A multiagent approach to power systems restoration

This paper proposes a multi-agent approach to power system restoration. So far, numerous studies have been conducted on power system restoration problems. From the view point of the system structures, these researches can be divided into two categories: centralized systems and decentralized systems. In this study, we have solved the distribution power system restoration ...

The multi-agent system will allow for the distribution of tasks between agents leading to a reduction of the computational time requirements as well avoiding single points of failure. 4. Multi-agent approach. The multi-agent structure and the communication between agents used was that presented in Zidan and El-Saadany (2012), differing in the ...

With the increasing integration of Distributed Energy Resources (DER) in the power grid, a decentralized approach becomes essential for scheduling and allocation of resources in a smart grid. Economic Dispatch (ED) and Unit Commitment (UC) are the two major resource allocation problems that play critical role in the safe and stable operation of a grid ...

NAGATA AND SASAKI: MULTI-AGENT APPROACH TO POWER SYSTEM RESTORATION 459 Fig. 2. Example of the post fault network. C. Negotiation Process Between Bus Agents Negotiation process is one of the key processes for the multi-agent system to successfully attain its goal. In the following, we shall describe what is negotiations in the restoration ...

A new multiagent system (MAS) design for fault location, isolation, and restoration in power distribution systems (PDSs) is presented, which integrate the advantages of both centralized and decentralized coordination strategies. A new multiagent system (MAS) design for fault location, isolation, and restoration in power distribution systems (PDSs) is presented. When there is a ...

The development of a multi-agent system for automatic restoration system (MARS) applied to a real power distribution network is presented. The agents of the MARS are embedded in external hardware to the intelligent electronic devices (IEDs) and communicate with each other via standard Foundation for Intelligent Physical Agents open protocols.

Simulation results have demonstrated that this method is able to reach suboptimal target configurations, which are favorably compared with those obtained by a mathematical programming approach. This paper proposes a multiagent approach to power system restoration. The proposed system consists or a number of bus agents (BAGs) and a single facilitator agent ...

In this paper, a decentralized multi-agent system (MAS) has been proposed to solve the power system

restoration problem. In the proposed MAS, an agent with its own specific logic and interactions with other agents is devoted to any piece of equipment in the grid, including bus, black start, non-black start, photovoltaic and wind generating units.

IEEE TRANSACTIONS ON POWER SYSTEMS, VOL. 17, NO. 2, MAY 2002 457 A Multi-Agent Approach to Power System Restoration T. Nagata, Member, IEEE, and H. Sasaki, Member, IEEE Abstract--This paper proposes a multi-agent approach to power system restoration. The proposed system consists of a number of bus agents (BAGs) and a single facilitator agent ...

A multi-agent system (MAS) architecture for fault restoration with DG islanding is proposed and its flexible nature makes it topology independent as shown in the results. The increase in penetration level of distributed generation (DG) in the distribution network has enhanced the service reliability of the customers. In case of a fault, the DGs with their ...

The use of the Q-learning algorithm developed in conjunction with the restorative framework can help the agents to make accurate decisions to protect against cascading failures in a timely manner without requiring a global reward signal. This paper presents a hybrid multiagent framework with a Q-learning algorithm to support rapid restoration of power grid systems ...

Utilizing distributed energy resources (DERs) such as renewable based distributed generations and energy storages as the utility power is an alternative approach to continue power supply for CLs in the case without power feeding from the main grids [9].The focus of this paper is to study the CL restoration using DERs for the distribution system after a natural disaster.

From the simulation results, it can be seen the proposed multiagent system could reach the right solution by making use of only local information and is a promising approach to more large-scale distribution networks. This paper proposes a multiagent approach to decentralized power system restoration for a distribution system network. The proposed ...

The development of agents and behaviors of the agents are described, including communication of agents, and a MAS that restores a power system after a fault is provided. The goal to provide faster and faster restoration after a fault is pushing the technical envelope related to new algorithms. While many approaches use centralized strategies, the concept of multi ...

benefit from a multi-agent system approach [14-18]. A multi-agent system is a computational system in which several agents cooperate to achieve some tasks. Multi-agent models are oriented towards interactions, collaborative phenomena, and autonomy. This chapter proposes a multi-agent approach to restoration of a local network,

This paper proposes a multiagent approach to decentralized power system restoration for a distribution system

network. The proposed method consists of several feeder agents (FAGs) and load agents (LAGs). A LAG corresponds to the customer load, while a FAG is developed to act as a manager for the decision process. From the simulation results, it can be ...

Planning of the power grid restoration (PPGR) is a problem with high computational complexity, many restrictions and conditions, which have to be evaluated by the operator of the grid [] is especially exciting because of its insufficient observability, high dimension of the state space, making impossible complete enumeration of the control object''s ...

This paper proposes a multi-agent approach to decentralized distribution power system restoration. So far, numerous studies have been conducted on power system restoration problems. From the view point of the system structures, these researches can be divided into two categories: centralized systems and decentralized systems. In this study, we have solved the ...

Multi agent system (MAS) is one of the most dominant research wings which consist of several agents who interact with each other to achieve a common objective. MAS has been developed for a wide range of applications in power systems. Power system restoration is a main application of that. Researchers present several architectures for fault identification, ...

This paper proposes a multi-agent approach to power system restoration. The proposed system consists of several bus agents (BAGs) and a single facilitator agent (FAG). A BAG is developed to decide a sub-optimal target configuration after faults occur by interacting with other BAGs, while a FAG is developed to act as a manager for the decision process.

This paper proposes a decentralized multiagent system (MAS) approach for service restoration using controlled distributed generator (DG) islanding and investigates the impacts of vehicle-to-grid (V2G) facility of the electric vehicles (EVs) for service restored. This paper proposes a decentralized multiagent system (MAS) approach for service restoration ...