

## Using a Redundant Ethernet Network for an IEC 61850 Substation

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IEC 61850-3 9G-port Full Gigabit managed Ethernet switches

IEC 61850-3 / EN51055 24+4G-port Layer 3 Gigabit modular managed Ethernet switches

IEC 61850-3 / EN51055 24+4G-port Gigabit modular managed Ethernet switches

### **Introduction**

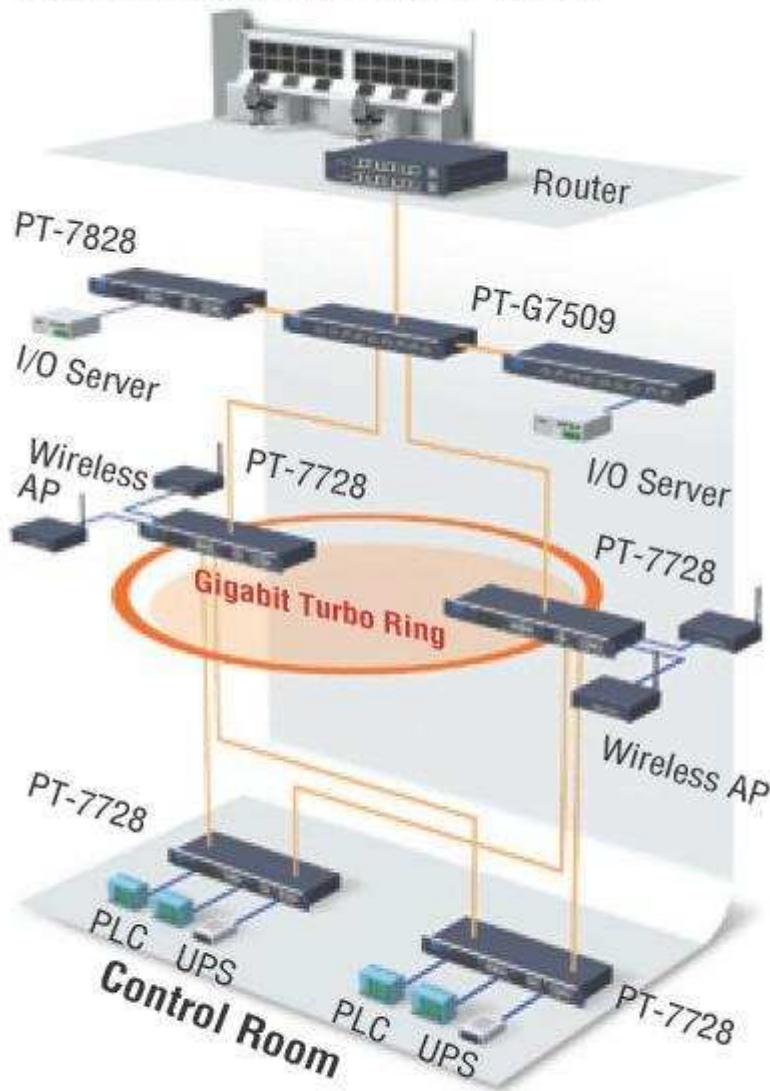
#### Project Introduction

A transmission company supplied three 132 KV power transmission lines to an aluminum smelter plant, each with its own power substation to convert the electrical energy for use in the smelting process. The existing network infrastructure was hub-based Ethernet and the network design was not redundant. In order to improve the reliability of the system, the operator sought to modernize the entire automation network, including a substation automation network that was originally installed in 2000.

#### System Requirements

- A redundant Ethernet infrastructure with secure data communication
- Network devices that are IEC 61850-3 and IEEE 1613 compliant to ensure reliable operations in the harsh electrical environment
- Ethernet switches with modular connectivity to make PLC upgrades and configurations easier

## Remote Dispatch Control Center



- Twisted Pair Cable
- Gigabit Fiber Optic Cable
- Fiber Optic Cable

## Why Moxa

- Moxa Turbo Ring redundancy with fast recovery (< 20 ms with 250 switches connected)
- The PT-7828 Layer 3 Ethernet switches support IP routing protocols
- The PowerTrans series Ethernet switches have passed IEC 61850-3 and IEEE 1613

## KEMA performance tests

- PowerTrans Ethernet switches feature modular construction to make future upgrades effortless