

Xinjiang Dabancheng Wind Farm



Project Introduction

Dabancheng, which is located 8 km east of Urumqi, Xinjiang province, is the famous Barry wind area with an area of about 80km wide and 20km around the Gobi desert. Today over 200 sets of silver windmills consisting of Asia's largest wind power has become the model for China to develop clean renewable energy. Goldwind, a Chinese wind turbine manufacturer located in Xinjiang province, is one of the largest turbine manufacturers in China and one of the top five in the world.

Company: Goldwind
Location: Xinjiang Province, China

System Requirements

- Wind turbines are linked together for operation and energy monitoring. This establishes a unique set of challenges since a wind farm can span vast distances with typical locales possessing electrical interference, extreme temperatures, dust, moisture, and vibration. Especially in this project, since Dabancheng is located in the far northwest of China, all of the equipment needs to have the ability to boot up at extremely low environment temperatures
- under -40°C (-40°F).
It is imperative to utilize rugged networking devices that support long distance and reliable transmission capabilities. Keeping data protected while communicating from the base to the top of each wind turbine and between turbines, can best be achieved through fiber optic Ethernet connections. At the same time, topological requirements and limitations, which are acceptable for conventional networks, become intolerable when designing

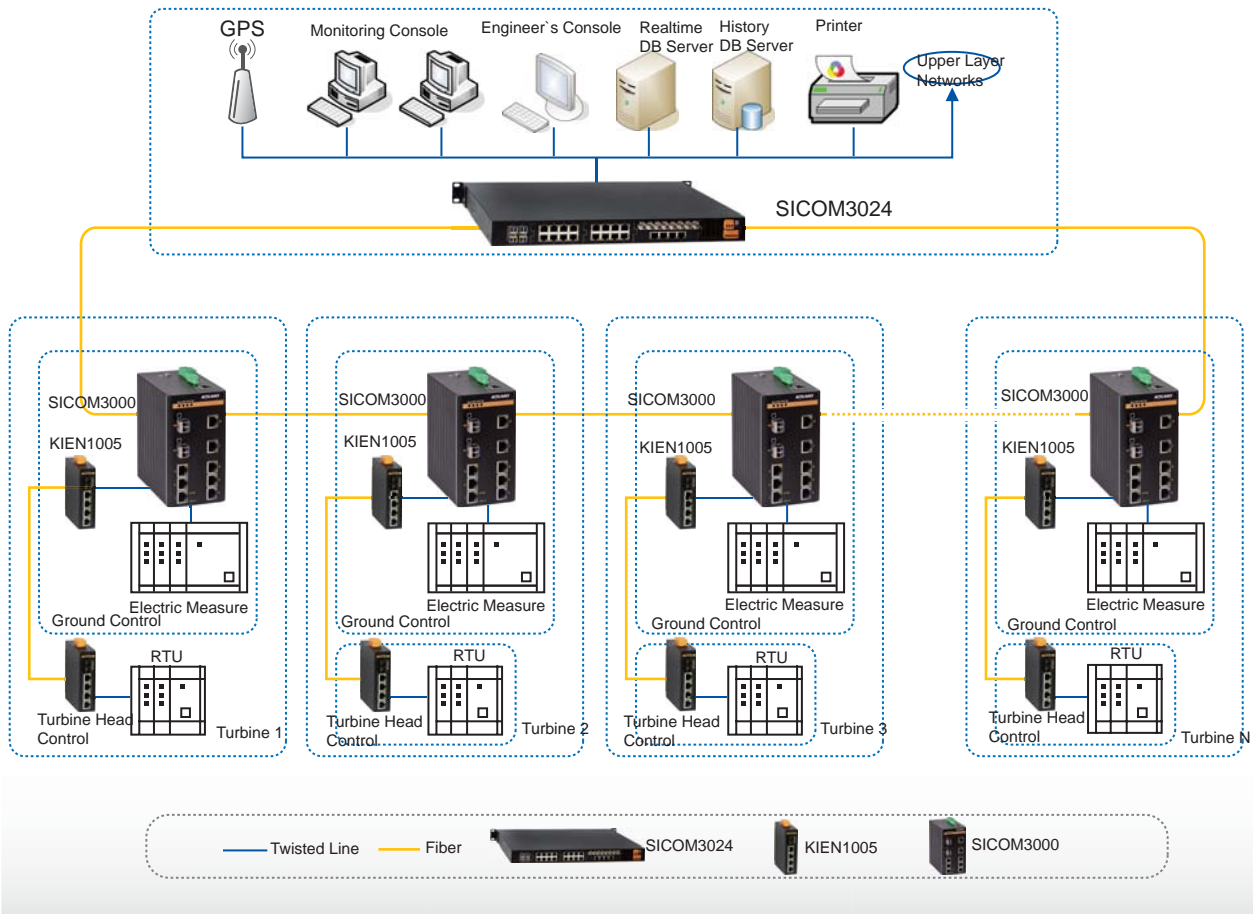
Kyland Solution

Kyland SICOM3000 managed industrial Ethernet switches with 2 fiber ports protects In and Out communications in the wind farm application and handles redundancy in a flexible ring topology via Kyland DT-Ring fast recovery ring protocol. Switches convert copper Ethernet to optical fiber for highly reliable, EMI immune data transmission. Several fiber rings connect all the windmills together with the control center realizing the integrated monitoring and control.

In this wind farm automation system, we need to monitor the working status of the wind turbine and the quality of the energy generated. This includes the direction of the wind turbine, the angle of the turbine blade, the vibration of the turbine tower, and the power of the energy. Kyland 5 port unmanaged KIEN1005 industrial Ethernet switches are used inside the wind turbine to collect all the data and send it out through one fiber port. In this project, another KIEN1005 is located in the cabinet under each windmill to convert the fiber to copper and connect with SICOM3000. Currently, Kyland offers several 3 fiber port models for wind farm applications, such as KIEN7009/SICOM3009A, which can eliminate one KIEN1005 in each windmill.

The system has very strict requirements on wide temperature variation operation especially with the need for the device to boot up under -40°C (-40°F) environment temperature. Goldwind, the system integrator, finally select Kyland solution to form the communication network for its rugged design and outstanding performance in harsh environments including wide operating temperature of -40 to 85°C (-40 to 185°F), industrial level 4 EMC design for EMI resistance, solid aluminum housing with single ribbed surface for heat

System Diagram



Why Kyland?

Operates in harsh industrial environment with EMC industrial level 4, wide operating temperature, dustproof, fanless design

Outstanding performance of booting up under -40°C (-40°F) extremely low temperature

Fast recovery DT-Ring protocol ensures the reliability of the network

Unified management software Kyvision3.0 for real-time network monitoring and easy management



SICOM3000

- 2 Gigabit SFP slots, 6 10/100Base-TX ports and 2 Fast Ethernet fiber/RJ45 optional ports
- Supports DT-Ring protocols and MSTP
- Supports GMRP, DHCP, SNMP, QoS
- Supports SNMPv3, HTTPS, SSH, DT-Psec enhance
- network security



KIENT1005

- 4 10/100Base-TX ports and 1 Fast Ethernet fiber/RJ45 optional port
- Uplink port supports broadcast storm control and QoS functions
- EMC performance reaches industrial level
- 4
- IP40 protection class

► Please refer to www.kyland.com for more details