

How secure is a smart grid?

It is essentially required that the smart grid must be free from security concerns for its modern infrastructure and popularity. The TACIT cryptographic encryption and decryption algorithm is successfully synthesized on Virtex-5 (xc5v1x20t-2-ff323) FPGA, ranging from 8-bit to 128-bit key size and grid data.

What are the security objectives of a smart grid?

According to the guidelines [7] of NIST, smart grid objectives are depending on three security requirements. Availability, confidentiality, and integrity [28] are the main security objectives of the smart grid. Smart grid has an open network over a larger area.

Can smart grid and nuclear power plant security be improved?

The research paper addressed the smart grid and nuclear power plant security issues in hardware. The grid security can be improved with the integration of cryptographic encryption and a decryption-based chip. The proposed TACIT algorithm has shown good results and simulated data is tested for different test cases.

What is a good solution for grid security in communication system hardware?

The cryptographic-based approach [3, 12] is a good solution for grid security in communication system hardware to protect information and secure communication. The design of the encryption and decryption algorithms in grid hardware is essential to provide data confidentiality in the smart grid.

Can a smart grid distribution system be embedded with FPGA hardware?

The cryptographic-based encryption and decryption approach can be used for a smart grid distribution system embedding with FPGA hardware. The chip design is carried in Xilinx ISE 14.7 and synthesized on Virtex-5 FPGA hardware.

What is the architecture of a smart grid?

The architecture of a smart grid [5, 6] consists of a network of different nodes, communication systems, and primary nodes such as substations, power generation stations, and energy appliances.

SCADA system becomes an integral part of micro-grid network. In Smart Grids (SG) and micro-grid network, ... from all others which is because of the implementation of encryption at bit level ...

Tomorrow: Ireland's Grid Development Strategy (2016). To date, there have been two iterations of GRID Implementation Plans (IPs) following publication of these strategies, the latest of which ...

In this paper, we design a vertical federated learning system for the for Bayesian machine learning with the homomorphic encryption. During the training progress, raw data are ...

and consumers makes the grid smart, the digital technology work with the electrical grid to respond to varying demands and for an intelligent control over the entire power system. ...

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By connecting a smart micro grid with IoT, the issue of voltage violation and grid instability caused by power insufficiency is resolved. The IoT-based network integrates grid ...

The objective of the research work is to design the cryptographic advanced encryption standard (AES) algorithm hardware chip for a smart grid in Xilinx 14.7 software and simulate the ...

The principle is based on the security protection principle of "security zoning, network dedicated, horizontal isolation, vertical certification" proposed by China State Grid Co. ...

Since Lorenz discovered the first chaotic system in 1963 [1], the study of chaos has developed rapidly and plays an increasingly important role in secure communication, ...

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