unique feature when PLCs are used for the Smart Grid. Index Terms--Smart grid, power grid, distribution network, power line communication, power line channel, distributed con-trol, cyber-physical systems. I. INTRODUCTION Digital communication over power lines (PLs) is an old idea that dates back to the early 1920s, when the first patents were

Power line communication (PLC) is a natural communications technology for smart grids, as it uses the

existing power cables. This chapter presents that the medium& #x2010;voltage (MV) networks, fibers are rarely included in the power cabling. While at present, MV substations are connected to the communications network mainly via digital subscriber lines, private pilot ...

As mentioned in section 2.2, the use of PLC for smart grid has limitations, as power lines are originally intended for electricity transmission. In this paper, methods are proposed to solve these

Smart grids (SGs) can be considered as an evolution of the current energy model to optimally manage the balance between power supply and demand and meet the energy needs of the modern world. One of the key elements of the SGs to achieve this goal is a bidirectional information and communication technology (ICT) infrastructure, with real-time monitoring, ...