

Extra Reliable Power Control System for Power Substations

2009-05-06

Location / Country : China, Jiaozhou Electric Power Group Shandong,

Product Solutions:

[EDS-510A Series](#)

7+3G-port Gigabit managed Ethernet switches

Introduction

Project Introduction

The Jiaozhou Electric Power Group (JEPG) is a state-owned enterprise in Shandong, China, that owns a high-quality, large capacity power grid with two 220 KV transformer substations, five 110 KV transformer substations, and twenty-two 35 KV transformer substations.

JEPG upgraded their network system in 2007 in response to the need for a reliable integrated video and data network for remote monitoring. The original power distribution system used point-to-point Ethernet fiber access communication with a radio communication system for backup. However, using radio for backup is considered less reliable since transmission is subjected to affect by the weather and the height of surrounding buildings. The upgraded system uses an Ethernet ring topology for the power distribution system and combines the power distribution system, video surveillance network, and office automation into a single network.

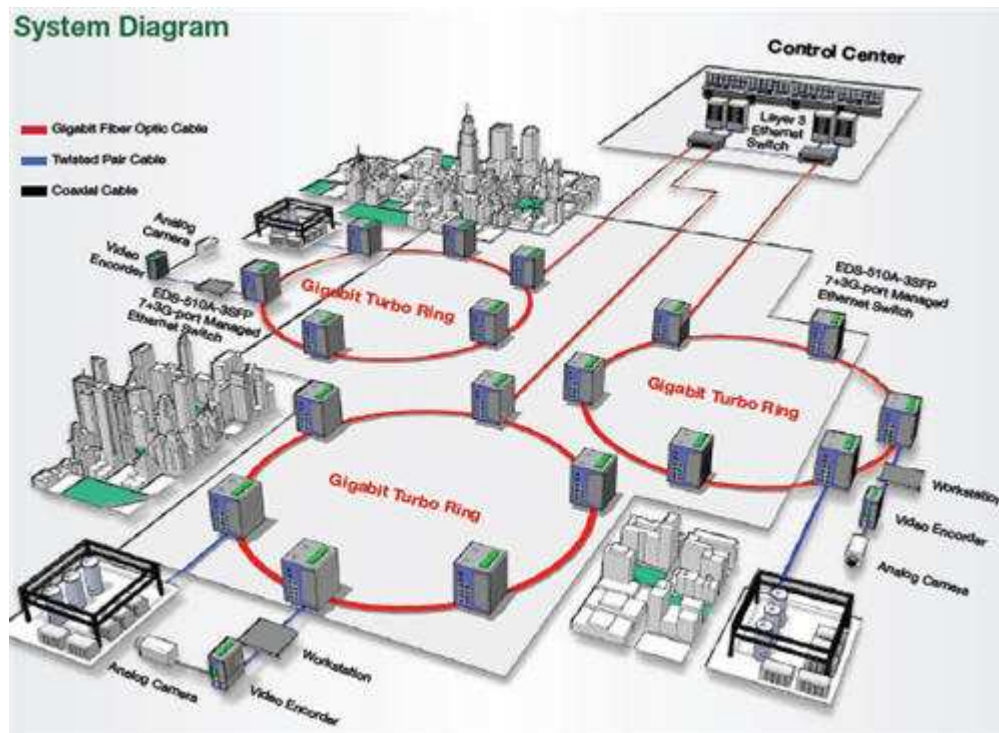
System Requirements

- The customer planned to integrate a power distribution automation system, office network, and video surveillance system into a single network.
- The Jiaozhou Electric Power Group wanted to use a communication network backup system that was more reliable and stable than radio wave transmission.
- The network requires a high bandwidth to transmit data and video simultaneously for real-time monitoring.

Moxa Solution

The Jiaozhou Electric Power Group has 30 substations located in three different counties. In order to guarantee more reliable remote monitoring for power distribution, the Jiaozhou Group deployed an Ethernet ring typology for their power control system. Based on the locations of the 30 substations, three Ethernet rings formed from Moxa's EDS-510A-3SFP Gigabit managed Ethernet switches were established. The rings used Moxa's patented Turbo Ring technology for the backup system. The power distribution system's protection relays are connected directly to the EDS-510A-3SFP switches, which together form a ring topology protected by Moxa's own Turbo Ring protocol to guarantee millisecond-level recovery in the event of network failure. In addition, each EDS-510A-3SFP switch is connected with a workstation for video surveillance to give system maintainers an efficient means of monitoring operations at the field sites. The EDS-510A switches come equipped with three Gigabit Ethernet ports to provide a high bandwidth solution that provides the power needed

for a redundant Gigabit Turbo Ring backbone, and leaves a spare Gigabit port for uplink to the core switches.



Why Moxa

- Moxa's Ethernet switches can be used to establish media redundancy with a recovery time less than 20 ms to ensure the stability of the power control system.
- The EDS-510A Gigabit Ethernet switches come equipped with three Gigabit Ethernet ports to provide a high bandwidth solution for creating an integrated video and data network, while also leaving a spare Gigabit port for uplink to core switches.
- Intelligent functions, such as warning by email or relay output, make troubleshooting easier.

Product

EDS-510A-3SFP

- 2 Gigabit Ethernet ports for redundant ring and 1 Gigabit Ethernet port for uplink
- Turbo Ring (recovery time < 20 ms), RSTP/STP (IEEE 802.1W/D) for Ethernet redundancy
- Relay output warning for power failures