Smart Microgrid Data Communication Design

What is microgrid configuration & control objectives?
The microgrid configurationand control objectivesimpose a variety of requirements on the communication system to ensure different delivering times for various signals generated both inside and outside the microgrid.

What contributes to the success of a smart grid?
The successful implementation of a smart grid (SG) is highly influenced by the successful development and implementation of intelligent microgrids (MGs) and novel information and communication technologies. The successful implementation of this new model of electric network,known as the smart grid,is dependent on the success of MGs and advanced communication technologies.

Why do microgrids need continuous monitoring?
Microgrids are very dynamic structures that need continuous monitoring of their components and surroundings to guarantee an efficient energy management. Microgrids are...

What is WiMAX (Worldwide Interoperability for Microwave Access)?
WiMAX (Worldwide Interoperability for Microwave Access) is a long-range system that supports both fixed and mobile broadband wireless access to deliver a connection to a network,in most cases the Internet. It is based on the IEEE standard 802.16e series,with the main objective being achieving worldwide interoperability for microwave access.

Is a communication module required for DGS?
According to IEC 61850-7-420 standards,Distributed Generators (DGS) that are modeled need to be equipped with a communication moduleto properly connect on the communication network. This module sends various parameters like status,rated current,and DG type to interested components in the Microgrid (MG).

How does the MGCC communicate with the LCS?
The MGCC communicates with the LCS (Local Controllers) of DERs (Distributed Energy Resources)at the central controller level to accomplish different objectives. Also,LCs communicate with each other when the decentralized control scheme is implemented.

Since a false data injection (FDI) attack that compromises the data integrity in the cyber/communication network is one of the most challenging threats for smart microgrids, it is investigated in detail in this paper. Such FDI ...

obstacles in developing a communication architecture for a multi-layer based smart micro-grid system. The communication and system control coordination are the first challenge. The ...

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A goal for the design is to obtain a microgrid that can supply power adequately to a community without any dependence on the large grid. Another goal is to make the microgrid smart in the ...

Smart microgrid concept-based AC, DC, and hybrid-MG architecture is gaining popularity due to the excess use of distributed renewable energy generation (DRE). ... Require a local controller ...

In islanded mode, there is no support from grid and the control of the microgrid becomes much more complex in grid-connected mode of operation, microgrid is coupled to the utility grid ...

In smart hybrid microgrids, information and communication networks, called cyber networks, are tightly coupled to the physical power components. Although the operation of converters in ...

The effective operation of distributed energy sources relies significantly on the communication systems employed in microgrids. This article explores the fundamental communication requirements, structures, and ...

The second smart microgrid project, the Sumba Island smart microgrid, was installed in 2012. It consists of 500 kW PV system, two smart generators of 135 kVA each, vanadium redox ...